

MOTION DRIVES

POWER TRANSMISSION & INDUSTRIAL MOTION MAGAZINE



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Power Transmission Operations *in* **Space**



+ Salim Haffar
EUROTRANS



+ Koen Laurysen
EPTDA

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A Positive Outlook for PT and Motion Industries



Mike Brandt
Editor-in-Chief

This edition of Motion + Drives Magazine headlines the uniquely interesting topic of Power Transmission operations in space. Take an introductory look at mechanisms propelling some of the most technologically advanced equipment in existence today, and marvel at the unparalleled durability requirements necessary to operate within the extreme conditions beyond Earth.

Further, it is our distinct pleasure to share exclusive interviews with influential leaders from a selection of the PT Industry's highly supportive organizations. Mr. Salim Haffar, President of EUROTRANS, provides his professional insight into the adaptive measures being taken to help PT associations navigate today's challenging landscape following the Covid-19 pandemic. Likewise, we highlight a candid discussion with Mr. Koen Laurysen, Operations Manager at EPTDA, who details his informative viewpoints related to current conditions and future outlook. Later, we go on to explore how new hybrid formats are revolutionizing the immediate future of industry events and meetings.

Finally, the core of any industry is undoubtedly the solution

providers. Explore a variety of companies from around the world offering innovative products and services. In this issue we cover companies that are helping to bridge the gap related to a surge of consumer spending. A central theme arises in the form of digital transformation within businesses. Whether through automated warehousing, lean thinking, or the addition of virtual experience centers, PT businesses are acclimating to technological shifts.

What's in Motion...

What's in motion for the PT industry. Revel in the joy of success while reading of a student start-up helping to improve racing technology. Learn details about key companies and trends, announcements, product developments, and tech advancements, concentrated in the following areas; belt systems, springs, chains & transmission elements, spacers for gearbox applications, seals, brakes, couplings, drive technology, lubrication systems, & induction heaters. All this and more can be found in this new edition of Motion + Drives Magazine.

I hope that you will enjoy it.

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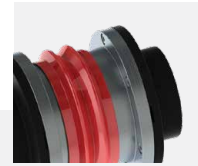
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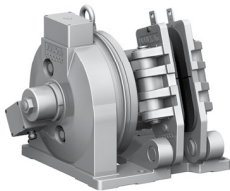
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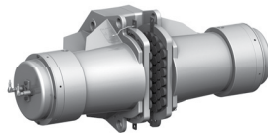
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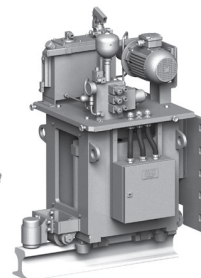
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Braking torque up to
400.000 Nm



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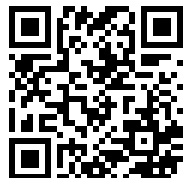


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Mr. Salim Haffar,
President at Eurotrans



– Adaptive measures help drive the European Power Transmission industry forward



EUROTRANS is the leading organization that represents the interests of the European power transmission industry. The federation supports a network of more than 600 enterprises that combined account for an annual production of over 40 billion euro and employ more than 160,000 people. At the forefront of this esteemed group is elected President, Mr. Salim Haffar.

Motion + Drives magazine had the distinct pleasure of interviewing Mr. Haffar in an effort to gain key insights into EUROTRANS' efforts to support of the Power Transmission industry, future trends, dynamics, as well as perspective surrounding the impact of current events, such as COVID-19.

First of all, we would like to congratulate you on your role within EUROTRANS. Can you tell us more about your history at EUROTRANS, as well as your background and current activities?

I am of French / Moroccan nationality, having lived seven years now in Turkey and working as the International Sales & Strategy Manager at I-MAK Gearbox manufacturer in Istanbul. EUROTRANS is the Federation of European Power Transmission Associations and Industries. I have been representing the MIB (Turkish Machinery Association) and Turkey at EUROTRANS for the past three years.

I had the chance to attend the EUROTRANS meeting in Belgium and Germany before the start of the pandemic. Last year I was elected president, and Mr. Andre Thuswaldner from Switzerland was elected as the Vice-President, by the Board of Directors of EUROTRANS. Due to my activities at EUROTRANS and I-MAK, I have the opportunity to interact with associations, organizations, universities and companies all around the world. This is a unique opportunity to follow the trends and dynamics of our sector on a global level, gaining key knowledge to serve the interests of our members.



How did the pandemic impact the activities at EUROTRANS so far? Which challenges have been faced since the start of the outbreak?

Thanks to the very high-profile professionals attending our meetings at EUROTRANS, we had the chance to switch immediately to online meetings. We could adapt and organize at an early stage. Our first online board meeting and even my election was done online. The main challenge with the virtual meetings was to adapt the training programs to the virtual world. One of the main missions of EUROTRANS is to prepare high level trainings for our member associations and member companies. We could manage to organize our first online trainings this year as well, with professionals attending from several countries.

The other challenge regarding online meetings for EUROTRANS is the annual meeting and networking events, where we discuss the latest trends and dynamics of our industries. The EUROTRANS International Drive Technology Meeting will be held for the first time online, this year on 30th September, with the participation of member companies, associations, and institutions from all around the world.

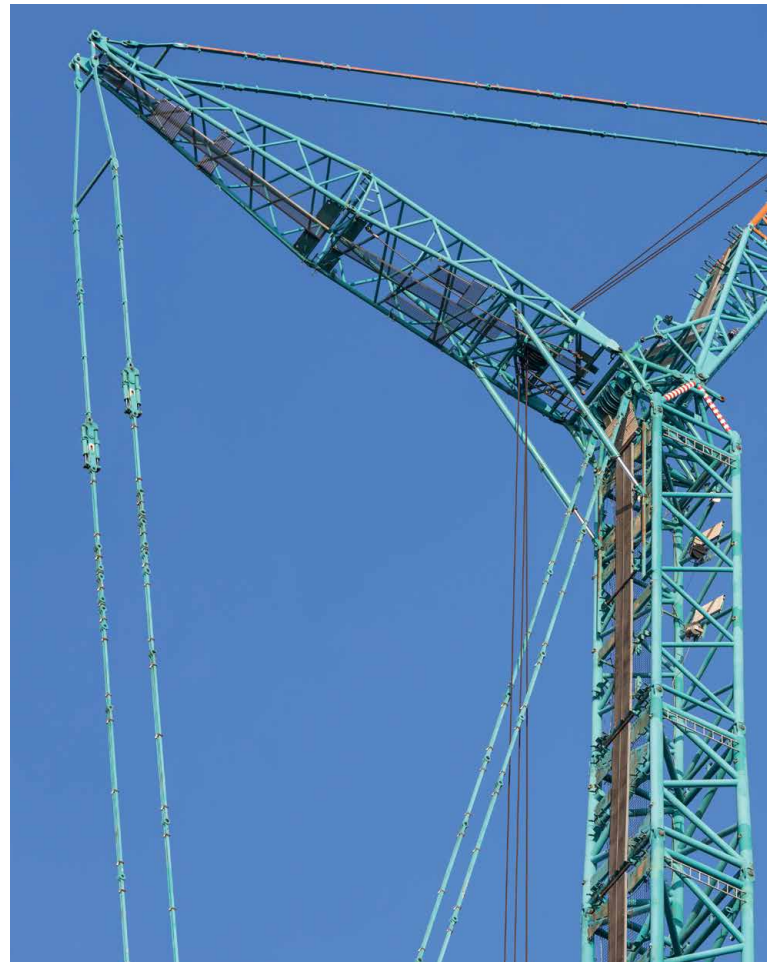
Did the recovery from the pandemic already start for the power transmission companies? What are the biggest challenges that companies will face during this process?

As per our regular discussing and internal surveys, the recovery already started for the majority of our member companies. Most of them are currently full of orders, production, and a positive provision for the future. Despite the travel restrictions, most of the companies continued their international sales operations. Most of our members show a great adaptability to the new digital reality.

As per today, the biggest challenge for the PT industry is the lack of raw materials and general cost pressure. As mentioned in our reports, many member companies struggle to receive their raw materials on time. The second challenge is from the logistics perspective, as the shortage of containers continues to impact multiple industries.

How do you see the future of the power transmission and motion control industries for the coming years ahead?

We are very positive for the future of the Power Transmission industries, as our sector continues to power, drive and contribute to many other industries



and sectors worldwide. Most of the EUROTRANS member companies manage to gain a good share in the changing energy sector, securing a new pool of growth for the future. It is also important to remember that Power Transmission components and equipment are used in most of the products in our daily life. When the growth is back again, as in the post-pandemic world, our member companies will benefit from the boost again. Wherever there is movement, there will be Power Transmission.



We are very positive for the future of the Power Transmission industries, as our sector continues to power, drive and contribute to many other industries and sectors worldwide.



Do you see the reshoring of manufacturing back in Europe speeding up with the current economic conjuncture?

The pandemic, with the travel restrictions and the increases in logistics costs, has forced many industries to either look for an alternative, or reactivate the local European supplies. Many of our members are rebuilding some old links and synergies with other Europeans companies to face together the current market pressures. Yet most of the power transmission companies are present on a worldwide level and act global. Their relocation seems too complicated or unnecessary as they already have their own production facilities spread around the world. They will continue to develop their presence in these countries and develop new chains of values.

On a local and European level the main change is felt by smaller manufacturers and workshops that are facing a unexpected boost after many years of difficulties. The relocation and market difficulties is a unique opportunities for smallest players as major companies struggles to match with delivery time schedules.

You said in an earlier interview that digitalization and sustainability are the two key challenges for companies in the power transmission industry. What can you suggest for companies in regard to the implementation of those two key points?

It's very hard to suggest these to most of our members, since in our network and sector, most companies took very early steps in sustainability. Located in Europe, our members adapted both



The electrification of power transmission products become more and more important with the IOT and the necessity to combine all products and components into a whole system that can be managed, optimized and monitored on a single platform.



the production and facilities to more green and sustainable method / style. Some even reached very advanced levels and are shown as example around the world. At the same time, our members also adapted their products to achieve higher energy efficiency and longer product life. This change started years before the new regulations and laws regarding motors efficiency(Eco design / European regulation (EC 640/20009), showing one more time that the European power transmission sector is in advance and keep being a leader on the international level.

Regarding digitization, most of our member companies also already took the digitization path. We can suggest to remaining companies that digitization is the key to create added value and that they can become integrated and combine with the products of other companies and industries.

What are your thoughts on the electrification of power transmission components and systems?

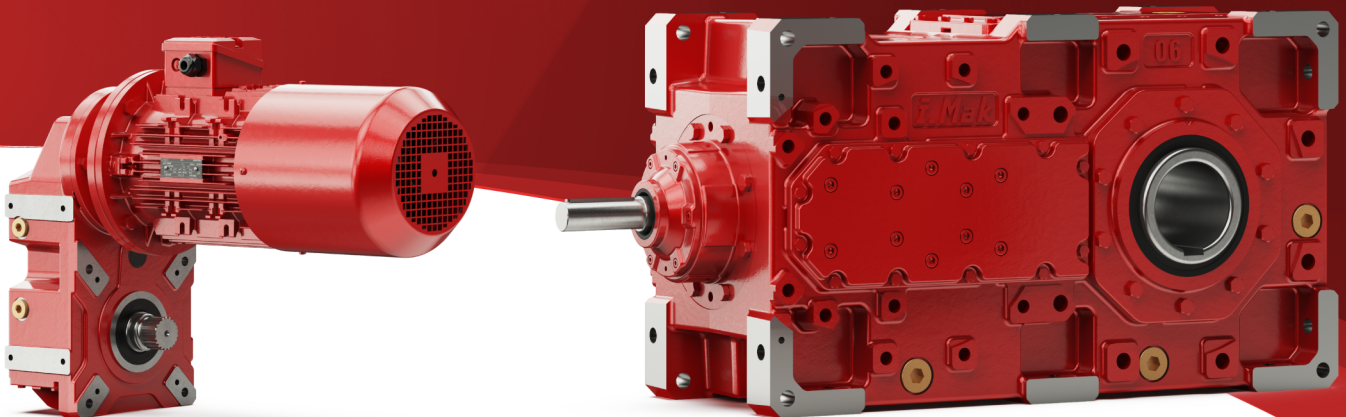
Electrification of power transmission equipment actually started more than ten years ago, when the first companies started to propose solutions to track up and follow the performance of their products. Nowadays the electrification of power transmission products become more and more important with the IOT and the necessity to combine all products and components into a whole system that can be managed, optimized and monitored on a single platform. The electrification is also a unique opportunity to create extra added value on products and keep the technological leadership of our members.

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Koen Laurysse,
Head of Operations at EPTDA



— A Future Outlook from the **EPTDA**

+ + + + +

As the most important power transmission distributors organization for the EMEA region, the EPTDA has adapted promptly to the ongoing global changes and is ready to embrace new challenges, in order to support its member companies. This candid interview with Mr. Koen Laurysse, Operations Manager at EPTDA, provides a fresh perspective concerning the current situation, ongoing projects and future outlook of the EPTDA towards the Power Transmission Industry.



Can you tell us more about your background and current activities at EPTDA?

I was a qualified lawyer practicing Finance, Corporate, and NonProfit Association Law for 15 years. From time to time, I acted as legal advisor to EPTDA on NonProfit Association Law, Management, and Governance. However, in January 2021, I on-boarded the EPTDA Bureau team as their Head of Operations. So far, the experience is very fulfilling, giving me opportunities to broaden my horizons. I always found EPTDA's purpose, activities, the Pan-European operation, and the general atmosphere very upright and contributory. Hence, when I got this golden opportunity to join this organization, I did not hesitate for a second and hopped in right away.

Will the traditional EPTDA programs and the annual convention, as we know them, return in 2022?

Absolutely yes ! The world is gradually getting back to normal, and so are we. We host the EPTDA Annual Convention in Warsaw, from 16 - 18 March 2022. Nonetheless, if one thing that the pandemic has taught us, is it 'You never know,' hence, be prepared for the unknown. But in an ideal and abiding situation, we do plan to host a physical convention for our members at the earliest.

During the pandemic, we organized multiple virtual events to stay connected with our members while providing them with actionable information to deal better with the situation. Quite frankly, the virtual-fatigue has reached the optimum now. EPTDA members seek real human interaction, and the bureau agrees that it is high time we indulge in our regular events like Annual Convention, Leadership Meetings, and Industry Fair.

Can we expect any new EPTDA initiatives and programs in the post pandemic era? If so, what will be different?

My philosophy says, "Don't change for the sake of it.


Change because you mean it and you believe in it". As new Head of Operations of this association, I aim to mature the existing initiatives to further champion the EMEA PT/MC industry.

To name a few: More than ever meaningful experience sharing and networking opportunities during and after the Annual Business Convention and other live events. Supporting and generating ideas to encourage further actionable usage of our high quality Economic forecasting reports and Product life intelligence (PLI) reports to foster a better understanding of local markets regarding production, process, and facilities. Rendering strategic data and details via our monthly PTMIndex publication, an exclusive report for EPTDA members, along with offering quality real-time industrial data available on European short-cycle industrial demand.

I enthusiastically share, we strategically leveraged the Zoom era for structuring one-on-one sessions with individual members to receive their propositions on adding value and potential to the EPTDA community. The response and participation received were extraordinary. We characterized some highly serviceable and practical initiatives based on these virtual roundtables like EPTDA Leadership Academy, Member News - a privileged broadcasting space for EPTDA members on the EPTDA Website, and interactive EPTDA newsletters. Unlike the past, in this newly transformed post-COVID era, we will rely on hybrid models of communication and networking - the digital will share the due weightage with physical.

Do you expect any practical or habitual changes at the personal level within the member companies? If so, would this force structural changes to EPTDA programs?

One thing has not changed : our members devoted support to the association. Even though times were often unpredictable and challenging for each of them, a huge majority of our members stayed on board despite the absence of an Annual Business

A professional portrait of Koen Laurysen, a middle-aged man with short brown hair and a slight smile. He is wearing a dark blue blazer over a light blue and white striped button-down shirt. His arms are crossed, and he is leaning against a white wall. The background is a bright, slightly blurred indoor setting.

Koen Laurysen,
Head of Operations at EPTDA



Convention in 2021. In addition, despite lack of physical meetings our volunteers were more motivated than ever to take up their active role in the different Committees and Board. I would like to express my gratitude to all of them for that!

Further, every industry has gone through a massive overhaul. Agreeably, the daily traffic jams will resume, but specific changes are here to stay. The Work-for-home is a groundbreaking concept that had a general breakthrough across industries. Many of our members are now embracing the hybrid model with enthusiasm. By all means, the association will also need to adapt its operations accordingly. Hence, the critical challenge at the moment for us is to continue engaging members of all ages - those who are digital-friendly and those who insist on physical meetings.

Must I add, the era of physical presence for every other meeting and conference is beyond passe.

During the COVID-19 crisis, what role did the EPTDA play in supporting its member companies? How does the EPTDA continue to support member companies today?

2020 was the year of webinars, video conferences, and adapting to new ways of communication. Unfortunately, the situation, although better, continues in 2021. It was certainly challenging for EPTDA to adopt these new techniques of doing business. Still, we did, and successfully at that; barring some sundry hits and trials. We left no stone unturned to ensure active communication with our members while guiding them on effective tackling of the pandemic while safeguarding their people and profits. Of course, we took every measure to ensure the health and well-being of all our representatives.

Meanwhile, we are encouraging our member companies to embrace digitalisation with all guns blazing. In 2021, we launched EPTDA Leadership Academy - A 1-year digital training program for aspiring leaders irrespective of their age, role, and experience. Of course, I can't repeat it enough: everyone is looking forward to the next live meeting.

What remaining challenges, if any, do member manufacturer and distributor companies need to overcome?

The general anticipation was that of a prolonged economic recession.

Interestingly, what we have is a super-fast recovery. Hence, the manufacturers and distributors need to up their supply chain and logistics game. Short

supply of raw material, plunging inventories, rising energy prices, and fast-paced digitalisation are a few prominent prevailing challenges.

However, this doesn't end there. Policy upheavals is another aspect our member companies mustn't ignore. Let's just discuss the Green Deal here as example - for sure, this is going to have an impact on the PT/MC industry. However, such challenges are more of an opportunity. At EPTDA, we keep our members updated on major trends and opportunities and their practical consequences on the industry.

Our PTMI Index is uniquely curated keeping this requirement in focus - I am 100% convinced members referring and consulting this index could pick up many economic trends and challenges in advance, such as these widespread shortages. Of course, prior information helps you with preparation, doesn't it?

How do you see the future of the power transmission and motion control industries in the years ahead?

In one word: BRIGHT. PT/MC is a core industry that has an irreplaceable role in the economic framework. Let's not forget that the PT/MC is the industry that technically put things in motion - We are the nuts and bolts and the gearboxes of the economy. Of course, the industry can't continue playing the age-old tunes; it must embrace the technological wave. Simultaneously aspects like sustainability and conscious carbon footprint reduction are critical dimensions.

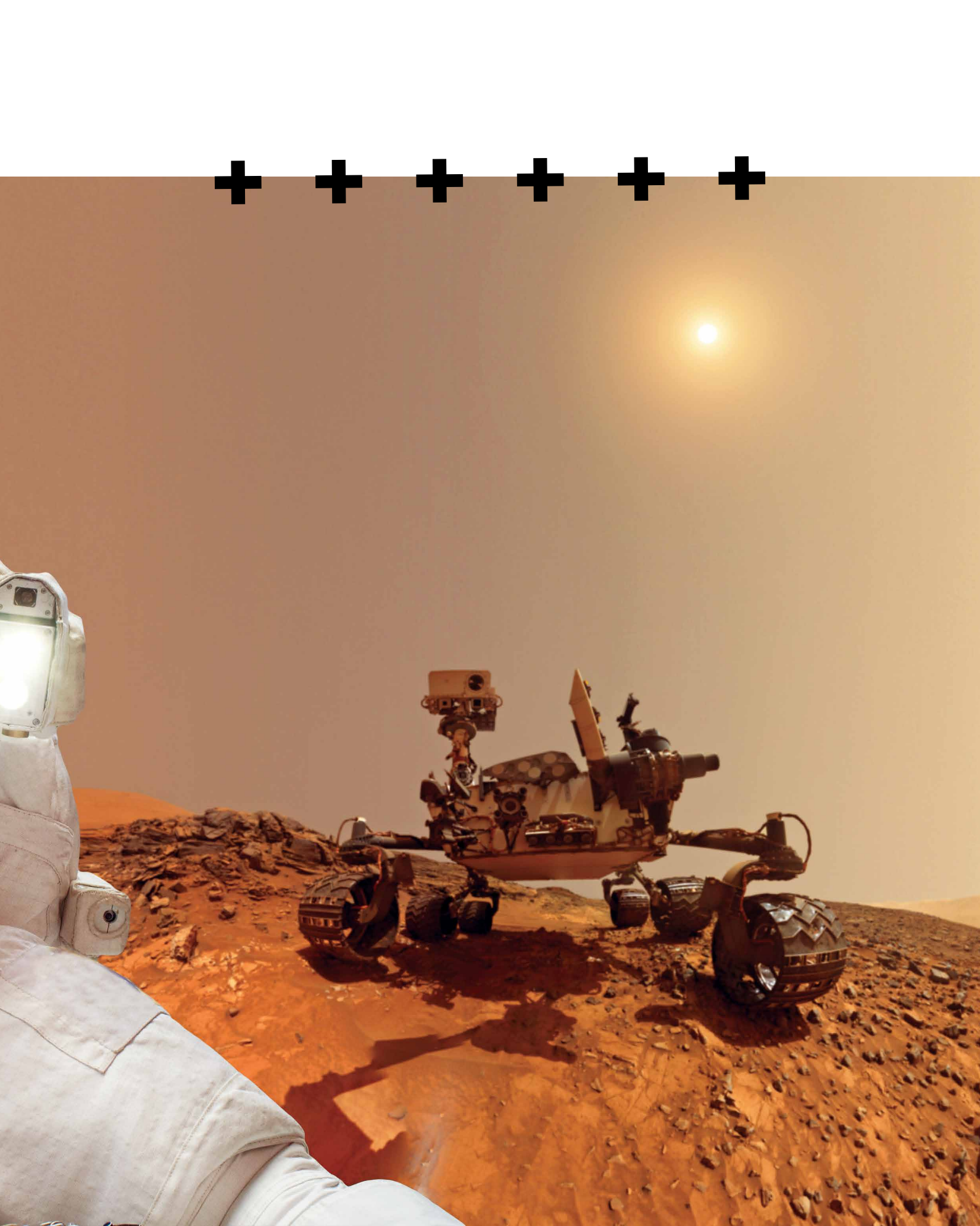
All said and done, EPTDA members are already bracing up to meet this new set of trends and challenges. I say this with conviction, PT/MC industry in Europe is re-shaping its purpose and vision fast. Rest assured, the industry will contribute significantly to the impending transformation of Europe towards sustainable growth.

About EPTDA

EPTDA is the leading association for industrial distribution distributors and manufacturers across Europe, the Middle East & Africa, setting the highest commercial, environmental, social and ethical standards. Its mission is to advance distribution and strengthen members to be successful, profitable and competitive in a changing market environment. EPTDA vision is to be the leading community in the EMEA region for industrial distribution, as recognized by customers. EPTDA currently has a membership of more than 243 leading companies across 34 countries worldwide, working with some 320,000 employees and representing over €22 billion in annual revenues.

Power Transmission
Operations in Space





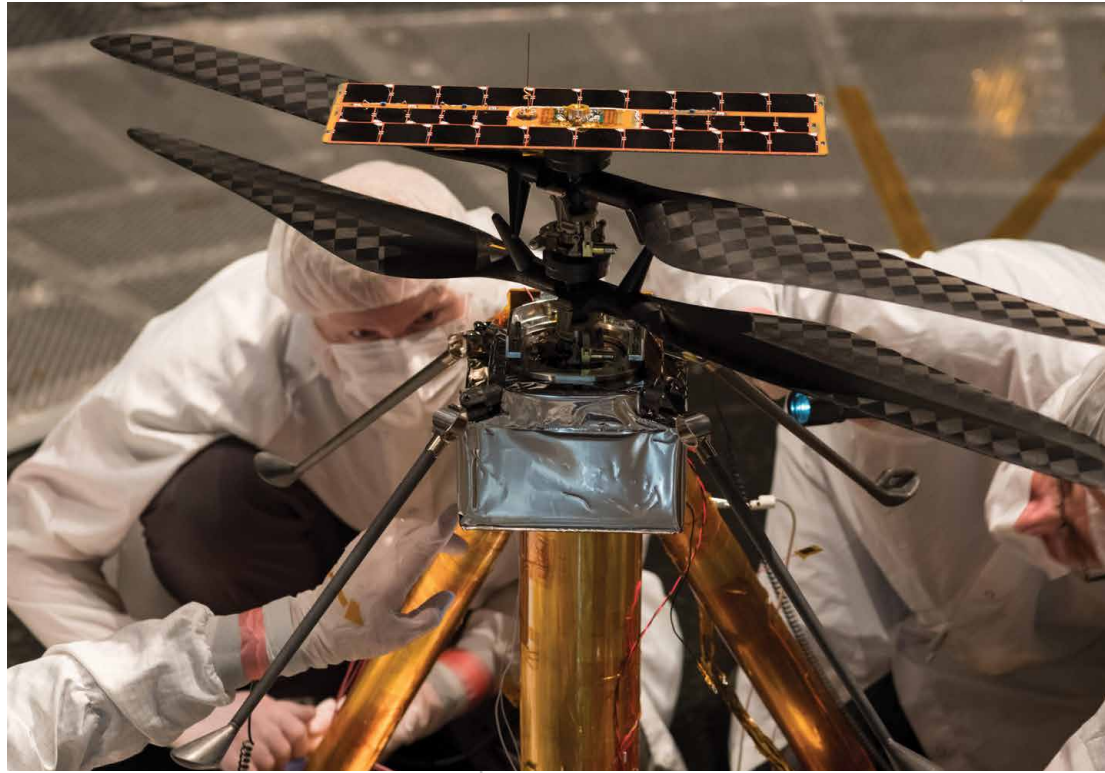
Author: Mike Brandt, editor-in-chief at Motion + Drives magazine

Maximum Function & Reliability

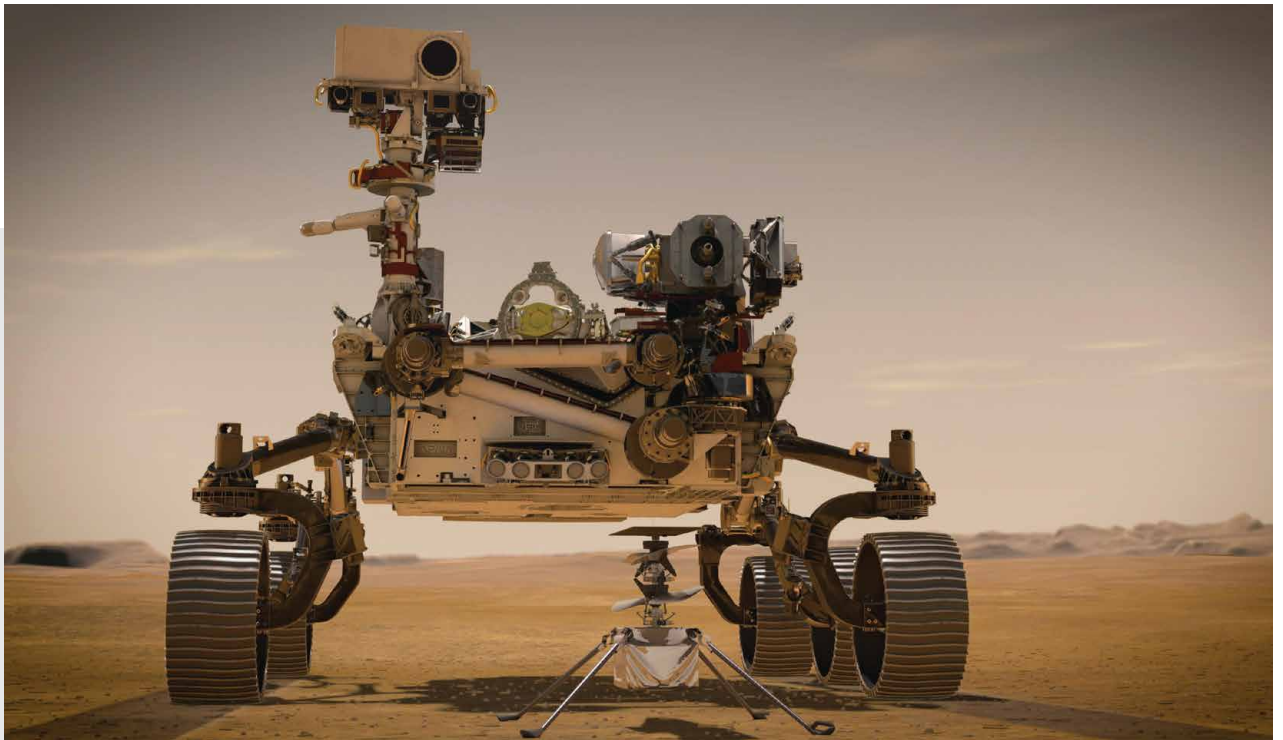


+ Image credit: NASA/JPL-Caltech // A Mars Rover and a Mars Flyer (Artist's Concept)

+ Image credit: NASA/JPL-Caltech // Inspecting Mars Helicopter



+ Image credit: NASA Astronauts on Mars With Helicopter (Illustration)



+ Image credit: NASA/JPL-Caltech // Portrait of Perseverance and Ingenuity (Artist's Concept)



As humanity continues to push the boundaries of space exploration, it has become increasingly apparent that the harsh and unforgiving environments beyond Earth pose unparalleled challenges for power transmission (PT) components. With information provided primarily by NASA's Jet Propulsion Laboratory (JPL), Motion + Drives overviews the uniquely interesting topic of PT applications in space, through the journeys of NASA's Mars Missions.

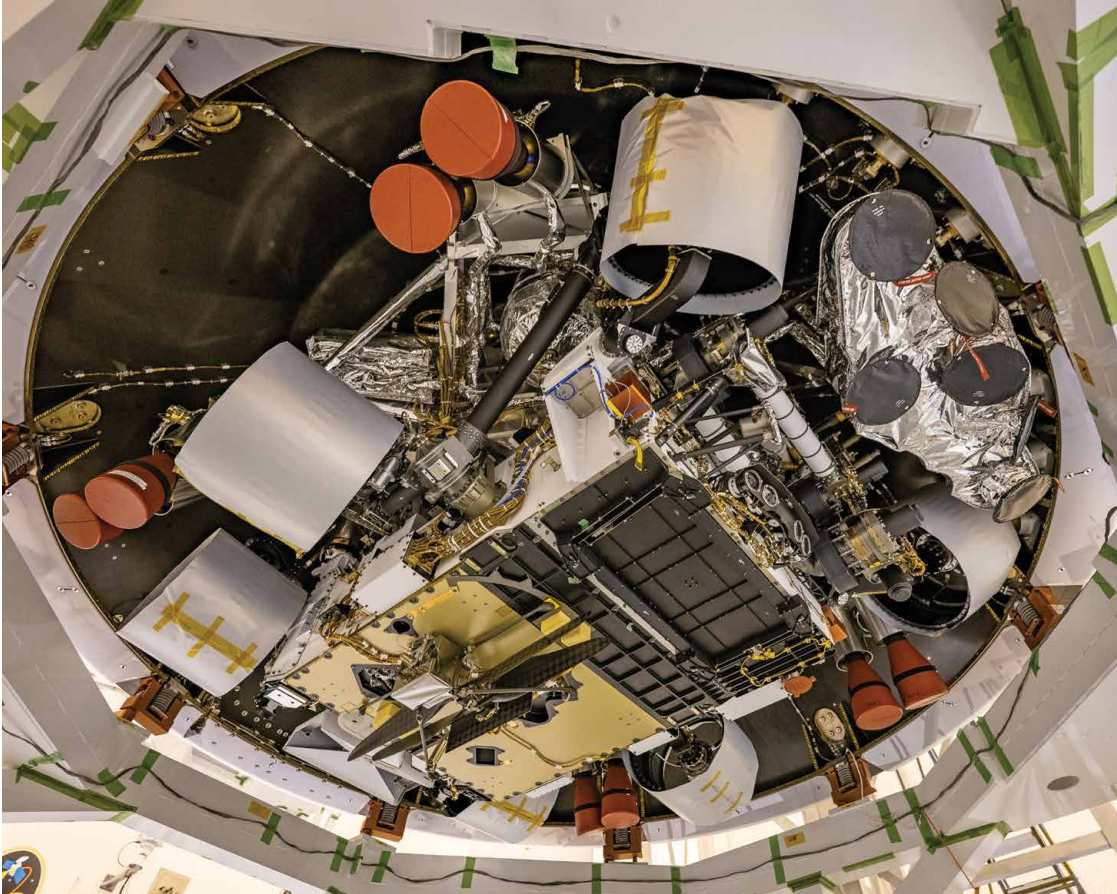
Earlier this year, NASA's Ingenuity helicopter became the first aircraft to successfully conduct a powered, controlled flight on another planet. The 49-centimeter tall, 1.8 kg, rotorcraft flew 3 meters off the surface of Mars, for a grand total of 39.1 seconds. This milestone achievement in flight tested the design limitations

of the helicopter's parts, and further proved that operations in space require an unprecedented level of durability. According to NASA, the battery powered device contains many unique components as well as "off the shelf commercial parts, that were tested in deep space for the first time with this mission."



Blades were required to spin 10 times faster than a helicopter on Earth.





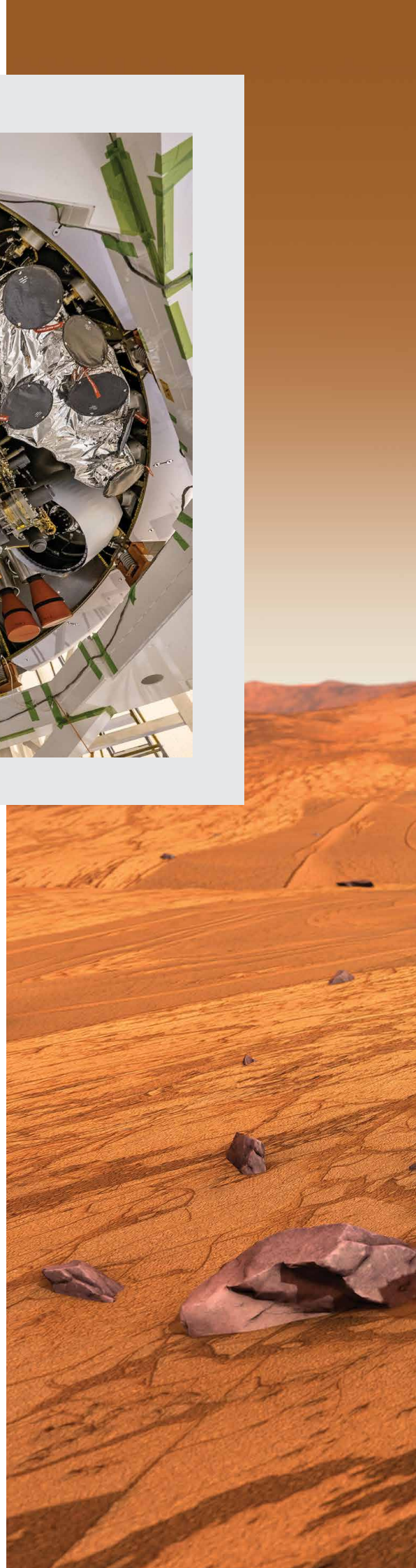
+ Image credit: NASA/JPL-Caltech // Perseverance from Below



More than 5 million pounds of thrust at liftoff, equal to roughly eighteen 747 aircraft at full power. The massive forces at play create a unique set of endurance challenges for parts destined for space.



+ Image credit: NASA // Mars Rover



At the time this article is being written, Mars sits 395 million kilometers from Earth, and NASA asserts that only about 50% of all attempts to land on Mars, by any space agency, result in a success. For Ingenuity, the success of arrival was quickly overshadowed by the next task; survival. Nights in the landing zone, Jezero Crater, can fall below 90 degrees Celsius, testing the resilience of every part on the craft.

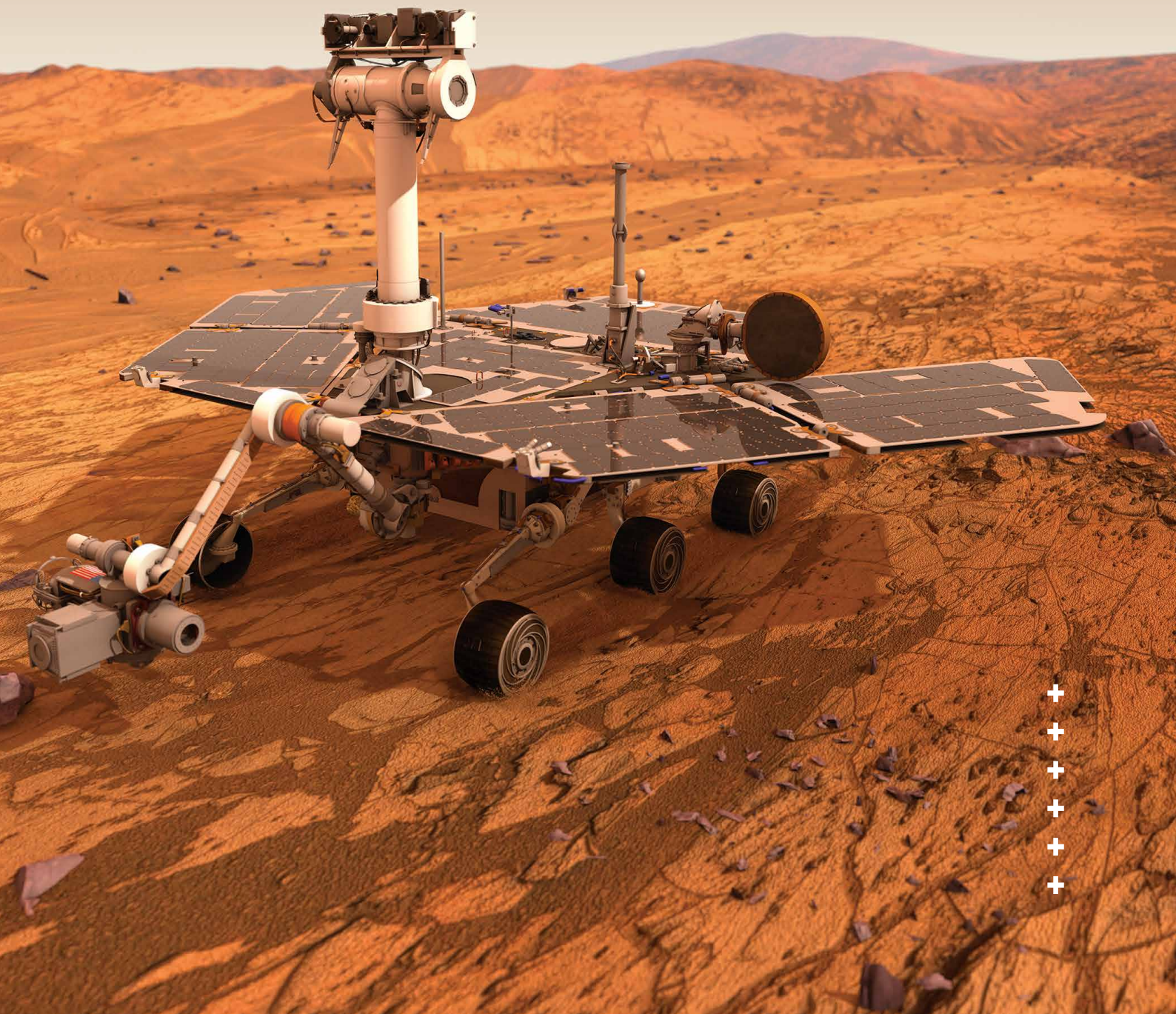
In order to create components and systems that will operate in the harsh environments beyond our planet, engineers must fully understand the principles of physics, some of which are purely theoretical. Mars' atmospheric differences created rigorous challenges for the mechanisms of Ingenuity, pushing design further than what is necessary on Earth. This frigid environment has one third the gravity of Earth, and to make matters more complicated, Mars' extremely thin carbon dioxide filled atmosphere is 99% less dense than Earth's. With relatively few air molecules, generating enough lift was a key concern. The 1.2-meter-wide, dual rotor blades were required to spin 10 times

faster than a helicopter on Earth (2,800 RPM), but also needed to be incredibly light and stiff. The blades were ultimately constructed using carbon fiber foam core.

The iconic flight of Ingenuity is only one aspect of a very large and complex set of systems developed to push the boundaries of human design and achievement. Most importantly, for the purposes of Motion + Drives Magazine, it is a celebration for members of the global power transmission community who are routinely contributing to these awe-inspiring efforts. Today's companies are designing, producing, and equipping modern machines with power transmission components and systems durable enough not only to withstand space flight, but the alien environments of other planets.

Extreme Environments

Power transmission components destined for space exploration face their first dramatic test leaving Earth. Ingenuity's famed





+ Shutterstock/Turin, Italy - October 2015: Technicians working on the ExoMars probe module, for a European mission to Mars, at the Thales Alenia Space plants

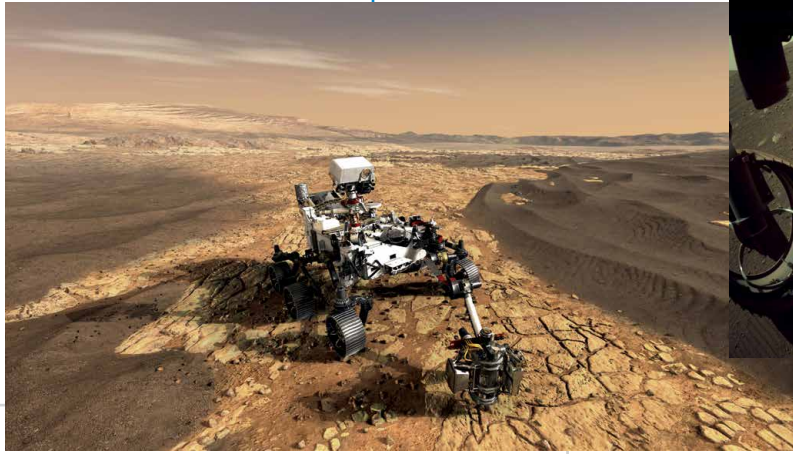
autonomous Mars flight came after it hitched a ride on the underside of the Perseverance Rover. The equipment was sent into orbit on a United Launch Alliance Atlas V Rocket fueled with liquid oxygen and liquid hydrogen, producing over 860,000 pounds of thrust at liftoff. In comparison, the most powerful rocket by lift capacity is the Falcon Heavy rocket. According to its manufacturer, Space X, the Falcon Heavy produces more than 5 million pounds of thrust at liftoff, equal to roughly eighteen 747 aircraft at full power. The massive forces at play create a unique set of endurance challenges for parts destined for space.

The Atlas V rocket carrying Ingenuity and Perseverance left on July 30, 2020 from the hot and humid space Coast of Florida in the United States. The parts onboard endured the vibration, acceleration, gravity changes, pressure fluctuations, and the extreme heat of ascent before eventually reaching the frigid vacuum of space; an environment that can cause volatiles from materials to release and molecularly contaminate the space vehicle, its payload, in a process commonly known as outgassing.

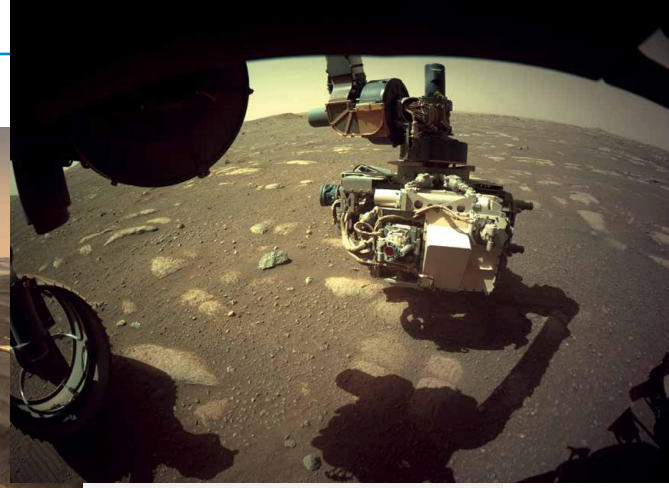
In terms of material degradation however, the most significant factor within Low Earth Orbit (LEO) is Atomic Oxygen (AO), "a product of short wavelength UV

radiation reacting with molecular oxygen. NASA asserts that "AO oxidizes many metals, especially silver, copper, and osmium. AO reacts strongly with any material containing carbon, nitrogen, sulfur and hydrogen bonds, meaning that many polymers react and erode."

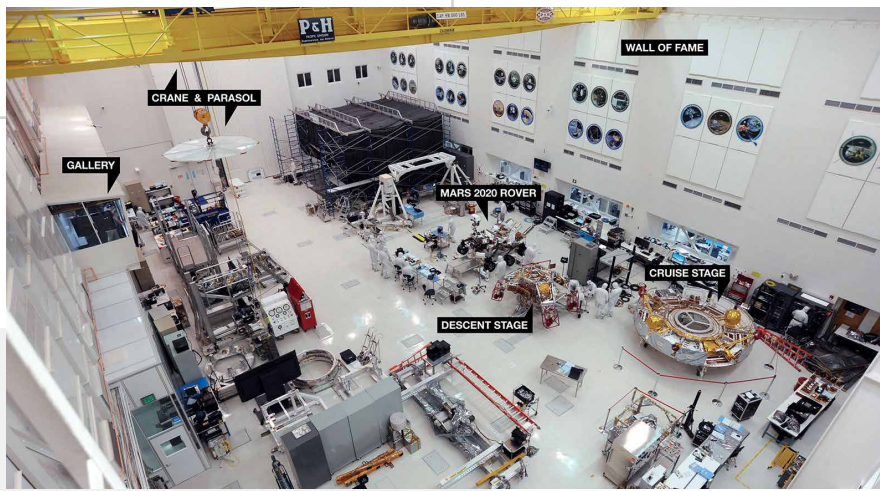
Without the blanketing protection of Earth's atmosphere, objects in space are exposed to the damaging effects of our own Sun. Ultraviolet radiation and dramatic temperature fluctuations are only a small fraction of the challenges our components face. For example, when exposed to the Sun, temperatures impacting the International Space Station (ISS) soar dramatically higher than the hottest temperatures ever recorded on Earth. In 1913, Death Valley, USA, registered a temperature of 56.7C (134.1 F), yet, on the ISS, temperatures can reach as high as 121 C (250F). Alternatively, dark side temperatures plunge to as low as -157 C (-250F), substantially below the lowest recorded temperature of any location on Earth's surface; -93.2 °C (-135.8 °F), recorded on an Antarctic plateau. The dramatic swing in temperature requires materials that won't significantly expand and contract, yet are lightweight, durable, and cost effective. Only a couple common materials regularly apply; aluminum and titanium. In fact, these materials are so durable when mixed with other metals to form an alloy, they are not



+ Image credit: NASA // The Perseverance Mars Rover with the robotic arm



+ Image credit: NASA // The Mars Rover's robotic arm



+ Image credit: NASA // High Bay 1 in JPL's Spacecraft Assembly Facility



An actuator with a titanium gearbox and dry lubricant capable of operating at -135 degrees C without a dedicated heater.



only routinely used in satellites, but operate in our deepest space missions. One relevant example are the aluminum wheels of the Perseverance Rover, which are complete with curved titanium spokes for support, along with the rover's titanium tube legs.

Despite all our reliance on available materials and existing component designs, the continued push into harsher environments requires continual research into alternatives. The conditions of space travel require mankind to reconceptualize the materials & designs used in power transmission components here on Earth.

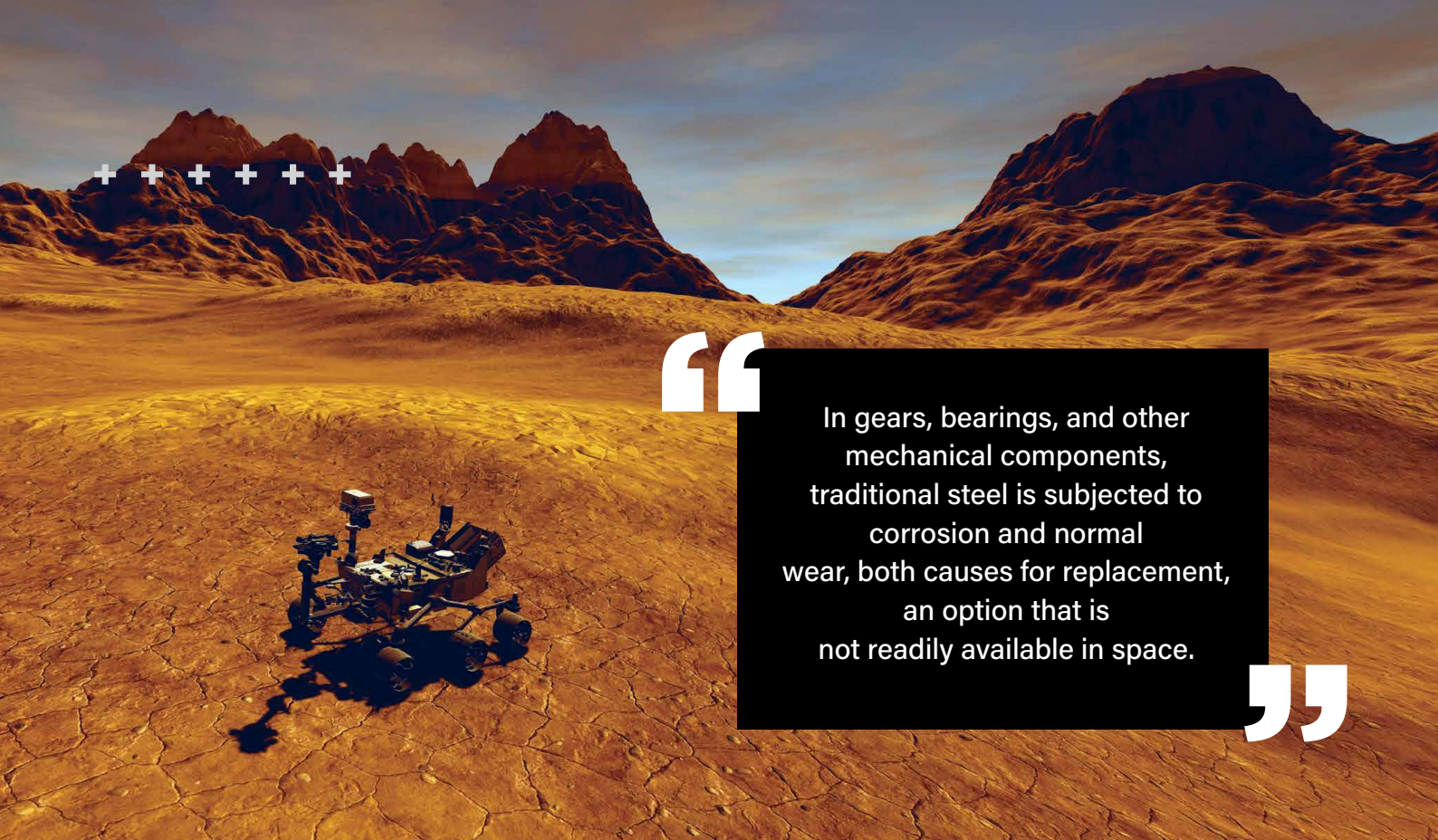
Re-thinking Power Transmission

Few industries require the custom design of new mechanisms completely from scratch; however, it is a central theme for space applications, along with reduction of mass and volume. When investigating drive systems in deep space, nothing encapsulates the complexity of space applications quite like the motion control equipment in NASA's Mars Rovers.

The power sources used in deep space missions are unparalleled to common apparatuses here on Earth. Systems are required to operate for decades while withstanding extreme temperatures, and providing heat and electricity to the crafts. NASA's space missions have been dependably powered using Radioisotope Power Systems (RPS); a space nuclear power system which converts heat from naturally decaying radioisotope materials such as Plutonium-238 into electricity. Missions operating on RPS power, such as the Voyager 1 and 2, launched in 1977, continue working to this day, some 44 years later.

Currently, the vehicles operating on Mars are using a variation of RPS called Multi-Mission Radioisotope





In gears, bearings, and other mechanical components, traditional steel is subjected to corrosion and normal wear, both causes for replacement, an option that is not readily available in space.

Thermoelectric Generators (MMRTG). This power source combined with lithium-ion batteries power the everyday missions of the crafts, and as with any other power transmission application, there is a necessity to convert that electrical input into mechanical motion. NASA's robotic exploration of Mars required the unique challenge of re-imagining and designing proper actuators. Rotary actuators are complex drive instruments comprised of a motor and gearbox, and have the primary function of driving the rover's wheels, as well as operating the scientific instruments such as the robotic arms. "The electric motor provides the energy to move the mechanism, the gearbox reduces the high output speed of the motor to a reduced speed and higher torque at the output shaft." Upwards of 30 actuators are needed to provide motion controls on one rover.

For the initial stages of actuator procurement, NASA acquired 90+ actuators/stand-alone motor units for testing. Mars Science Laboratory (MSL) actuator designs for rover applications called for "an actuator with a titanium gearbox and dry lubricant capable of operating at -135 degrees C without a dedicated heater." However, following 3 life test failures, MSL switched to a heated gearbox design with wet lubricant. Actuator development and production associated with other risk factors delayed the launch of NASA's Curiosity rover for 2 years, further justifying the importance in perfecting the complicated design adjustments. Many of the gearmotors required customization in the form of

nonconventional coatings, and bearings to cope with demanding requirements while catering the end use for the motors.

Still, in the face of new discovery, even our most trusted and tested solutions for one mission require further innovation for others. NASA wishes to use rovers to explore even colder and icier locations such as Jupiter's moon Europa. This requires hardware that can withstand such temperatures without heaters. For the sake of continuity, gearbox applications can run dry and unheated through the implementation of Bulk Metallic Glass (BMG) Gears. The development of Bulk Metallic Glass Alloys specifically for gearboxes "make them tougher than ceramics and twice as strong as steel, with better elastic properties than either...combined with greater wear and corrosion resistance."

These alternatives are defining our capabilities as many of our most recognizable materials do not hold up to the standards needed for deeper space missions. In gears, bearings, and other mechanical components, traditional steel is subjected to corrosion and normal wear, both causes for replacement, an option that is not readily available in space. Therefore, NASA relies on other alternative breakthrough innovations, such as Nitinol 60, a non-magnetic, shape memory alloy. This lighter material does not rust or dent, yet maintains a high degree of dimensional stability with potential to be used in a variety of applications.

For the purposes of our introduction into PT space applications, these intriguing examples only scratch the surface of this topic. The list of new technologies and developments is so vast that NASA offers “Standard Commercial Licensing agreements” for partner companies to produce and ultimately sell products derived from NASA’s patented technologies. This is one way space technology is constantly changing our day to day lives here on Earth.

Closer to home, the private sector is leading the way with new milestone achievements, opening the door to an industry completely devoted to space travel. Computer modeling and artificial intelligence are pushing technological progressions farther and faster than any previous time in our history. Motion + Drives will continue to highlight the variety of topics surrounding

mechanisms in space, and we will investigate companies developing the most technologically sophisticated equipment on Earth. We hope you enjoy it.

Update: Since Ingenuity’s maiden flight on April 19, 2021, the helicopter is on its 14th flight. Seasonal shifts on Mars are creating less atmospheric density than originally tested, and once again, NASA is approaching unprecedented territory. The rotors will need to spin faster than any of the test flights performed here on Earth, and the entire system including the electrical, will be pushed into unknown territory. The thinner Martian air is just one more example of our ever-changing understanding of space environments along with the maximum reliability functions of our PT applications.

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+ SMART Induction Heater
Betex SLF 303

- Safe mounting and dismounting of bearings and other drive components



There can be many reasons for bearing failure, and one of them is improper installation. It is estimated that improper installation accounts for at least 18% of the defects. Traditional mounting methods can be press fitting, oil baths, even torches are used to heat parts in order to shrink fit them onto shafts. Most bearing manufacturers recommend induction heaters as a safe and controlled heating method to mount bearings. Induction heaters have been around for a long time. Early heaters were analog. They simply worked with an on off switch and had no control over the heating process. They just heated. When the digital generations were introduced, additional functionalities were added such as time and temperature control and automatic demagnetization. Induction heaters increase efficiency and reduce risk of damage and contamination.

As the development of digital systems is advancing, so are the possibilities with induction heaters. Bega Special Tools has introduced new intelligent BETEX® heater generations that are capable of both mounting and dismounting.

Developments are aimed at improving the service life of bearings and other parts, and at working damage-free

to allow parts to be reused. New features are:

- Easy to use touch screens
- Log function to store data or export to a USB-stick
- Double temperature measurement (Delta T) for perfect control and tension free heating
- Creating proof of work reports

+ Crank shaft with inner ring and the Betex MF Quick-Heater

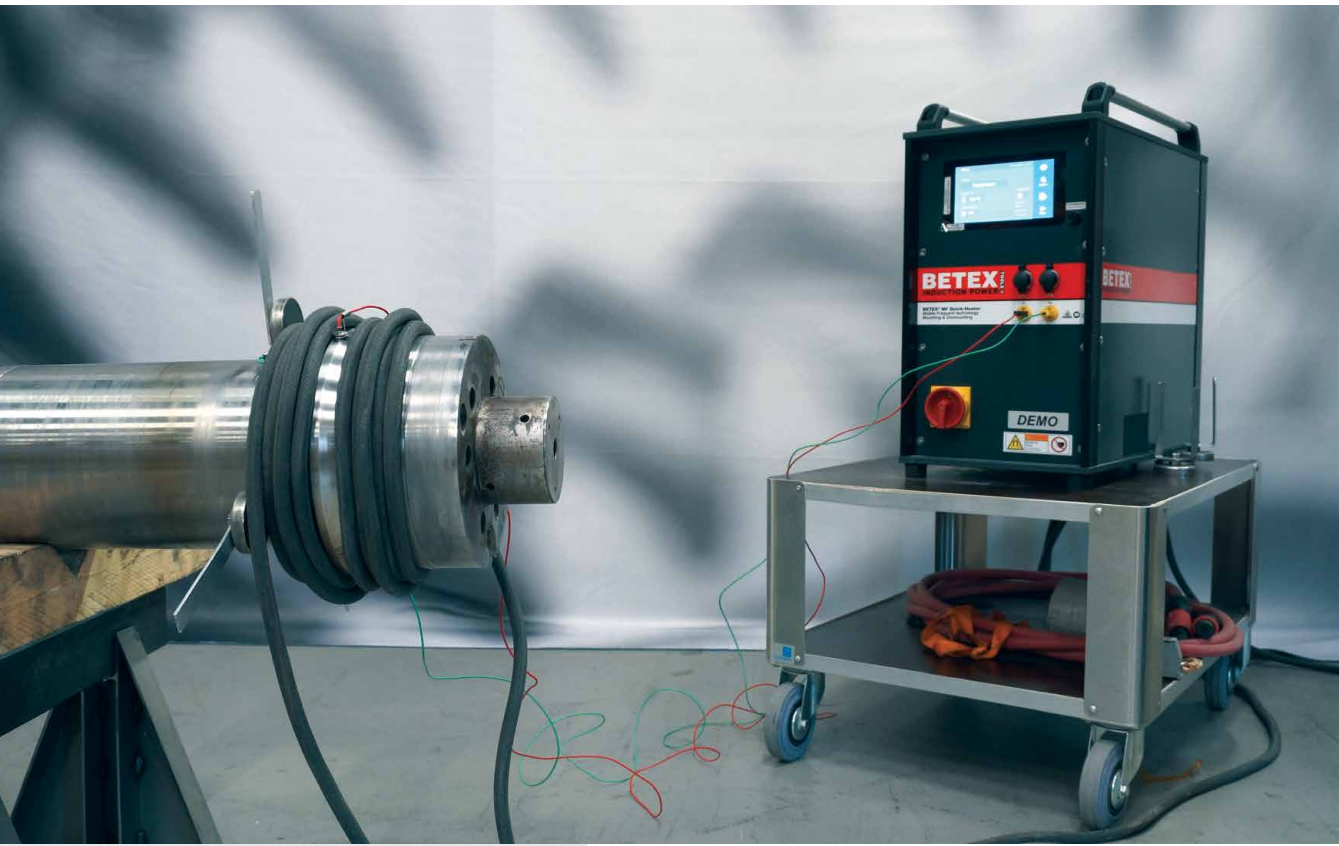


The new generation of “quick-heaters” in particular offer remarkable solutions for both mounting and dismounting. Especially the latter can cause problems during maintenance jobs where stuck parts can cause long delays. Working with grinding wheels or with gas burners is very common in workshops, with all its consequences: time consuming, damage to shafts and parts, pollution of the working environment. By using induction heating, technicians achieve a clean, damage free disassembly of stuck parts, for example due to rust or glue. In addition, induction heating contributes to a much higher level of safety for the users. There is no open fire, no noise, smoke or smell, no chance of flying steel splinters that can cause serious injuries.

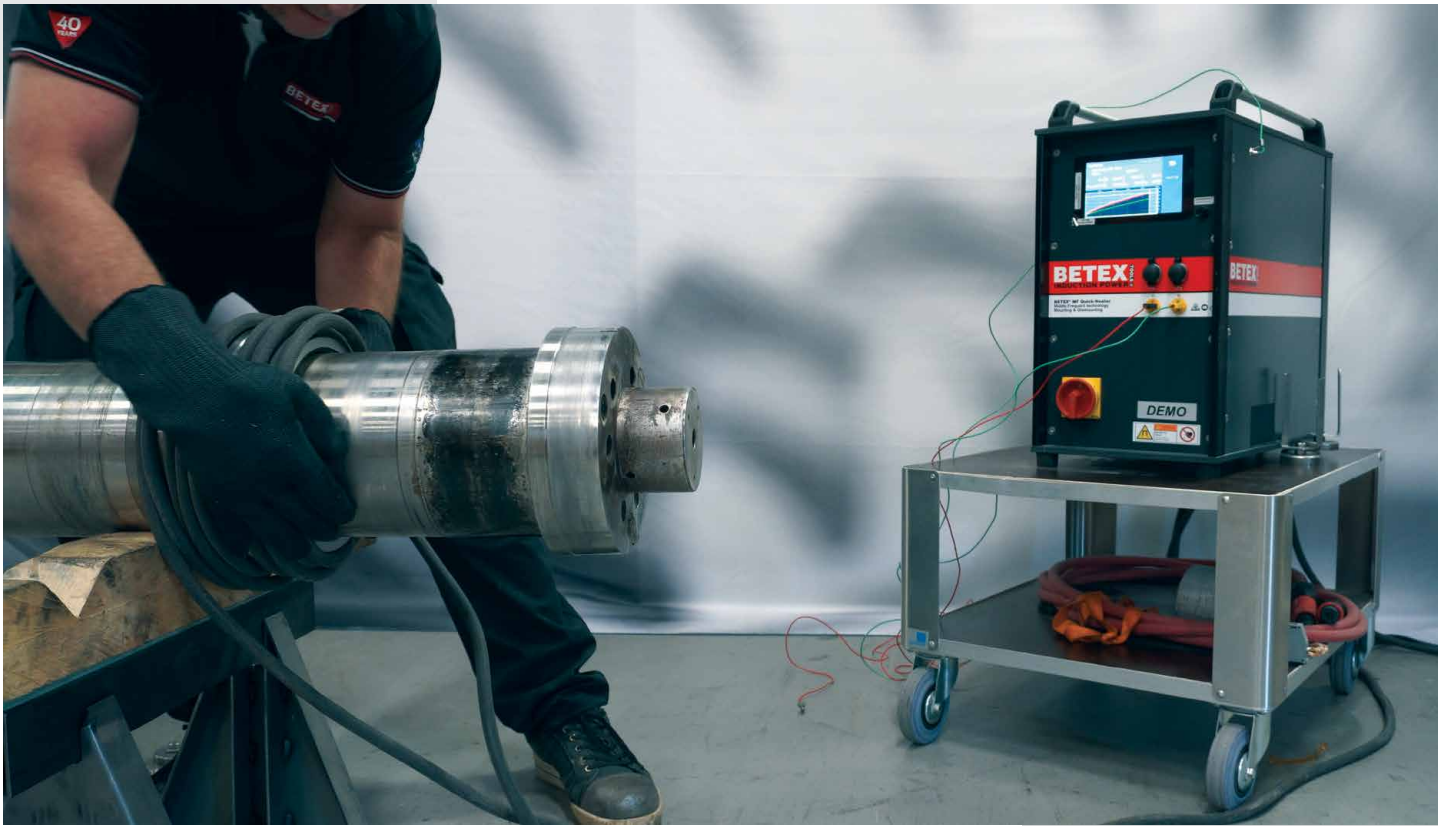
Betex MF Quick-Heaters consist of a generator used in combination with a fixed or flexible inductor. Fixed inductors are suitable for serial mounting or dismounting of labyrinth seals, bearings etc. Flexible inductors come in various lengths and diameters and can be placed around and/or in a part. Shape or size are virtually unlimited.

Technicians are pleasantly surprised when they experience how easily they can work with these devices and how quickly they can move them into position where they need to do the job. A recent project involved a manufacturer of pellet presses. For maintenance work, they have to remove inner rings from a crank shaft. Normally they would grind them off. At the customer’s request we ran some tests with a BETEX MF Quick-Heater 22 kW, with a flexible inductor. Within 1 minute, the inner ring was heated to 150°C and could be pushed off the shaft without any extra force. The customer was so pleased that they sent us other parts to test, all of which were carried out successfully. The time savings were amazing! The heater had proved its versatility so the decision to purchase it was quickly made. The dirty and noisy work of grinding off the rings is now history, much to the delight of the workers who were responsible for doing this. Also, collateral damage to the shafts is now a thing of the past.

For further information visit www.begaspecialtools.com or call +31 578 668000



+ Crank shaft with inner ring and flexible inductor



+ Crank shaft with inner ring dismantled in 1 minute



VULKAN **How it all Began...**



Founded in 1889, VULKAN started to produce first clutches for lifting machinery, hoists and reverse gearboxes. Fast forward to the 50's, VULKAN set a milestone by producing the first highly flexible torsional coupling. By combining application know-how, cutting-edge technology and professional competence, over the years, VULKAN became synonymous with torsional couplings. It was not until recently that VULKAN started to develop internal technology and know-how either by producing elastomers for its products in-house or diversifying its own business.

Today, VULKAN counts on three major branches, which are VULKAN Couplings (linked to the primary marine market), VULKAN Drive Tech (the industrial unit of the VULKAN Group), and VULKAN Lokring (market leader for braze-free tube connections in refrigeration systems).

VULKAN Drive Tech operates in different industrial markets such as oil & gas, steel mill, energy, bulk material handling and mining to provide high-grade solutions for industrial drive. VULKAN Drive Tech has been setting standards in terms of performance and reliability in the harshest conditions. The horizontal integration of its portfolio creates added value for the customer: torsional flexible and rigid couplings, hydrodynamic couplings, brakes, backstops and resilient mounts are all available from a single source, perfectly integrated and works in tandem as a standard solution as well as individually tailored.

Uniting Tradition and Innovation

Adopting a holistic approach to producing drivelines components for the heavy duty industries, VULKAN Drive Tech is guided by a mission to serve as a system solutions partner, preferably a simple products supplier. As international strategic partner for industrial transmissions accessories, VULKAN Drive Tech is driven by the goal to guarantee the utmost integration for different components in industrial drives, such as couplings, brakes and backstops. At VULKAN Drive Tech, we take care of the design, development, manufacturing, and most importantly, testing of all our products in-house. All product performances published in our technical literature have been calculated and tested in our in-house laboratories on a real 1:1 scale either statically or dynamically.

VULKAN Drive Tech engineering team is focused on guaranteeing that all the products installed on the same drivetrain, can properly perform and correctly interact with one another. This proves to be of great advantage for clients as they can now count on just one partner as the main source of all power transmission components and braking system.

Since preventive maintenance to reduce operational costs is also a mandatory requirement for the industry, VULKAN Drive Tech is engaged in developing innovative products to enable its clients to monitor product performances and operational status in real-time properly. For instance, VULKAN Drive Tech new power supply for electromagnetic brakes V317 can be remotely operated via the VULKAN app "V Connect", to check the main parameters of VULKAN Drive Tech electromagnetic brakes and, if necessary, reprogram the brakes' main functions remotely.

With its innovative offerings, VULKAN Drive Tech successfully optimizes its clients' product performances and reduces associated costs along the way. As a result, it has amassed an exemplary reputation among its clients.

What steers VULKAN Drive Tech ahead of the competition is its relentless pursuit to continuously improve and extend its products portfolio offering with new cutting-edge solutions which can, in the best possible manner, meet the continually evolving and changing requirements of main customers such as OEM and end-users. Furthermore, VULKAN Drive Tech optimizes its sales organization through a global presence of the company with 17 wholly-owned subsidiaries worldwide.

VULKAN Drive Tech guarantees value retention and high customer benefits for its clientele. To this end, it is always a step ahead of the competition. The basis of this is the reliability of the products and optimization of cost-benefit ratio against the backdrop of the high market requirements. Based on customer requirements, VULKAN Drive Tech engineers an integrated system solution consisting of couplings, brakes and backstops, which will fulfil the customers' initial technical and commercial requirement and therefore optimize products performances and associated costs.



— KYS emerges as Global PT brand

+ + + + +

KYS started its activities as a family company in the casting sector in 1985, and has also been involved in the production of power and motion transmission parts since the early nineties. KYS employs a total of more than 100 employees, aiming to lead the sector in which it operates. The company exports 70% of its production to companies in over 30 countries, primarily Germany, France, Netherlands, Switzerland, Italy and America, and represents its country in the best way as a Turkish Brand.



+ + +

With a young and dynamic technical staff, KYS carries out its production in accordance with TS 148 standards, within the framework of TS EN ISO 9001: 2015, 14001: 2015 and OHSAS 18001: 2014 management systems. It provides engineering-based support to sales and after-sales customers.

KYS achieves success by responding to customer product and quality demands at a high level of importance without compromising commercial ethics with strong teamwork. Although its strongest and most critical competitor is the company itself, KYS continues to work meticulously so that its colleagues work more efficiently, and customers receive better service by aiming ahead of the previous day.

Working with a design and production-oriented system approach in the sector, KYS produces V Pulleys, Poly V Pulleys, Timing Pulleys, Couplings, Bearing Housings, Bolt on Hubs and special production in accordance

with customer demands. The company also meets the demands of many of its customers, mainly in the milling industry, for casting parts.

In its foundry department, KYS carries out processes from 3 separate branches: Automatic Molding, furan resin molding and green sand molding. In addition, 250 gr - 6 tons cast iron and ductile iron (GG15-GGG90) can be cast in its foundry. Apart from this, up to 1 ton of steel casting is also made. KYS actively use 55% of its monthly casting capacity of 950 tons.

The new investments are: a Furan mixer with 20 tons/h capacity, semi-automatic furan resin molding and casting line, fully automatic 60 tons/h sand system and mixer, fully automatic 100 molds/h 600x700/250+250 undegraded molding machine, fully automatic molding line, 2+2 tons/h dual track induction furnace, 2+1 tons melt/hold induction furnace. There is a Bruker Q4 tasman spectrometer, 60 ton capacity universal pulling device, Brinel hardness



measuring device, Rockwell hardness measuring device, metal microscope, sample cutting sanding machine in our laboratory. Among the new investments, there is also: ultrasonic testing equipment, casting simulation program, sand analysis and testing equipment.

With KYS' mold shop investment, it can also make its own models using CAD-CAM programs. There is the SMEC LCV 6700 machining center, CNC router, universal lathe, styrofoam cutting machine and wood cutting machines and equipment in the mold shop.

In its machining department, KYS responds to customer demands with its CNC lathe, CNC machining center, C-axis vertical lathe, C-Y-axis horizontal lathe and CNC hobbing machine in a total of 30 CNC machine. In the next 2 years, KYS aims to double its number of machines. The company can manufacture special design and standard pulleys, couplings, bolt on hubs, bearings up to a maximum diameter of Ø2000. In the coupling manufacturing series, the product range is quite wide and KYS exports many more customer-specific design couplings. All of the manufactured products are stabilized by checking on a balance machine, and KYS offers products that can be used for many years at the same quality by coating them with our manganese phosphate coating line, which provides high corrosion protection. With a wet paint line, which KYS put into operation in 2021, the company can sandblast and wet paint in sensitive microns in accordance with customer requests and present measurement reports. Detailed technical analyzes are made and reported with the CMM 3D measuring machine in the quality control unit.

When discussing power transmission parts, KYS says that it is very difficult to go to sector limitations, but it mainly serves the mining industry, compressor manufacturers, bakery machine manufacturers, cement factories, sugar factories, ventilation systems, milling machine manufacturers and defense industry sectors. Apart from manufacturing, KYS also provides technical support to customers during the machine design phase. The product development and technical support unit carries out joint work with customers in the selection of pulleys and belt pulley calculations. Choosing the right pulley highly affects machine performance and cost. It is asserted that customers can get high performance from machines at low costs with belt-pulley and coupling calculations and designs based on engineering foundations.

KYS' long-term goal is to become a world brand in its industry. The company has a high level of exports to many parts of Europe, but as the KYS brand in the world, it aims to be a global brand sought by OEMs and end users.

Finally, the company aims to provide services to its customers, who closely follow the rapidly developing world technologies with its products at the right time, by providing high quality and customer satisfaction, continuing to work with its strong staff, and KYS wishes success to solution partner colleagues and customers in all these processes it carries out.

More information about KYS can be found at www.KYS.com.tr

ANNUAL BUSINESS CONVENTION

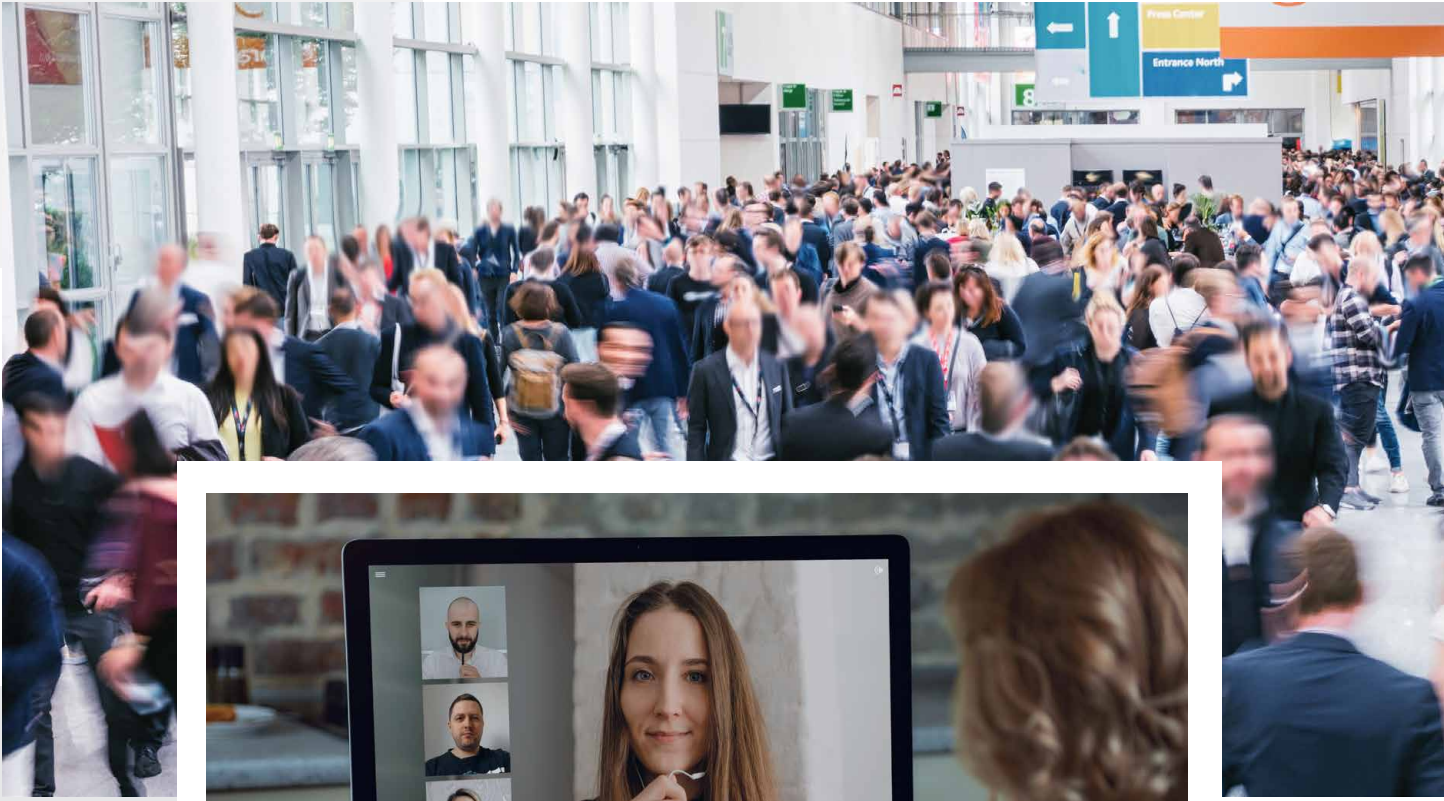
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The Future of Events and Meetings is **Hybrid**





“ What hen here hy & How? ”

The Covid-19 pandemic caused immense changes to industry events and meetings. The abrupt transition from in-person to online events left both attendees and planners scrambling to understand the complexity of virtual event spaces. Moreover, many were left puzzled, trying to determine if this unique situation was an opportunity for growth, or a short-lived pain that would eventually go away. Now, as the world begins to heal, we are no longer left guessing which answer is correct.

Hybrid+ events are here to stay.



Current situation and challenge

2020 delivered unprecedented transformational change. B2B marketing and event participation experienced a complete reduction in physical events, and forced dependence on virtual events. This uniquely difficult period challenged the understanding of virtual event spaces and tested the comfortability of digital features. The shortcomings of online event planning displayed the importance of in-person connection, while previous reliance on physical events deprived us of the untapped potential for greater virtual opportunities. As the world experiences an evolutionary change, leaving many in uncertain territory, there is an overwhelming challenge; how to bring the two formats together in order to facilitate two experiences in one.

Future Outlook and solutions

Hybrid events are here to stay, and it is safe to say these changes are permanent. In order to understand why, it's important to first comprehend the structure of a hybrid event. In a basic format, hybrid events will incorporate features from both in-person and online event structures with a shared experience for all participants. The utilization of technical capabilities will allow participants to reach their specific audience on a magnified level, increasing the productivity of events, while also socially engaging face-to-face.

Networking opportunities are vital to the growth objectives of any company, and maximizing this potential is the goal of all event planners. Physical events have long provided the valuable social interaction deemed necessary for companies to display their professionalism through carefully selected representatives and visual displays. For this reason, the variety of benefits provided through in-person events will remain.

Concurrently, digital event technology will provide

additional value. Successful B2B marketing and event participation in any format requires the highest level of return on investment (ROI). Through hybrid events, companies can now quantify ROI through statistical tracking - furthering their ability to drive engagement, and maximize revenue with increased opportunities to meet with sellers/buyers. Additionally, hybrid events do not limit matchmaking opportunities to the confines of the event space, and allow participants the ability to network well before, or long after the physical event is over.

As the world continues to navigate the effects of Covid-19 on a country-by-country basis, hybrid formats will prompt a dramatic increase in event participation. Companies facing difficulty in scheduling, travel restriction protocols, or limited budgets will be afforded flexibility to attend events.

Motion + Drives Hybrid Meetings 2022

Motion + Drives is organizing a hybrid event structure that will encompass 1 full year of virtual meetings across 30+ physical events. Working globally through local teams and partnerships in each of the participating countries, companies can connect with power transmission manufacturers, distributors, and end-users within 15 different industries. Operating before, during, and after physical events, the virtual matchmaking meetings will significantly augment trade show capacity and allow participants to return to virtual portions of their desired event at their convenience. Plans are in motion to incorporate unique features designed to expand company visibility, such as the option for customized company events. Overall, Motion + Drives is offering a community building strategy with the opportunity to reach over 100,000+ industry peers.

Contact marketing@imotion.media for more information and details about Motion + Drives Hybrid Meetings.



10 REASONS TO JOIN

**MOTION
DRIVES**

**HYBRID
MEETINGS**

2022

1. Connect with the global power transmission industry peers for 1 year
2. Pre-schedule meetings with potential leads and partners [in-person or virtual]
3. Market your product in 15+ different industries
4. Present your solutions during 30+ physical events in 2022
5. Organize your customized company event within the community
6. Expand your brand visibility worldwide, in print and digitally
7. Find new suppliers
8. Receive monthly international event reports and contacts
9. Keep track of your ROI
10. Reach 100,000+ industry peers

+ *Hybrid: combination of in-person and virtual features



– Garlock GUARDIAN®

labyrinth seals, the perfect solution for mechanical engineering applications, such as machine tools and milling machines, to avoid bearing oil leakage and debris inclusions.



Lubricant contamination is a common issue in mechanical engineering applications. Labyrinth seals offer good possibilities to avoid these problems.

A major advantage of labyrinth seals is that they are mostly wear-free and thus particularly durable. They also function safely and reliably: Moisture, dirt and dust get caught in the zigzag labyrinth paths of the seal due to flow resistance. Leaks, which can become a hazard to employees and the environment, are avoided.

The labyrinth profile consists of radial and axial spaces that give a recirculating effect during rotation, resulting in reliable protection. The labyrinth is constructed to give a non-contact seal without wear parts - for long service life and with reduced drag on the shaft.

Machine builders are often on the lookout for a suitable solution for their specific applications. In the process, many aspects must be considered.

To give an example: A company, that develops, designs and sells 3-spindle Machine Tools was looking for sealing solutions to avoid bearing oil leakage and debris inclusions. They offer over 3 times greater productivity with a single robot and its 3-spindle system ensures much lower running costs, saving on space, energy and specialist intervention. These are unique machines with a high degree of specialization and specific requirements. Garlock GUARDIAN® labyrinth seals have been installed between the housings and their spindles. Bearing oil leakage and debris inclusions were eliminated. The company specified GUARDIAN® in all machines of a special model replacing the original labyrinth seals. The introduction of GUARDIAN® simplified the overall design and related installations. Machine reliability increased reducing the total cost of production.



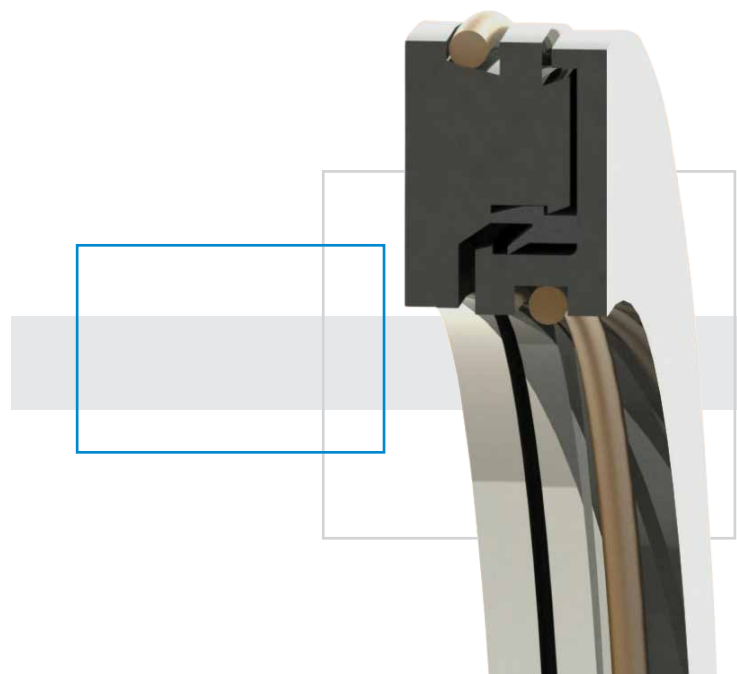
As a second example, consider the following case: A company, that offers milling solutions designed for the most demanding production environments, such as the power generation, automotive, aerospace, and railway industries, introduced new milling heads in their 5-axis machines and were looking for a specially designed bearing isolator. By offering the widest range of milling solutions on the market, including bed machines, gantry machines, floor type machines and machines with a T-shaped configuration, the demands were high. As it was a 5-axis machine, orientation of the head was constantly changing. Additionally, it is critical that the bearing isolator does not increase temperature in the bearing chamber as this could impact in the performance of the bearings. Garlock GUARDIAN® bearing isolators have been selected for the ability to provide a specially designed isolator, adapted to the customer's new heads and for its great performance after intensive testing. GUARDIAN® protects a high speed 6000 rpm / 80 mm diameter shaft (25 m/s) of their new milling heads, avoiding turbulent air-oil mist flow to get into the grease-lubricated bearings. GUARDIAN® mastered the requirements of the 5-axis machines and their heads and did not increase temperature in the bearing chamber. Prototypes were successfully tested in their test heads for several months. The customer has specified GUARDIAN® for their new head design, which is being introduced in all their new machines.

Garlock GUARDIAN® labyrinth seals are general-purpose seals designed to reduce downtime. The bi-directional seal provides both inlet and outlet protection. GUARDIAN® applications include auxiliary equipment in dirty, dusty, and wet environments. Split GUARDIAN® are fitted without

dismantling the equipment. When uptime and mean time between repairs (MTTR) are critical, split seals are the right choice.

About Garlock

Garlock, an Enpro Company, is one of the leading international companies in the field of sealing technology and is regarded as a specialist for the sealing of critical and demanding media in innovative mechanical and plant engineering. More than 1,500 employees work for the company worldwide, of which around 240 work in Europe. Garlock is also represented by sales partners and specialist dealers in over 90 countries. Garlock supports a wide range of industries with an integrated range of services. In addition to standard seals, Garlock primarily develops and produces special solutions for customer-specific applications. More information about Garlock solution can be found at www.garlock.com or by contacting garlockgmbh@garlock.com

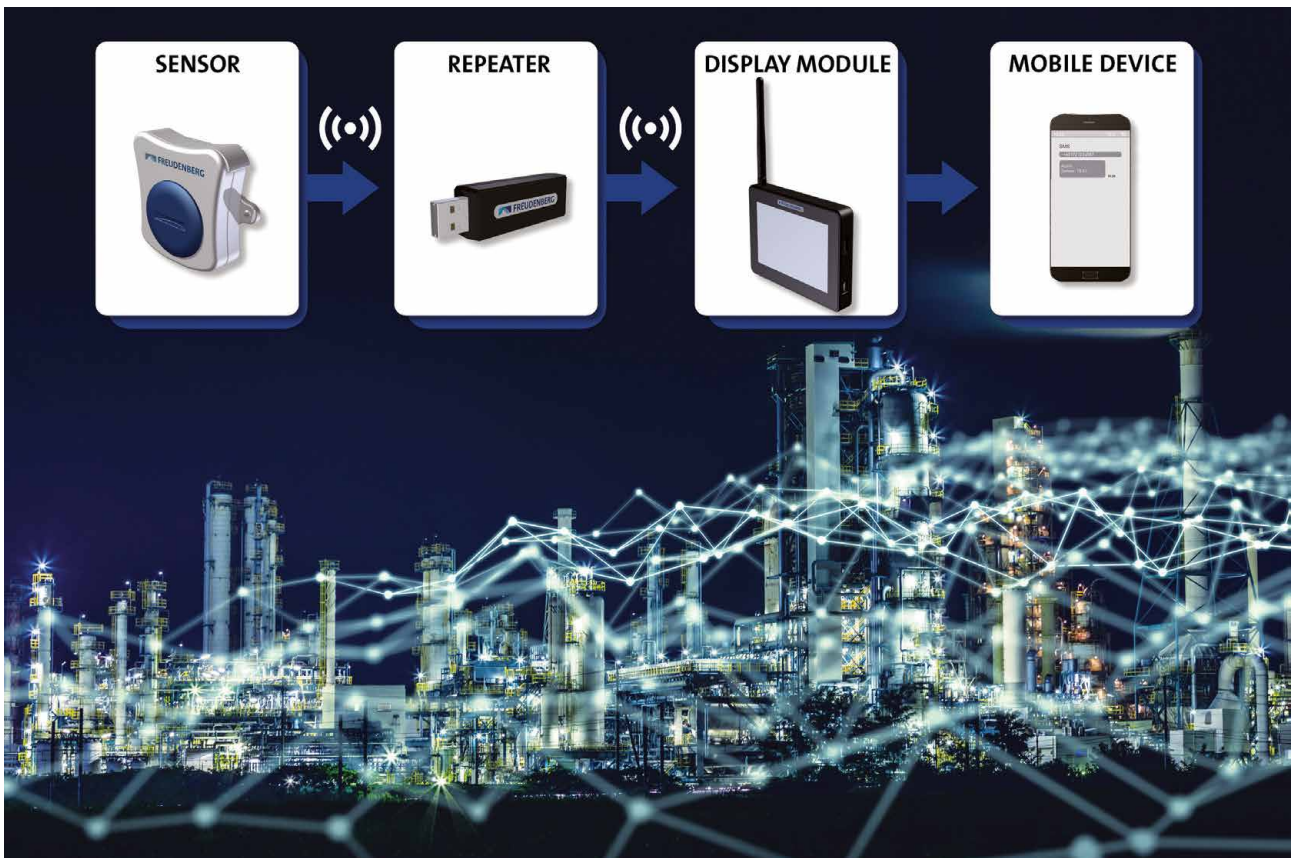


– Leak Detected, Damage Deflected

Freudenberg Sealing Technologies introduces retrofittable monitoring system

+ + + + +

An innovative optical sensor from Freudenberg Sealing Technologies enables the early detection of leaks in industrial plants. The “LeaCo” monitoring system is easy to install and offers a particularly good solution for retrofitting existing production facilities and test stands.





Smart factories do more than increase productivity – they also help reduce environmental damages. Along these lines, it is important to immediately detect and automatically report any leaks in tanks, pipes, pumps and valves. According to the vision of Industry 4.0, damages caused by any kind of leaking liquids are a thing of the past. But concepts for smarter factories reach their limits when it comes to retrofitting production facilities that have existed for years or even decades. Therefore, Freudenberg Sealing Technologies has now developed a solution for reliable leakage detection that can be flexibly retrofitted with minimal installation effort.

The sensor, developed jointly with the Freudenberg Team in Switzerland, can be attached below any possible outlet area – such as a flange or valve – and eliminates the need to make any structural changes to the system itself. If even a few drops leak during the operation, gravity will make the liquid land on top of the sensor, which consists of a replaceable nonwoven material. Just like in a sponge, the liquid then spreads evenly across the material, which is continuously monitored by an infrared laser. The liquid causes changes in the refractive behavior of the laser light on the surface of the nonwoven material – and it won't even take two minutes for the sensor to sound the alarm. The detection works for any liquids, including water, chemicals, oils, or fluids of any kind. The data are transmitted on the broadly used frequency band of 868 MHz, appearing on a display module that was also developed by Freudenberg. A single display module can be used to pair and monitor up to 40 sensors. In addition, the alarm can be automatically forwarded to specified smartphones or tablets via SMS. In larger plants, a repeater can be used to amplify the signal.

Quick setup

A major advantage of the "LeaCo" leakage monitoring system is the simple installation and activation, which can be easily performed even by small and mid-level companies without their own IT specialists. The sensor is paired with the monitoring display in just a few steps. Then the sensors are attached either with two screws or a magnet integrated into the sensor housing. A standard lithium button cell reliably provides power for about five years. Since the sensor is programmed to send a control signal every 30 minutes, any failure will also automatically trigger an alarm.

During the development phase, Freudenberg Sealing Technologies tested the monitoring system at its own drive test facility in Weinheim, Germany. The test rigs, where sealing concepts for electric drives are tested for durability, among other things, sometimes run seven days a week. "It's evident that the LeaCo concept can lead to a much more carefree test rig operation when no staff is present," reports Freudenberg technology expert Wulf Geiselhart. "And that's exactly our goal: So, operations managers can leave for the weekend without worries."

Currently, Freudenberg is targeting exclusively the B2B segment. But LeaCo could come into use someday in the consumer and governmental segments or in building engineering. It could be an especially good option to prevent water damage in buildings and will likely attract the interest of insurance companies as well.

The basic LeaCo set with three sensors, one repeater and a display module is now available via specialized technical dealers. YouTube tutorial on the installation of the LeaCo is available at <https://on.fst.com/3AvtqvK>.

Freudenberg Sealing Technologies provides a range of specific services around MRO, OEM and R&D. A smart overview of those will be available in a new service section on its website on www.fst.com from October 2021 on.

*About Freudenberg Sealing Technologies
Freudenberg Sealing Technologies is a longstanding technology expert and market leader for sophisticated and novel applications in sealing technology and electric mobility solutions worldwide. With its unique materials and technology expertise, the company is a proven supplier for demanding products and applications, as well as a development and service partner to customers in the automotive industries and in general industries. In 2020, Freudenberg Sealing Technologies generated sales of about 2 billion euros and employed approximately 13,000 people. More information at www.fst.com*

The company is part of the global Freudenberg Group which has four business areas: Seals and Vibration Control Technology, Nonwovens and Filtration, Household Products as well as Specialties and Others. In 2020, the Group generated sales of approximately 8.8 billion and employed more than 48,000 associates in around 60 countries. More information is available at www.freudenberg.com.





The perfect solutions for Roller Conveyor Manufacturers



Hutchinson designs and produces customized materials and connected solutions to respond to the needs of its global customers, on land, in the air and at sea. As global leader in vibration control, fluid management, sealing system technologies, and belt drive systems, our Group stands out with a multiple market offering spanning multiple areas of expertise and delivering synergies and value-added. Hutchinson reported revenues of €3.800 billion in 2020 and has more than 40,000 employees in 25 countries. Our ambition is to contribute to safer, more comfortable, and more responsible mobility for the future.

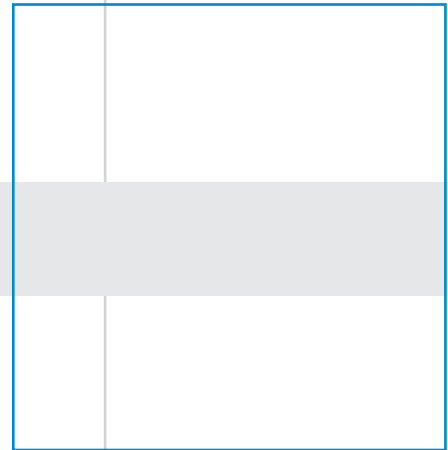
Hutchinson designed the Poly V rubber belt, as a recognized worldwide specialist in rubber Belt Drive Systems. Since 1962, Hutchinson develops and manufactures complete Drive Systems incorporating ribbed belts, linear tensioners, thermoset pulleys, idler rollers.

As a market leader, the company works with the largest OEMs in automotive, appliance, conveying, HVAC, pumps, energy supply, heavy industry, small appliances, food processing, agriculture and gardening, quarrying, mining, and building. In response to industrial customer needs, and as designer of conveyor elastic belt technology,

Hutchinson has developed the Conveyxonic® belt for roller conveyor manufacturers and is a key partner by providing innovative solutions with added value, economical and reliable solutions.

ConveyXonic® rubber belt

To meet the needs of the roller conveyors manufacturers, Hutchinson has specially developed the Conveyxonic® elastic belt. This belt is now used worldwide by all the roller conveyors manufacturers and millions of Conveyxonic® belts are fitted on thousands of conveyors kilometers each year.



The Conveyxonic® is the «6 in 1» belt capable of transporting loads from 1 to 2 tons, as well as replacing up to six transmission systems used in the conveyor assembly (flat belt, round belt, chain and timing belt, twisted belt, and tangential belt).

The belt's elastic properties allow for at least 30% reduction in costs by using 1 motor for 50 rollers while improving life span and absorption of shocks and vibrations.

The Conveyxonic® is available in two profiles to cover a power range from 55 to 550W and a linear speed from 0.10m/s to 3m/s:

- The Conveyxonic® PJ «Light loads» easily outperforms round polyurethane belts, with its transmission ratio 4-times higher.
- The Conveyxonic® PJ «Medium and Heavy loads» can replace a chain drive system.
- The Conveyxonic® PK belt can be used to replace chains for very heavy loads up to 2 tons.

With the Conveyxonic® belt, you can save at least 30 % on your global roller conveying system cost, reduce inventory costs and cut your budget on maintenance. It is easy to use, and includes the following features:

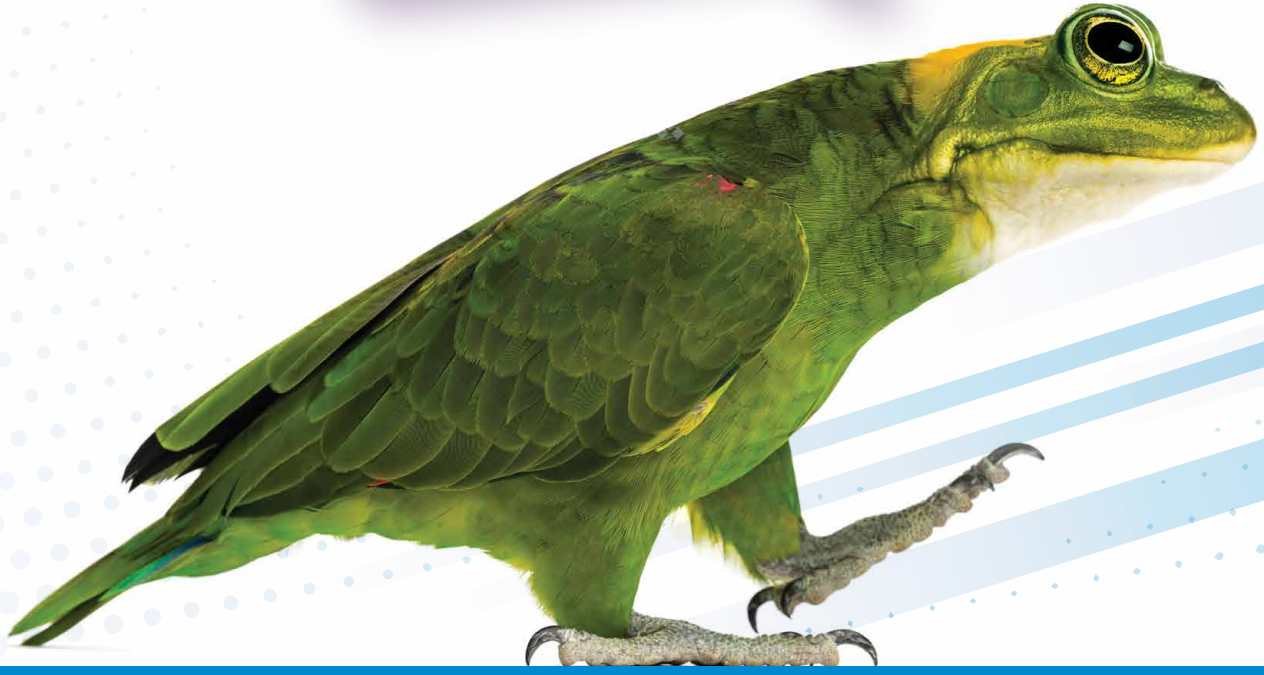
- Universal standard shelf product, automatic or semi-automatic installation
- Worldwide product line availability
- Simplified installation thanks to the products elasticity
- Technical Performances:
- Power transmission 4 times greater than a round belt
- Rapid and smooth package flow (up to 3m/s)
- Antistatic belts compliant with ISO 1813

Benefits:

- Durable and clean
- Reliable and quiet
- Guaranteed efficiency and ROI
- Iso standard 9982
- Free of maintenance (no grease necessary)

To help you to define your Conveyxonic® belt for your roller conveyor in a few seconds, Hutchinson has also developed the CONVEYXONIC® WIZARD APP. Do not hesitate to connect to the App and order your Conveyxonic® belts at www.hutchinsontransmission.com/resource-center/online-calculation-softwares/wizard-conveyxonic or find Hutchinson products and solutions for all markets on the company website www.hutchinsontransmission.com

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Ready to Transform?



**MOTION
DRIVES**
**HYBRID
MEETINGS**

Connect with
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Industry Peers, in Hybrid**

Date : January – December 2022
Location : Hybrid*

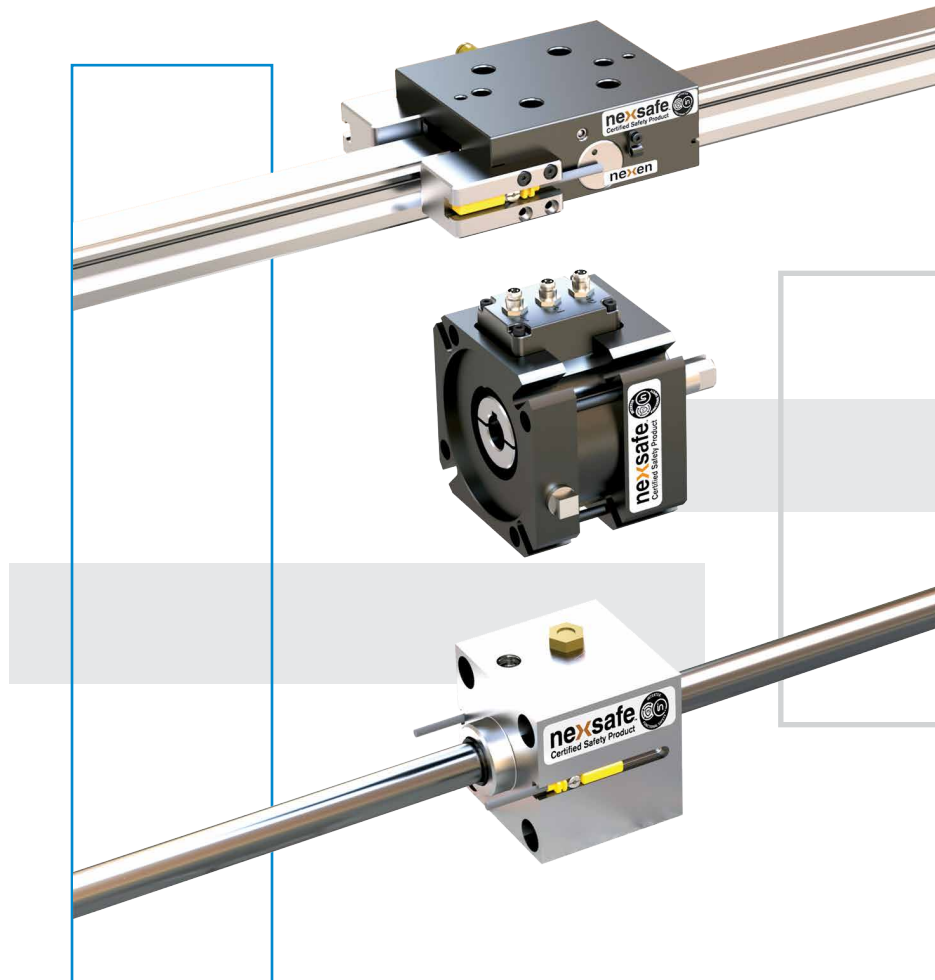
contact marketing@imotion.media for more information

Hybrid*, combination of in-person and online features

Making safety a priority: NexSafe brakes with functional safety certification

+ + + + +

Nexen Group, Inc. now offers three of its brakes products with functional safety certification under its NexSafe trademark name. NexSafe functional safety certified rod locks, rail brakes and servomotor brakes can be used for machine operations such as holding, emergency stopping or positioning. They are ideal for applications where safety is a priority.



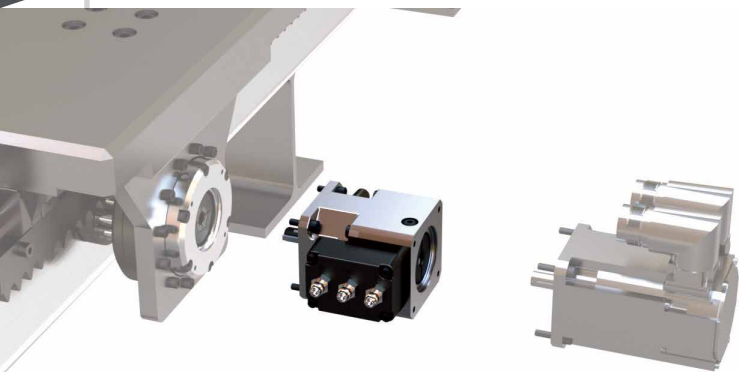
+ From top to bottom: NexSafe rail brake for installation on profiled guide rails on linear axes; NexSafe servo brake for installation between servomotors and their gearboxes; NexSafe rod lock for installation with or on pneumatic cylinders.

Functional safety

Functional safety reduces the risk of injury posed by the use of machinery in the face of operator error or mechanical failure. Building functional safety requires the design and fabrication of protective features responding to human errors, hardware failures, operational or environmental stress. ISO 13849-1 is a safety of machinery standard that assists in the design and integration of safety related parts of control systems or machines. This standard includes a system of categorizing the risk a machine poses, and the safety functions to mitigate that risk.

Certification program for industrial automation

Intertek, a company headquartered in London, provides assurance, inspection, product testing and certification. In July 2020 Intertek launched its Functional Safety Conformity Assessment Program for industrial automated machinery and robotics. The program offers manufacturers design evaluation, testing and certification with the Intertek Functional Safety (FS) Mark to signify compliance with rigorous standards for product safety and performance. The first products in North America to earn the FS Mark are Nexen's NexSafe rail brakes, servomotor brakes and rod locks.



+ The NexSafe servo brake has failsafe mechanical connections with the servomotor and gearbox; patented frustoconical friction-facing structures with tapers on both the outer and inner surfaces for simultaneous engagement with two mating surfaces; and optional sensors for feedback.

Emergency stopping and holding applications

NexSafe functional safety certified brakes provide a verified, reliable solution that machine builders can depend on. With ISO 13849-1 Functional Safety Certification, NexSafe rod locks, rail brakes and servomotor brakes are ideal for operations such as holding, emergency stopping or positioning. They are an ideal fit for applications where safety is a priority. Optional operating mode sensors further ensure NexSafe products are a fit for safety channels designed for ISO 13849-1 categories B through 4 and performance levels PLa through PLe. In addition, NexSafe brakes are certified to meet IEC 61508, ISO 12100, ISO 13850, and ISO 4414 standards.

Rail brakes: compatible with most profile guide rails and carriages

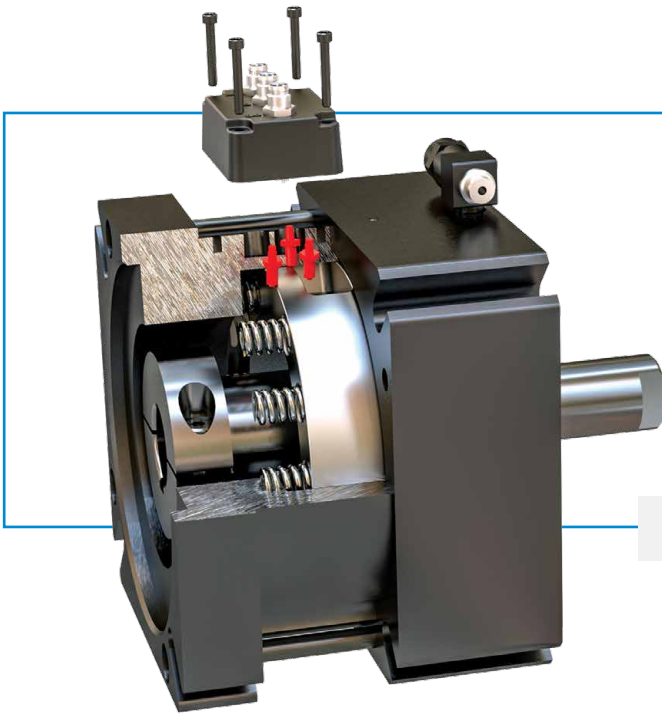
Rail Brakes grip and hold profile guide rails in linear motion systems. The NexSafe rail brake is a compact, powerful brake compatible with most profile guide rails and carriages. Rail brakes can be equipped with sensors to detect engagement and disengagement. Guide rail brakes with mounted sensors are ideal for E-stop and redundant safety braking applications such as gantry axis braking, industrial door open/close locking, medical equipment and hospital beds, primary and secondary packaging, and window and door manufacturing.

Servomotor brake: powerful high torque brake between servomotor and driven load

Servomotor brakes have been developed for braking on the shaft end of a servomotor or between a motor and gear reducer. The NexSafe servomotor brakes stop the load quickly and enhance safety with bidirectional braking capabilities. Typical applications include the production of automotive parts, cyclical operations, food production (IP67) and packaging, gantry routing, robotics, and semiconductors.

Rod locks: precision holding with guide rod systems and pneumatic cylinders

Rod locks can operate on round rails, linear rods, round shafts, and linear guide systems, or they can be mounted directly to an NFPA and ISO pneumatic cylinder. They are designed to grip and hold the piston rod of a pneumatic cylinder or a guide rod with extremely low backlash. They meet IP67



+ + +

+ The NexSafe servo brake shown here can include up to three sensors to monitor the disengagement condition, engagement condition, and wear. This feedback helps the brake satisfy the requirements for functional safety certification and deliver IIoT connectivity.

standards and can be equipped with sensors to detect engagement and disengagement. Rod locks are used for applications that require precise holding, fast engagement, and high cycle rates over millions of cycles such as automotive production, cyclical operations, food production (IP67), gantry routing, and platen presses.

Functional safety features

Brake features to help achieve high levels of functional safety include multiple engagement springs that default to lock. The friction surfaces are equipped with a proprietary friction facing, tapered on both the inner and outer friction surfaces. Those surfaces apply the braking (locking) force via springs concurrently to both the rotating shaft and brake housing to hold the shaft from rotating, all with zero backlash. To ensure safe emergency stopping and holding, there are up to three operating-mode sensors for feedback. These are essentially inductive proximity sensors to sense three different brake conditions: First, disengagement: the proximity sensor in the brake activates when rated air pressure enters the brake's piston circuit to essentially pull the friction-facing pair apart, for a disengaged (free-running motor torque) axis condition.

Second, engagement: the proximity sensor in the brake activates when the piston and facing friction-surface pair move into engagement and application of braking (stopping) torque. Third, wear: this proximity sensor in the brake activates when the brake is engaged but the friction facing is worn enough to necessitate replacement.

Time-tested technology, Industry 4.0 ready

With spring-engaged, air-released functionality, NexSafe devices default to the locked position, making them ideal for holding a load in position or for emergency stopping situations. They can be used in any orientation. Nexen has manufactured thousands of rail brakes, servomotor brakes and rod locks for a wide range of applications. NexSafe builds on that experience, retaining form, fit, and functionality, while seeking enhanced safety. Industry 4.0 is a standard option all on NexSafe devices. More information about Nexen solutions can be found at www.nexengroup.com

About Nexen Group, Inc.:

Nexen Group, Inc. is a worldwide leader in power transmission, linear and rotary motion, and tension control components. Nexen holds 120 US and international patents. A privately held company, Nexen traces its origins back to 1902. For 50 years, Nexen has been producing industrial brakes, clutches, torque limiters, overload protection devices and control systems for a variety of industrial applications ranging from packing equipment to sawmills and automobile conveyor systems. Nexen's customers span every industry – from multi-national corporations to small businesses – and range from design engineers to plant maintenance. Headquartered in the USA and with its European office based in Wommel, Belgium, Nexen has more 40 sales offices and more than 1,500 distributor outlets worldwide.



PRECISELY FORWARD NSK MOTION SOLUTIONS

From Machine Tool, Injection Molding, Medical & Measuring to General Machinery applications, NSK offers the best technical solutions and a full range of engineering services. Every NSK Linear Guide, Ball Screw, Support Bearing and Super Precision Bearing is tailored to your specific needs. NSK, the only comprehensive engineering service supplier on the market, will take your business a step ahead. Find out more at www.nskeurope-motionsolutions.com.

**LINEAR GUIDES | BALL SCREWS | SUPPORT BEARINGS
SUPER PRECISION BEARINGS | ENGINEERING | SERVICES**

The Couplings which you can **Fit and Forget**



+ TCAE-R-2



In its 20-year history, Australian based Thompson Couplings Limited has seen great success with its innovative range of couplings which handle load misalignment and the associated vibration. In stark contrast to the industry-standard method of laser alignment procedures for rotating equipment these couplings with misalignment ability solve many difficult problems involving situations such as soft foot and vibration due to shaft misalignment. Most couplings within the range are **“fit and forget”** requiring no maintenance and take far less time to install and operate compared to traditional shaft couplings.

The Thompson “Alignment eliminator” or TCAE coupling has proven successful with companies such as Pulp & Paper Mills, Steel industries, Gearbox drives and more recently Power Take Off units solving a variety of often difficult installations.

The TCAE range of products can manage misalignment

angles up to a total of 10° and the new V series can operate in vertical applications.

Its distinctive double-jointed hinge mechanism provides the TCAE coupling with high radial and axial flexibility thereby reducing damaging side loads to the supporting drive shafts. As a result, the TCAE is far less damaging to pump seals, bearings and other expensive rotating parts compared to traditional “flexible” couplings when operating with some small degree of shaft misalignment.

In process plants, many pumps are rigidly bound by connected pipework and failures frequently occur with traditional couplings from thermal growth, soft foot and other misalignment forces. By contrast, the TCAE can eliminate these damaging loads by allowing the pump to freely move as the pipework “grows” or as the motor flexes on its mounts.



Tests have been conducted by the Australian group to demonstrate the potential greenhouse emission savings from a reduction in wasted energy compared to traditional “flexible” couplings. The more axially and radially compliant nature of the TCAE coupling means there is significantly less energy wasted when shafts are slightly out of alignment compared to the “stiffer” nature of elastomeric or disc type couplings.

The extensive range of models within the TCAE series can handle un-factored loads of up to 7,000 kW. A carefully developed spreadsheet selection method has also been introduced to allow users to easily choose the appropriate TCAE for their unique application. Since it was first introduced in 2009 the TCAE-R series coupling has become the product of choice for Australia’s largest pulp & paper manufacturers now with hundreds in various process pump applications. Similarly, one of Indonesia’s large paper mills has made the TCAE-R coupling the product of choice for their process pumps and gearbox drives.

The benefits these two companies realise is the “**fit and forget**” nature of the coupling as well as the quick installation and worry-free operation. Furthermore, they are seeing the real cost savings in their maintenance budgets from reduced equipment downtime and quicker time return to line. An Australian manufacturer of open cut gold mining vehicles has recently ordered the thirteenth TCAE-R-2 coupling for the power take off (PTO) drive for a hydraulic pump. Due to the demanding

nature and restricted space available in the engine compartment other shaft couplings were unable to cope with the imposed alignment angle between the diesel engine PTO and the hydraulic pump. According to the design engineer Jake Schliebs *“The TCAE-2 has been a dream – the whole process with working with Thompson couplings has been smooth as butter, so thanks for that – we’ll be in contact in the future for further orders then, since it seems like we’ll have more trucks built before we even need to look at them, cheers”*

Along with the “Regular” TCAE -R series the company has newly released the TCAE-V series range for challenging vertical applications including wastewater process pumps and deep well mining plants. The TCAE-V- series will accommodate up to 5 degrees misalignment angles between the vertically mounted motor and pump.

Another unique product in the company’s line is the Thompson Constant Velocity Joint or TCVJ. Its patented design features a double cardan joint with zero length intermediate shaft and distinctive spherical centering mechanism. This coupling is designed to transmit power at angles up to 20 degrees with the highest efficiency and at true constant velocity. Since its commercialisation in 2005 this product has seen great success as a propulsion shaft coupling in the marine industry. *More information about Thompson Coupling solutions can be found at www.thompsoncouplings.com.*

— Flexacier/ Winflex grid coupling

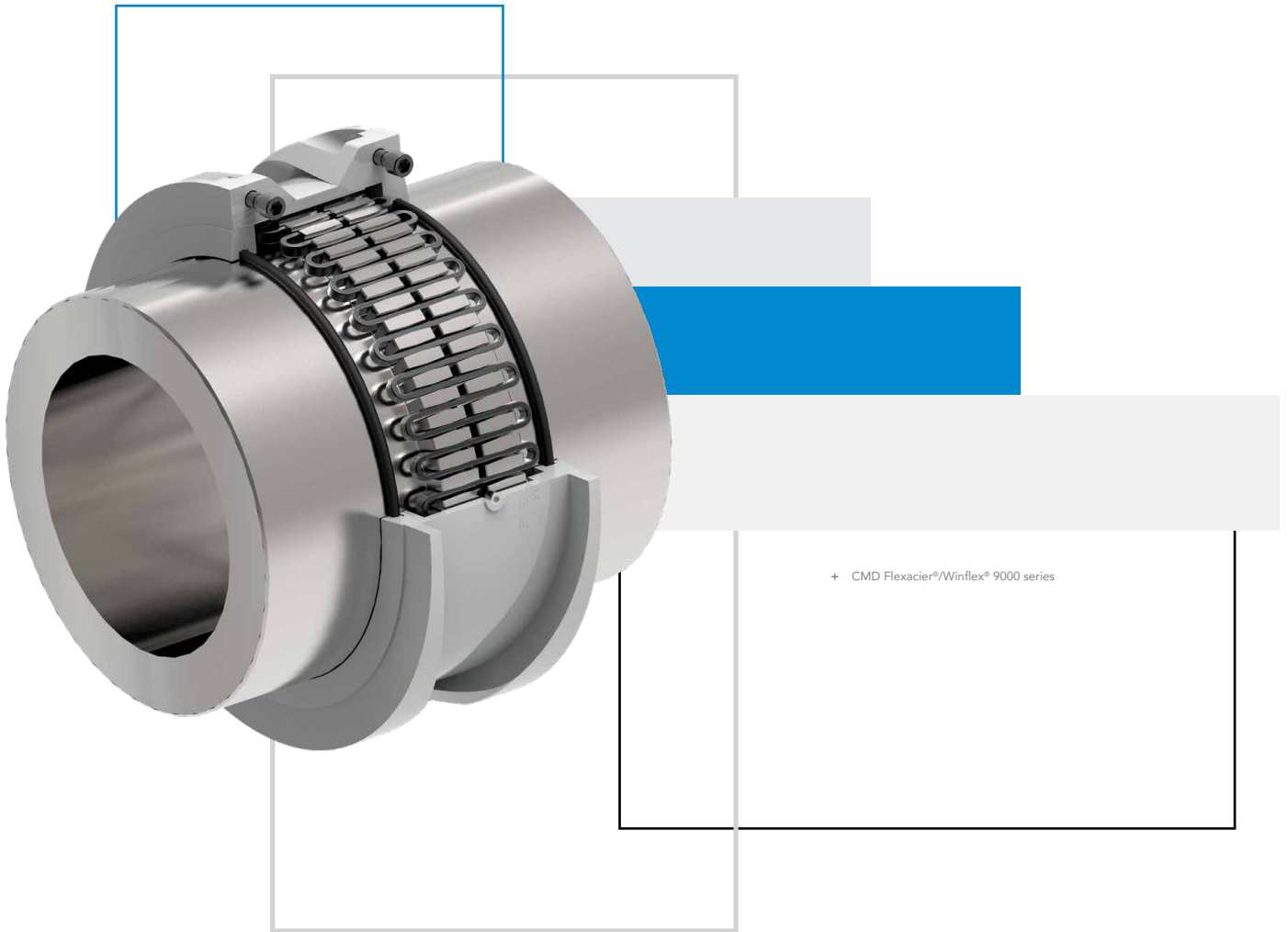
The real
maintenance
free & eco-friendly
coupling!



Today's industries not only rely on investment costs or Capital Costs (CC), but on Total Cost of Ownership (TCO). TCO includes operating & maintenance costs (OMC) in addition to CC. Depending on the period considered, OMC can have a great impact on TCO, therefore reliability & long life of components is vital.

The Flexacier®/Winflex® grid couplings offer this reliability & long life (Flexacier® brand is widely used in french & spanish speaking countries, Winflex® brand is widely used in english & german speaking countries; Flexacier® & Winflex® represent the same grid coupling ranges) ; its 100% compact metallic design, coping with harsh environment, can reach 40000 hours or 5 years between 2 maintenance operations.

Its unique design with the grid progressive stiffness allows to absorb every peak torque & shocks, observed for instance at motor start, and reduces vibration. A good summary of the Flexacier®/Winflex® coupling is that it has the torque transmission capacity of a gear coupling, with the same flexibility as an elastomeric coupling.



Elastomeric couplings manufacturers often promote the ‘maintenance free’ ability of these couplings; In fact, these couplings will require frequent maintenance operations (every 6 or 12 months), with an observed life span of 2 years (maximum 3 years in very smooth environments).

The sketch below provides various TCO’s depending on coupling technology (observed by distributors in France), based on a 9000 Nm coupling rating. Comparison is made between 4 technologies :

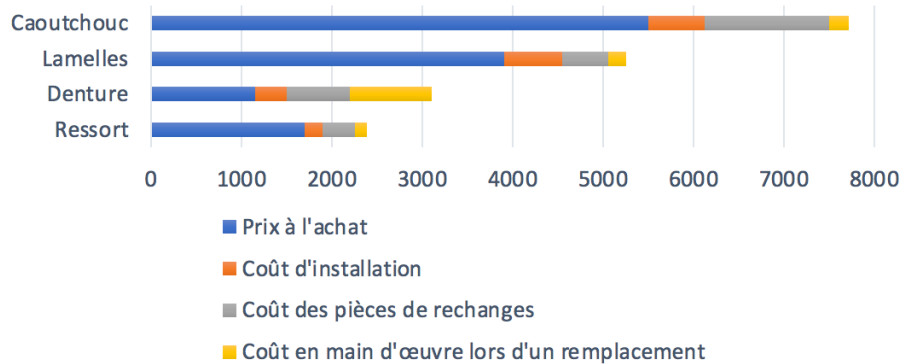
- Elastomeric (Caoutchouc on the sketch)
- Disc (‘Lamelles’ on the sketch)
- Gear (‘Denture’ on the sketch)
- Grid (‘Ressort’ on the sketch)

TCO is calculated by adding Capital Cost (CC) (‘prix à l’achat’, in blue on the sketch), and Operating &

Maintenance Costs (OMC), composed of installation cost (‘coût d’installation’, in orange on the sketch), spares cost (‘coût des pièces de rechanges’, in grey on the sketch) and maintenance staff cost (‘coût en main d’œuvre lors d’un remplacement’, in yellow on the sketch). Additional costs like ‘in service’ operation costs have not been included, as they are non significant on TCO, and technology has no real impact compared to maintenance strategy implemented by a company, so non pertinent for comparison purpose.

The CC indicated on the sketch are based on costs observed for western couplings manufacturers. More exotic sourcing is available today to reduce the CC, but for long enough periods (over 2 years), OMC will be significant enough to come to the same conclusion: The Flexacier/Winflex coupling has the best result for TCO & is the real ‘maintenance free’ coupling.

Coûts d'usage par type de technologie d'accouplements pour un couple de 9000 N.m



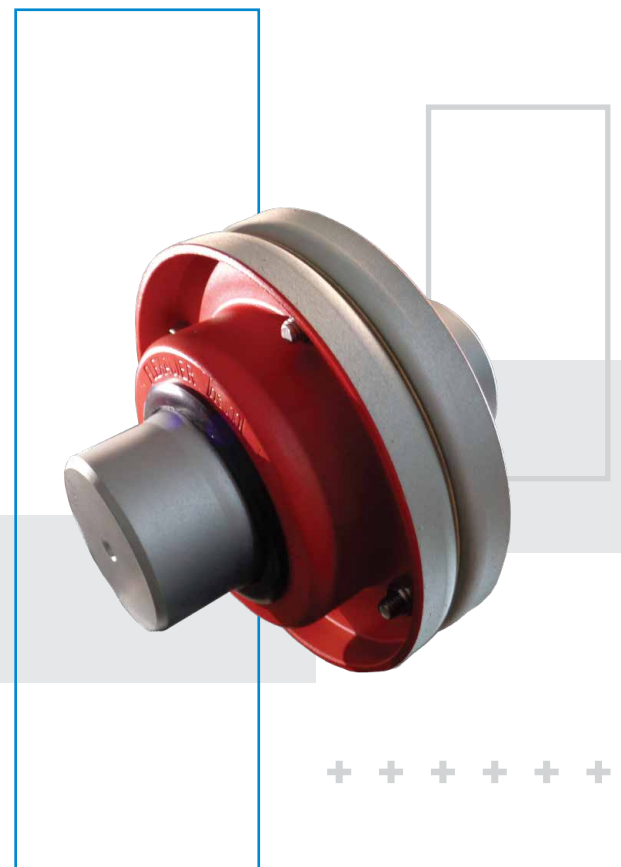
+ OMC comparison for various couplings technology (French distribution)

Another aspect to be considered, is the ability to be 'environmentally friendly'. Companies have more & more concern about their social & environmental impact, thus asking the same from their suppliers.

Being environmentally friendly is directly linked to longevity & reliability, of course, as less maintenance means less spare parts & less energy used. It is also related to recycling & circular economy. Grid couplings are made of metal, 100% recyclable. It uses lubrication of course, so extra care must be taken on sealing (problem is not the lubricant, but the leak), and also lubricant manufacturers make lots of efforts to promote more environmentally friendly greases, sometimes even with ECOLABEL. Worn elastomeric elements might be hardly recyclable.

For instance Grid couplings are now widely accepted for the food & beverage industries, as good alternates to 'non lubricated' couplings, or stainless steel couplings. Anti-corrosion or oxydation coatings, that have long been used for the ports & maritime industries (due to the highly salty & corrosive atmospheres), have proven to be compatible with the particular environment of food & beverage industries (with intense cleansing & washing procedures), with unrivalled torque transmission capacities (compared to elastomeric or stainless steel couplings).

To conclude, the Flexacier®/Winflex® grid coupling, offering unrivalled compromise between torque transmission, reliability & long life, is today the real maintenance free & eco-friendly coupling.



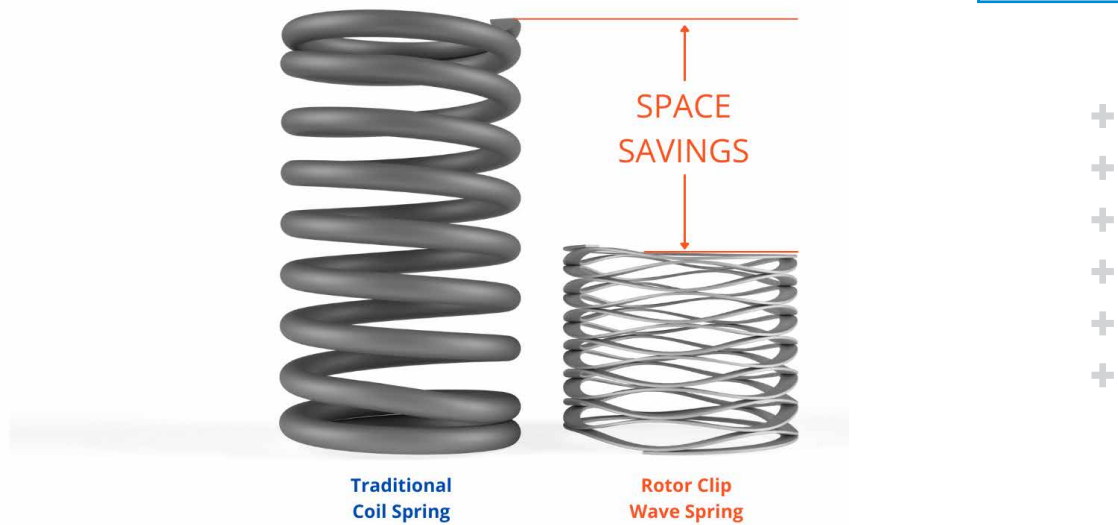
+ CMD Flexacier®/Winflex® coupling
+ with anti-corrosion protection

– The Wave Spring Advantage



When considering a spring element for your technical application, it is worth comparing the familiar and traditional spring options to another innovative spring element, a wave spring. Most engineers have experience with traditional coil or disc springs, whilst wave springs remain somewhat of a mystery. Flat wire wave springs offer the best balance of size and spring force and in many applications, offers considerable advantages over their more traditional and well-known counterparts.





One of the main reasons to specify wave springs is the impressive force-to-work height ratio as they can produce the same or even greater forces as coil springs, whose work heights are up to twice as large. These axial space savings are perhaps the most immediately visible advantages of flat-wire wave springs. In static applications, a wave spring will typically need just 50% of the work height of coil springs to deliver an equivalent force. In dynamic applications, the work height advantage is typically about 30% less than the static applications, but still substantial. Wave springs can also save space in the radial direction compared to using disc or coil springs with larger diameters.

Wave springs can ensure a largely constant force over a large spring travel. Their deflection curves have wider, flatter linear force region than either coil or disc springs. Spring elements typically exhibit both linear and non-linear force behaviors, depending on their deflection. This linear behavior can be graphically shown on the spring's load-deflection curve. In general, the broader and flatter linear region of the curve, the easier it is to hit specific spring force requirements. Wave springs have a clear advantage in this department. They typically have a linear force between 30 and 70% deflections. Both coil and disc spring have much narrower linear force. Predictable spring forces can be a big benefit in many applications.

Another benefit of wave springs complete elimination of torsional loads. Whenever you compress a coil spring to its work height, loads are not just in the axis of compression but also torsional. These torsional loads can cause the pre-loaded component to rotate in use, potentially resulting in excess wear. Torsional

loads can also decrease the spring working load. Whilst many applications can suffer from this rotational wear problem, wave springs don't have this issue. Their wave forms can only compress axially.

Compared to a traditional disc spring, multi-turn wave springs offer far more travel. One multi-turn wave spring can easily replace the assemblies that use multiple disc springs to achieve the necessary travel. Replacing a stacked disc spring assembly with one wave spring can result in both cost and quality benefits. Not only will the single spring cost less to install, but it also reduces the chance of assembly error.

Wave springs can also be used to preload bearings, eliminate axial endplay, and minimize vibration. Applying a permanent thrust load to a bearing assembly is important for secure and successful installation. The bearing preload process extends component lifetime by eliminating unnecessary clearances, creating high stiffness, and reducing noise and vibration.

Unlike stamped produces, which require tooling, wave springs can be customized by changing the parameters of the coiling equipment. This ability allows you to specify custom wave springs without worrying about cost or delays associated with custom tooling. This capability is yet another cost factor weighing in favor of wave springs.

This unique spring element is the clear winners in a wide variety of engineered systems and in applications with high performance requirements.

For more on wave springs, visit www.rotorclip.com or contact info@rotorclip.com

– Precision Spacers for Gearbox Applications

By Mark Bos, Fenner Drives

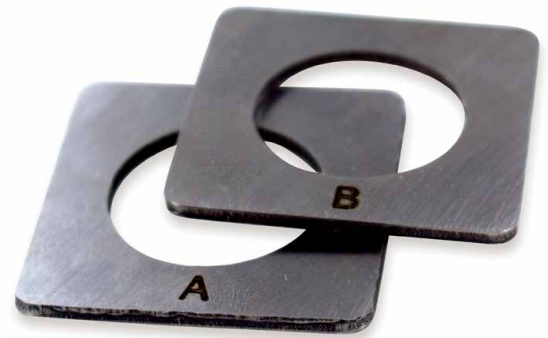


A problem commonly encountered in the manufacturing of gearboxes is filling the last gap in the gear shaft assemblies.

The accumulated tolerances of the many components can result in a range of gaps too wide to be met with a single size spacer. Filling the gap accurately and completely is critical to reliable, long-term operation of the powertrain or gear box.

Traditionally the gap is filled with a combination of shims, or the gap is measured, and a thick spacer is ground down to a finished thickness. Both options are time consuming and slow the final assembly rate. They also introduce a significant chance for error.

National Bearings, a product line of Fenner Drives, designs and produces spacers to solve this problem for OEMs and is currently doing so for a major player in the industry. The custom spacers are manufactured in a range of precise thicknesses to fill the last gap with a single spacer, no matter how wide the gap that is produced by the combined components.

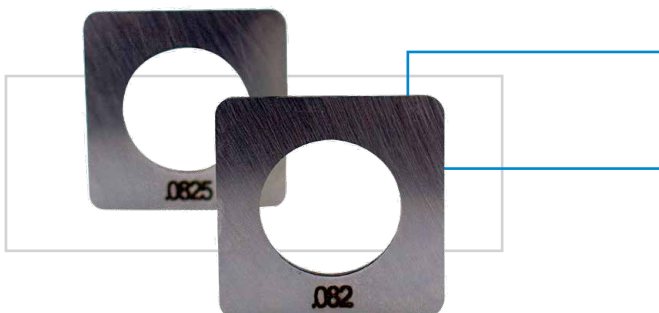


Made from stamped steels that are designed for extreme duty applications, spacers can be nearly any shape from a simple round washer to more complex geometries to fit any constraint. They are hardened and ground to precise thickness and flatness tolerances. Finally, the spacers are then laser engraved or color coded for easy and error-proof identification.

The distribution of the gap thickness in gearbox assemblies is usually uneven across the range of component stack ups, with a few specific sizes making up a majority of the usage. Precision ground stampings allow for the cost efficiency of high-volume manufacturing and the wide range of thicknesses usually provided by machining. That way it is possible to order smaller quantities of the infrequently used sizes while taking advantage of the lower pricing of those sizes requiring higher volumes. More technical details are listed below or can be consulted at www.fennerdrives.com.

Technical Details

- Typical materials: Bearing steels such as UNS 1050, 1074, 8620, 52100 or corrosion resistant steels including 302/304, 420 or 440C
- Hardening up to 60 HRC
- Surface finishes from .8-.2 micrometer RA
- Thickness, flatness, and parallelism to .003 mm





— Customised Solutions in Chains & Transmission Elements



YUK helps customers developing their projects by offering quality bespoke solutions in conveyor and roller chains, and transmission elements. Since 1964, experience, dedication, development and investment have been the cornerstones of our company. More recently, YUK has been involved in a deep change process, struggling to step up a factory and facilities that meet the expectations of our clients.



Key-figures:

- Factory adaptation to Industry 4.0.
- 14.000 sqm fully automated warehouse (Easy WMS Mecalux System synchronized with our ERP on real time).
- More than 15.000 references representing over 7 million € stocks.
- Specifically built-in warehouse for raw material storage, in times when supplies may be at stake.
- New offices, showroom for customers and training dedicated area for employees.

Digitalisation:

- B2B e-commerce platform with real stock: in English/French/Spanish.
- Implantation of a new CRM software that will help us put the customer at the very centre of the company.
- Customer and employee training on Teams.

- Specific training for LinkedIn Sales & development of LinkedIn Marketing.

Environment protection committed company:

- Increase of our solar power supply to reduce the use of environmentally harmful energy.
- Digitalisation process to reduce the use of paper and printing machines and contribute to the safeguard of the environment (Docuware-Project)
- Facilities for our employees to work in remote mode, to help preserve them from Covid-19 and reduce the impact on the environment, caused by systematic comings and goings from home to the office.

YUK has a strong commitment to become a major player in the European market. You can contact YUK anytime at export@yuk.es or visit the website on www.yuk.es/en for more information.



– New Premium Roller Chain Developed for the After-Market



A new high precision Roller Chain, called EXL Chain, is now available offering superior quality and durability over standard Roller Chain. The new chain is developed by the Hangzhou Donghua Chain Group which is one of the world's largest chain manufacturers who supply their wide range of chain products world-wide.



Short pitch precision roller chains EXL (A&B series)

The EXL chain is a premium product positioned within Donghua's new Solution range. The Solution range offers customers a unique solution to problems with chain

wear, chain fatigue, corrosion, high speed, lubrication, chain length accuracy and chain strength, whilst being designed for arduous environments.



I'm thrilled to introduce this new Chain and our Stockists are keen to see a new design of chain which offers significant benefits over standard Roller Chain.

Bob Wellsbury, Managing Director of Donghua Limited



Aimed specifically for the after-market, EXL Chain is designed, manufactured and tested for unbeatable accuracy and performance in arduous conditions, offering enhanced wear and fatigue resistance and greater precision than their Standard Roller Chain range. By utilising different materials, material treatments and layer technologies, EXL Chain offers the best possible quality/price ratio for all applications.

New hardened, shot-peened wide waist plates deliver increased fatigue strength and a seamless cold forged solid bush and roller give full contact between the pin, bushing and roller for higher durability. Optimised cylindrical parts improve sliding contacts which help increase service life.

The chain also incorporates Donghua's unique Easy Break Technology. This unique feature enables EXL Chain to be cut in the field using Donghua's Plate Extractor tools. A video shows how the Easy Break Technology works and can be viewed at <https://youtu.be/UD6rtBEJrkM>.

Bob Wellsbury, managing director of Donghua Limited, said: "I'm thrilled to introduce this new Chain and our Stockists are keen to see a new design of chain which offers significant benefits over standard Roller Chain."

EXL Roller Chain is supplied pre-loaded with 40-50% of the breaking load. Roller Chains can be matched in pairs



to close tolerances in Donghua's UK workshop. For chain lengths over 5 metres, the chain can be supplied matched & tagged for fitting in sequence. Pre-lubricated, as standard, using high performance synthetic lubricant ensures high workload performance in arduous and abrasive conditions.

Donghua's EXL Roller Chain is available in standard pack sizes of five metres, reels available on request, and bespoke cut-to-length sizes in British standard 06B to 32B, American standard ANSI 35 to ANSI 160 in simplex and duplex ex-stock. All Donghua Chains are marked with production batch codes for full traceability.

With increased precision, higher wear resistance and greater fatigue resistance, EXL Chain is the new Roller Chain solution of choice.

For more information about Donghua's EXL Chain and to download a catalogue, visit: www.donghua.co.uk/exl-chain



- Manual lubrication is a thing of the past!
perma Lubrication systems replace grease guns!

+ + + + +



The most important tool for daily equipment lubrication is the grease gun. In the long run however, grease guns are not an optimal lubrication solution.

perma Lubrication systems on the other hand ensure a safe, clean and optimal lubrication process. Lubrication points on electric motors, pumps, conveyor belts, blowers and fans are automatically lubricated with the right lubricant, in the right amount, at the right time, based on ambient conditions. This continuous lubrication prevents insufficient and over lubrication and minimizes premature wear and machine downtimes.

Reliable lubrication saves time – without a grease gun

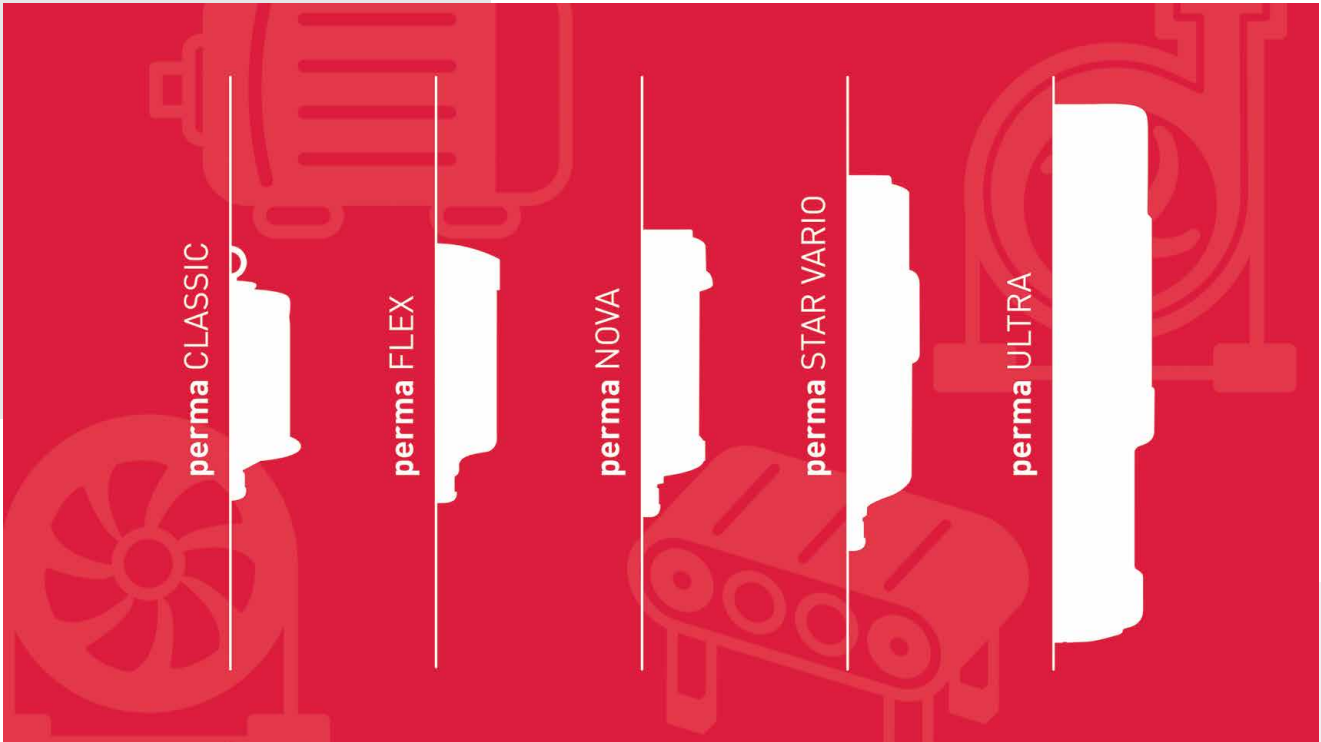
Manual lubrication often requires different grease guns filled with different types of greases. Using only one grease gun with changing lubricants poses a high risk to grease and oil contamination. This will have a negative effect on the lubrication result and can only be prevented by storing and using several grease guns. The more lubrication points with different lubricant requirements, the more difficult

the storage of the right lubricant. Without written documentation it is almost impossible to correctly carry out maintenance tasks and to observe specified maintenance intervals.

None of this is necessary with automatic perma Lubrication systems. Once installed, they automatically supply lubrication points with the selected lubricant.

Efficiency and high equipment availability – lubrication systems compared to grease guns

It can be extremely challenging to supply the right amount of lubricant to the lubrication point with a grease gun. Manual lubrication often results in too much or insufficient lubricant supply. Insufficient lubrication increases friction and wear which leads to dry running of the bearing. Too much lubricant over longer periods causes bearing heating which results in bearing failures and costly equipment downtimes.



The use of perma Lubrication systems can prevent these problems. With precise lubricant dosing and the right lubricant, these compact lubrication systems can be perfectly adjusted to meet the requirements of every lubrication point. Relubrication takes place while the machine is in operation which has a positive effect on lubricant distribution inside the bearing. A consistent supply of fresh lubricant prevents the ingress of fluids, dirt and dust and extends bearing service life. Maintenance intervals can be planned, unscheduled equipment downtimes are prevented and maintenance costs are reduced.

A benefit to workplace safety and the environment

The use of perma Lubrication systems increases workplace safety. Automatic lubrication contributes to accident prevention as the systems minimize the need for maintenance workers to access dangerous areas. An indirect or remote installation of perma lubrication systems supplies machine parts reliably with lubricant despite strong vibrations or high temperatures.

Every 11 seconds, a perma lubrication system is installed or exchanged worldwide.

The decision to use perma Lubrication systems is also a decision for long-term optimal lubrication. perma is not only the expert in automatic lubrication systems but also offers all-round service. The perma SELECT

APP helps to determine the ideal lubricant and the right discharge setting on perma Lubrication systems taking operating conditions into account. perma MLP is a great tool to organize and manage all lubrication points. Upcoming maintenance work can easily be coordinated. The perma SERVICE Team is always available for installations on site.

perma-tec GmbH & Co. KG

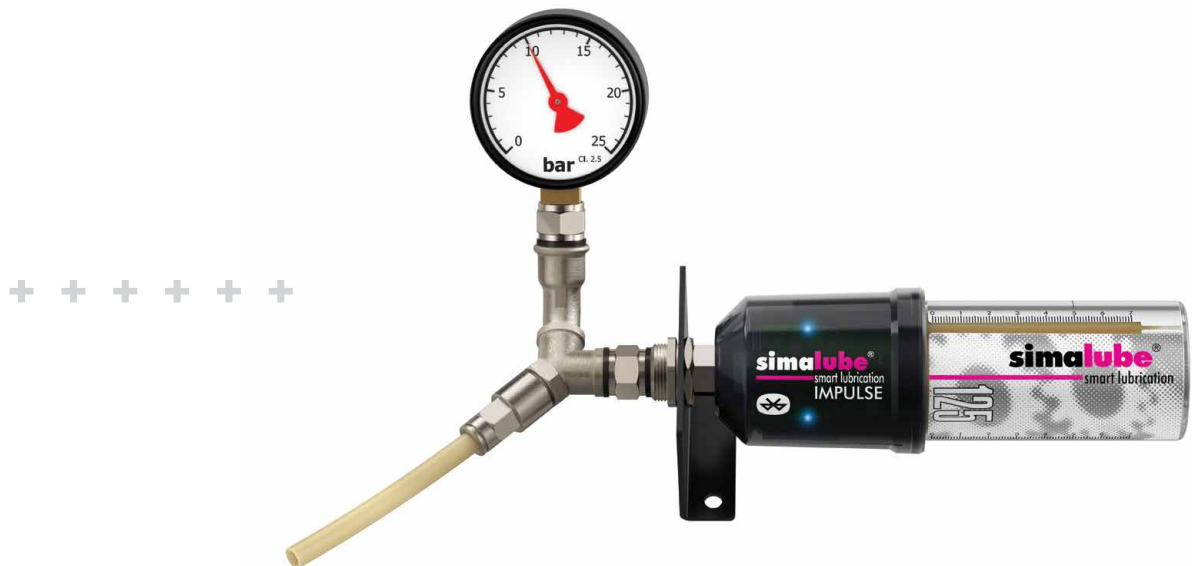
perma-tec has been providing innovative and creative lubrication solutions for more than 50 years. perma's single- and multi-point lubrication systems can be found in almost all types of industries and applications around the world.

perma-tec's leadership in single-point lubrication is based on many patents and certifications. All perma products are developed, tested and manufactured in the company's German headquarters and live up to the "Made in Germany" quality.

With many years of experience and a network of subsidiaries and competent partners around the world we can offer our customers lubrication solutions that meet highest technical requirements. More information about perma-tec can be found at www.perma-tec.com or requested from sales@perma-tec.com.

– Ready to lift off to the world of maintenance with **simalube**

– *the next level of automatic lubrication*



The simalube IMPULSE connect is the latest generation of the pressure booster from the simalube family. The proven functions of the IMPULSE have been supplemented with the option of connecting the device to a smartphone via Bluetooth®. In connection with the newly developed "*simatec world of maintenance*" app, the devices can be easily configured and then monitored without having to be directly at the lubrication point. Information such as general status, fill level, lubricant, size, start and change date etc. is displayed to the user and easy to read in the app. It also enables the customer to manage the lubrication points digitally.



Every industry has lubrication points with requirements that can be optimally solved by using the new simalube IMPULSE connect. The initial installation as well as the subsequent monitoring can be carried out quickly and easily thanks to the support provided by the «simatec world of maintenance» app.

Together with the proven functions of the simalube automatic lubricant dispenser and the pressure booster IMPULSE connect, lubrication points are supplied with the required amount of lubricant with the greatest reliability, while at the same time reducing costs.

Compelling customer benefits

Faster, easier and safer inspection rounds can save costs in the long run. The dispenser's status and error displays can be read directly in the app, and the lubrication points can also be managed in Lubechart via the app. Animated installation and operating instructions assist with a correct installation. Continuous lubrication ensures less wear on the components, which also leads to cost savings. Production downtimes for maintenance and monitoring purposes are eliminated, resulting in higher availability of the production equipment.

Together with the simalube lubricant dispensers in sizes 60, 125 or 250 ml, the simalube IMPULSE connect ensures reliable lubrication at high counter-pressures and in lubrication lines up to four meters

long. Regular lubrication triggers supply the lubrication point with 0.5 ml of oil or grease up to NLGI 2 at a pressure of up to 10 bar. This is gentle on the lubricant, as only the dosing quantity is under pressure. The operating status can be easily monitored with the «simatec world of maintenance» app. The intelligent pressure booster also provides continuous information about the current operating status.

Simple installation and operation

As soon as the battery pack is inserted and the lubricant dispenser screwed in, the simalube IMPULSE connect is operational. The IMPULSE connect is connected to the «simatec world of maintenance» app via Bluetooth. The runtime, the size of the lubricant dispenser and the lubricant can then be selected and saved in the app. The system then works with the settings selected by the customer. When the lubricant dispenser is changed, the simalube IMPULSE connect remains permanently installed on the lubrication point. Only a new battery pack needs to be inserted before a new simalube lubricant dispenser is screwed on. This way, the connection point remains sealed even when the dispenser is changed and no lubricant runs back. The settings saved in the app remain the same, but can be changed if necessary. The new start date is set automatically after the new battery pack is inserted.

Versatile and – thanks to reusability – very cost-efficient

The compact design of the simalube IMPULSE



connect allows installations in confined spaces and in all positions; even under water. As an IP68 protection class device, the pressure booster is dustproof, waterproof and suitable for use in a wide range of industries. Equipped with a new battery pack at each refilling, the simalube IMPULSE connect can be used for ten dispensing cycles of simalube 125 ml or for up to three years.

«simatec world of maintenance» app

With the «simatec world of maintenance» app, simatec ag has created a platform for easier and more efficient management of lubrication work. The app offers the user the possibility to record lubrication points, to set the necessary parameters for the lubrication and to control or monitor all activities around the lubrication. The simalube IMPULSE connect equipped with Bluetooth® can be configured directly via the app, the current operating status can be viewed from a distance of up to 20 m via the app.

Short profile of simatec ag

simatec is an independent, globally operating family business in Switzerland and has been managed in the second generation by Mischa N. Wyssmann since 2005. Since its foundation in 1983, a motivated team has been developing and producing innovative products for the maintenance of roller bearings under the brand names simatherm, simatool and simalube. At the end of 2007, the simatec inc. subsidiary in Charlotte, NC, USA, and in 2017 simatec gmbh in

Pforzheim, Germany, successfully started operations.

The simatherm induction heating devices enable rapid heating and the simatool tools facilitate the simple mounting and dismounting of roller bearings and other ring-shaped metal parts. And simalube lubricant dispensers automatically and reliably lubricate machinery and equipment around the globe.

With the launch of the simalube grease and oil lubricator, simatec opened up an extremely successful business segment and became one of the leading suppliers on the world market. The foundation for this success was the development of a special drive system: The patented gas producing dry cell enables a clean, safe, maintenance-free and long-term lubrication of bearings. This new technology simplifies complex processes and reduces the maintenance requirements on thousands of machines and systems.

Manufacturer and Distributor

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CH-3380 Wangen a. Aare, Switzerland
Tel. +41 32 636 50 00, Fax +41 32 636 50 19
Website: www.simatec.com
Email: welcome@simatec.com*

If you have any questions about this article, please contact: Angela Kalousek, Marketing & Communications, simatec ag, Tel: +41 32 636 50 00, angela.kalousek@simatec.com

— Power Your Conveyor *with Optibelt!*

Transportation and motion over the last two years is becoming more and more important in various sectors and industries. Logistic systems and logistic centres are growing and the number of packages to be delivered have been increasing tremendously. Consequently, the need for more powerful transportation lines as matter of fact are being reported from our customers and market representatives.

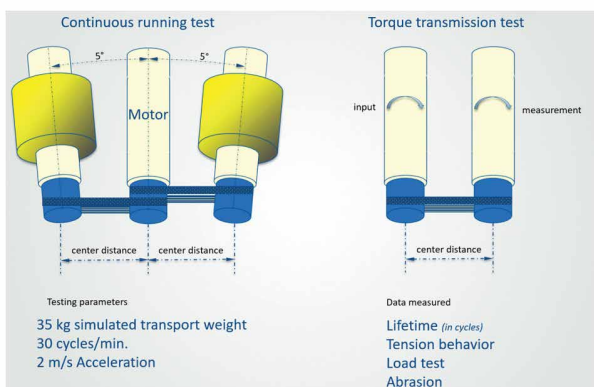
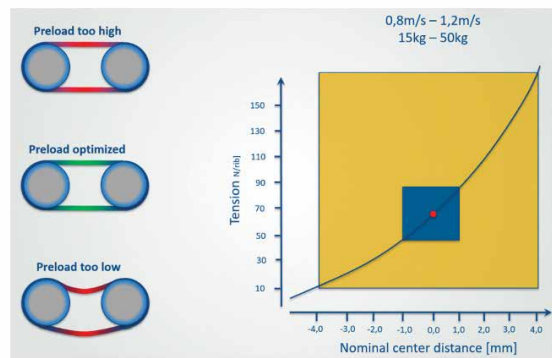


For these specific needs Optibelt have developed the product range Conveyor Power, mainly for roller conveyor systems. Beside V-belts the elastic rib belt is the major drive element.

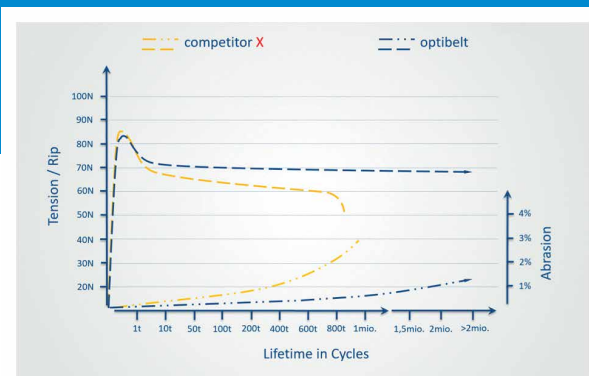
Optibelt Conveyor Power range is dedicated and especially developed for those roller conveyor systems and has advanced features as follows.

- Highest power transmission vs. competitor products
- More than 10 belts in a line suitable
- Cold-resistant up to -40°C
- High Temperature-resistance up to 80°C
- Shock load absorbing
- Suitable for start / stop cycles
- High efficiency vs. round belts almost on timing belt level
- Maintenance-free
- Suitable for curves
- Quiet operation
- Maximum of reliability

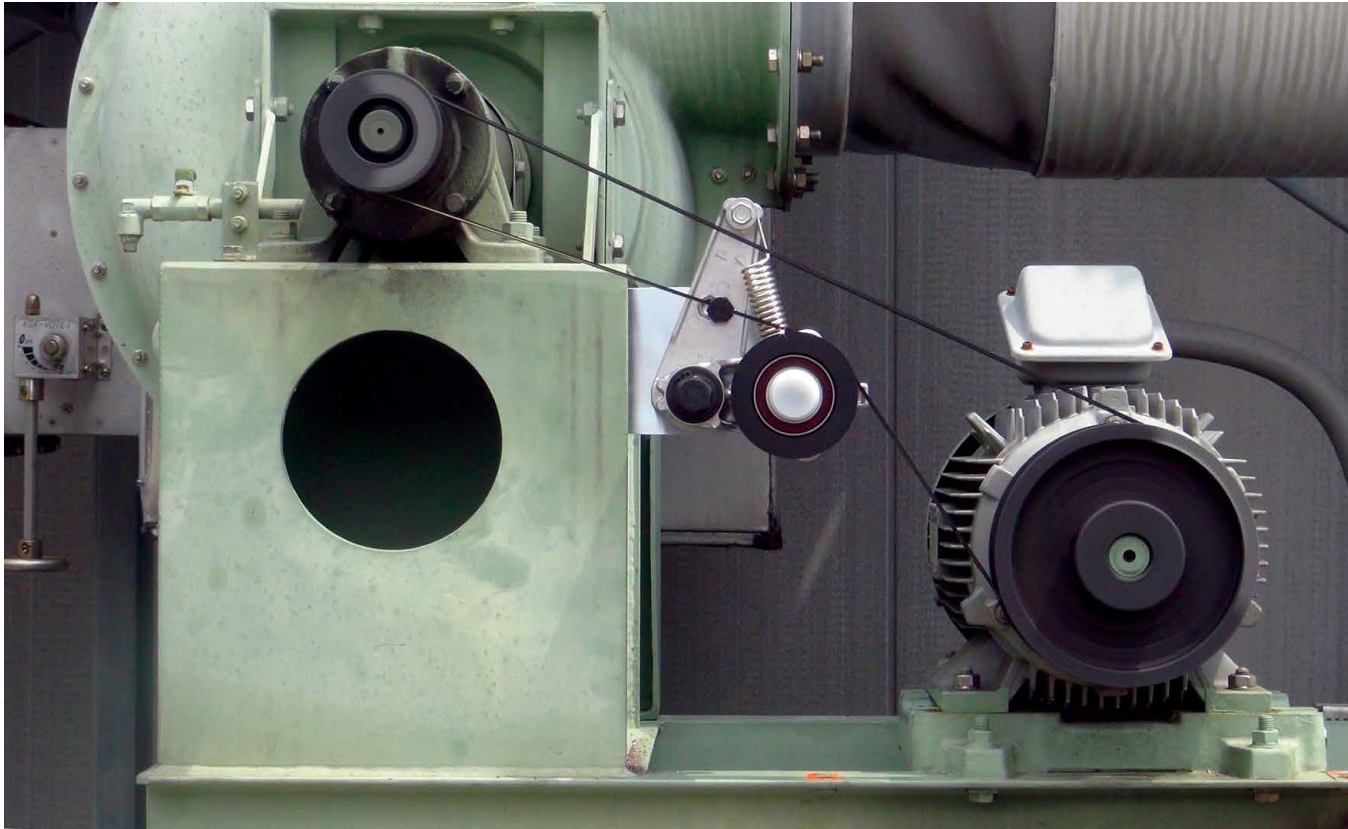
Our Conveyor Power rib belts are produced in tight length tolerances, for optimized operation tension in use (graph below).



Preload force & Usability of the belts added value with Optibelt Conveyor power



For more information about Optibelt solutions check out the home page on www.optibelt.com or use the App Conveyor Power selector at www.optibelt.com/en/products/ribbed-belts/optibelt-conveyor-power



— **BANDO's Energy** *Saving Transmission* *Belt System*

+ + + + +

BANDO is a 115-year-old multinational enterprise based in KOBE, Japan. The company's main products are transmission belts for various kind of industries, automotive, motorcycle engine parts and industrial machines, HVAC, factory related parts/elevators, bank machines, security cameras in the town and printers or photo copiers in your office or in your house.



*BANDO could achieve
ENERGY SAVING,
LONG LIFE and
MAINTENANCE-FREE
operations.*



BANDO EUROPE has been established in 1978 - since then the company supplied transmission belts to Europe's competitive manufacturers mainly in automotive industries and precision machinery industries. The new challenge is to contribute to solving Europe's advanced and world's most required issues which is to reduce carbon emission and save energy.

BANDO introduced the energy saving transmission belt system called "HFD" which stands for Hyper Flat belt Drive, since the BANDO's engineering team believes that the combination of "FLAT BELT" + "AUTO TENSIONER" is the most efficient transmission belt system for HVAC industry. More than 100,000 units of blowers and 130,000 units of cooling towers with

conventional V-belts are running in Japan. It is estimated that - a possible change of those 230,000 units V-belts into HFD systems - could reduce approximately 60 GWh, which is almost equivalent to the electricity generated by one small size coal fired power plant.

BANDO has released around 7,000 units of HFDs in Japan, China, Korea and Taiwan. On the other hand, in Europe with the world's most advanced area for environmental protection, the company did not promote this advanced technology yet and aims to be the evangelist who will preach around the method how specific applications can reduce 5~7% of energy consumption with transmission belt systems.



HFD has two other features: One of them is the longer lifetime, HFD can achieve 24,000 hours lifetime, while a conventional v-belt's lifetime is around 8000 hours. The second feature is the maintenance-free solution. These days workforce for facility and asset maintenance has been reduced because of declining working population. For a conventional v-belt, three to four times maintenance is required during its 8000 hours lifetime. But HFD doesn't require any maintenance for its 24,000 hours lifetime and contributes to solve several related socio-economic problems.

How can BANDO achieve these major strong features? This is thanks to the patented tensioner pulley and the development process of the belt materials. For cars with an engine, the company offers a transmission belt maintenance solution for over 50,000 km. This thanks to the accessory drive produced for automotive engines; a ribbed belt and auto tensioner which enables the long life and long-term maintenance-free operation. BANDO introduced this advanced technology from the automotive industry into industrial applications. A good example is the comparison of a conventional v-belt and a flat belt. A flat belt is easy to bend, which means an easy installation capability on pulleys. A conventional v-belt needs more energy to be installed on pulleys, which causes the major loss for belt transmission.

BANDO also introduced a flat surface belt and the meander correction pulley. For the high-power motor application, it was not possible to use ribbed belts that have tiny V shape ribs on the surface, because they got destroyed with higher engine power. The company decided therefore to use flat surface belts instead. However, flat belts cannot run straight without any guide or flange. So, the introduction of the "meander correction pulley" which enables belts to run straight was the solution. With these technologies and innovations, BANDO could achieve "Energy Saving", "Long Life" and "Maintenance-Free" operations.

BANDO is looking for the right business partners from the following areas to build a long-terms cooperation.

1. OEM supply for HVAC (blowers, compressors)
2. Maintenance operation professional companies with wide network, especially for HVAC system. (Public facilities, Hospitals, Shopping Malls, and Factory)
3. Major manufacturing companies who have a target or goals for environmental protection or carbon offset.

Feel free to contact info@bando.de in case you are interested in a partnership with BANDO:

Making the world run more smoothly

“Clean Metal” for a sustainable future

“Clean Metal” takes lubrication-free plain bearings to the next level. Copper alloy is sintered onto a steel back and impregnated with fluorine-based polymer to achieve a low coefficient of friction. Despite its simple structure, various materials with focus on low friction, high load or fast rotation are available and can be selected according to desired application. Clean Metal is compliant with recent environmental regulations and contributes to a sustainable future.



We support the sustainable development goals “Responsibility Consumption and Production” and “Climate Action” recommended by the United Nations.

Senju Metal Europe GmbH

www.senju.com/en | Kirchnerstrasse 6-8 60311 Frankfurt am Main Germany
 | E-mail: de-info@senju.com | Phone: +49-(0)69-29 80 15-0



- *One Address for all belts and belting systems:*
Megadyne

+ + + + +

At the end of the 1950s, near Turin (Italy), Corrado Tadolini started his own production and marketing of rubber flat belts: "Megadyne" was born. Around the 1980s, the company experienced strong economic growth thanks to the use of new production technologies that allowed it to develop new polyurethane belts and to establish itself on the National market.

CUSTOMER CENTRICITY

PEOPLE FOCUS

ENTREPRENEURSHIP

AGILITY

RESPONSIBILITY



MEGADYNE



Megadyne aspires to be **THE** local partner of choice for belting solutions - around the globe.



The great success of Megadyne belts on the domestic market led the company to expand its horizons to the International market.

Today the Megadyne Group develops and manufactures power transmission belts, matched components and complete belt systems for a diverse range of applications. As a reliable partner for original equipment manufacturers and aftermarket distributors, with manufacturing plants in Europe, North America and Asia, Megadyne can provide its customers with a large range of products: thermoset and thermoplastic polyurethane belts, rubber timing and v-belts, pulleys, clamping plates, timing bars and complementary products, including made to order.

In the new millennium Megadyne made a further leap forward, thanks to several company acquisitions that allowed to obtain a strong commercial and manufacturing presence across the globe (such as America, China and Europe) and to offer its customers an increasingly complete and innovative solutions for a wide range of applications and industries.

Of significant impact was 2018, the year in which the Megadyne Group was acquired by the Private Equity Fund "Partners Group" together with another world leader specializing in industrial handling: Ammeraal Beltech.

The merger of the two companies gave rise to the AMMEGA Group.

As part of the AMMEGA Group, Megadyne shares its "Core Values": Customer centricity, People focus, Entrepreneurship, Agility and Responsibility.

Ammega takes its social responsibilities seriously and is a member of United Nations Global Compact. They strive to do business in a way that minimizes the negative impacts and maximizes the positive value for people, the environment and society. Megadyne prides itself in responding quickly towards their customers, optimizing its delivery time and making fast decisions at all levels in the organization.

Throughout the past sixty years, Megadyne has grown from being a small family company to become a leader in the field of Power Transmission. It's goal is to consolidate and increase the globally presence of the Group, through continuous research and development of innovative and high-quality products combined with a professional customer support.

More information about Megadyne can be found at www.megadynegroup.com/en

Belt customization is the key to successful automation



The trend towards greater industrial and production automation has clearly been boosted by the need for social distancing and the problem of finding workers during the pandemic. However, the greater the automation, the more the pressure to ensure top efficiency, productivity and return-on-investment for conveyor lines. Very often, the only way to achieve this is to install customized belting to match each application's exact needs.

As the global pioneer of numerous belting innovations for over 75 years, Habasit knows that customized solutions are key to our customers' success. With automation ramping up, timing belts are particularly in focus, including our HabaSYNC® truly endless flex timing belt range.

HabaSYNC flex timing belts are ideal for synchronized parallel and linear conveying, and precise positioning of heavy loads. Manufactured with helically wound cords, they provide double the strength of joined endless belts, and can also be used efficiently in high power transmission applications. Key features include resistance to abrasion, hydrolysis, UV light and ozone, oil and grease, and some acids and caustic solutions.

HabaSYNC flex timing belts are produced from a standard sleeve width of 150 mm / 5.9". But it's our unique slitting lane technology and ability to arrange the cords in the sleeve that ensure exactly customized belt widths.

The result: high-quality belts in the correct width with clean, homogeneous edges. Another benefit

is the option to arrange the cords so that holes can be punched, or screws positioned, precisely where needed.

Several of these customizations appeared in a recent case, when a canning industry OEM requested a 200 mm wide flex timing belt with special thickness tolerances and large diameter holes, using specific slitting lane widths. The belt had to lie flat, be durable, resist regular stamping, and index the product accurately. Furthermore, it needed to be supplied within just eight weeks.

Rising to the challenge, Habasit engineers in three countries coordinated the production of two flex sleeves, arranged longitudinal welding to make the 200 mm width, used water jets to cut the holes, delivered in seven weeks - and received enthusiastic feedback on the belts' superb quality and fast delivery.

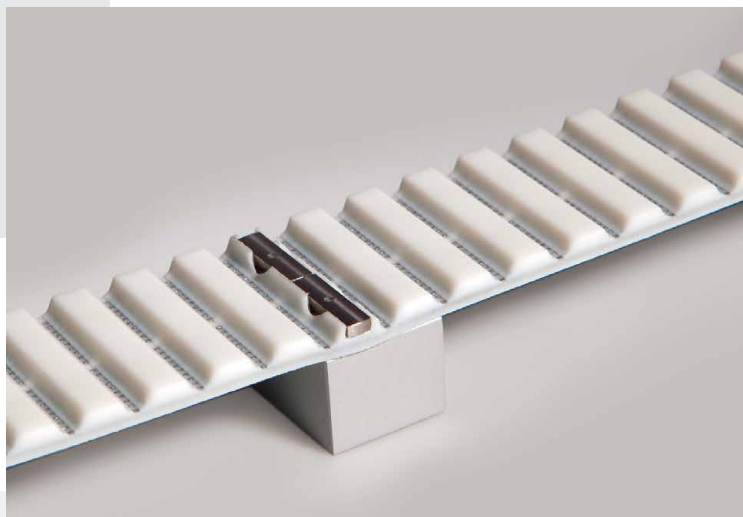
Another case featured very narrow belts of 7 mm width for a beverage industry OEM. The requirement was for FDA-approved belts for a PET preform inspection application using camera scanning, with a non-marking cover, adhesive surface, higher thickness, and dark colour.

Thanks to Habasit's extensive customization capabilities, we delivered these narrow, fully FDA/EU-approved belts with an exclusive, very thin FDA textile on the teeth, on black belts extruded with a high back. The new belts not only eliminated marking on the preforms, the application also ran faster.

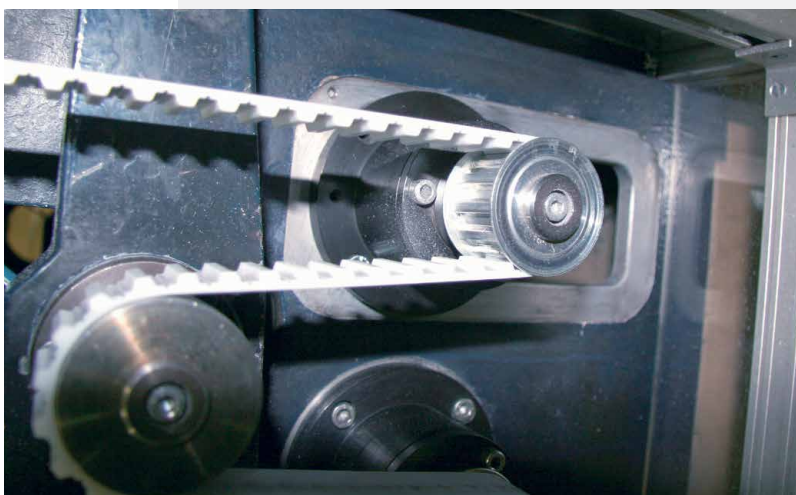
As the above cases show, another unique advantage



+ Choice of over 100 different covers individually processed



+ Unique false teeth design for profile attachments in any shape or amount



+ Strong Flex timing belts with customized slitting lanes

of Habasit's flex timing belts is that for thicker belts, Habasit can extrude TPU during manufacture (to 16 mm). The advantages of extrusion were clearly illustrated when a biscuit manufacturer asked Habasit to replace its welded-cleat packaging lines, which were suffering frequent belt replacements and unscheduled repairs due to cleats breaking off. Our response: FDA-approved monolithic timing belts with precision milled integrated cleats, which delivered five times longer belt lifetimes, lower costs and higher productivity.

When extrusion is not an option, cleats (TPU profiles) can be welded onto the conveying side of a timing belt in any number, shape, or placement. We also offer a unique false teeth design for profile attachments that delivers more robust construction,

greater design flexibility, and better durability than other options available.

HabaSYNC flex timing belts offer 14 pitch designs, six cord options, different TPU materials, multiple colors (including an exclusive white), various cleat options, longitudinal profiles, and advanced fabrication facilities for milling, grinding and perforating. Belts can have friction-reducing, wear-resistant polyamide fabric on the tooth side, which is also available with antistatic properties. With over 100 cover options available, we offer the largest choice on the market. As well as the fastest delivery.

Whatever your challenge, Habasit can create a customized solution to meet it.

- M.E.C.[®] ProfilBelt: A Zeta Gomma excellence in “customised” belts

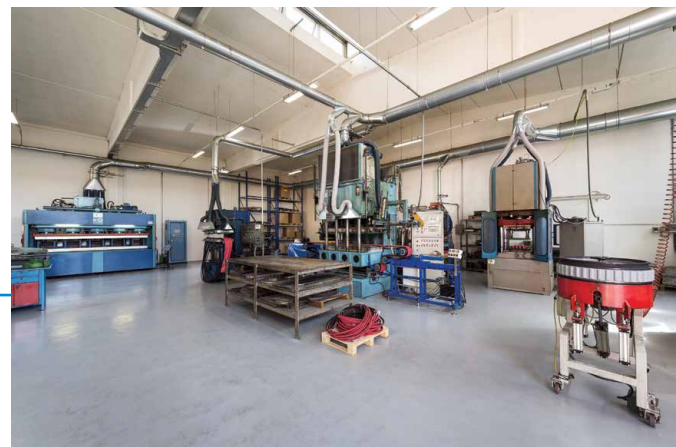


A Zeta Gomma is an international company, established almost 50 years ago in Sassuolo (MO), in the heart of one of Italy's most important industrial areas (for ceramics in particular).

It has a wide range product such as power transmission belts, v-belts, and conveyor belts (in rubber, PVC and PU), as well as thermo-weldable belts, hoses for roller coatings, rubber sheets, moulded products, technical items and equipment for pressing, welding and joining belts. The main features of A Zeta Gomma are the top quality production and the versatility to meet every specific customer need and durability under all conditions of use, even the most severe.

A distinguishing point of A Zeta Gomma's excellence is the M.E.C.® ProfilBelt range, completely customised belts with special rubber coatings.

Thanks to its experience in moulding and a fully equipped internal vulcanising department, A Zeta Gomma is able to create a wide range of coatings in order to adapt the belts to many applications. The coatings differ in terms of the type of rubber, colour and shape, and are perfectly tailored to each customer's requirements.





M.E.C.® ProfilBelt optimise the conveyance of materials on horizontal, sloped, or vertical, and their versatility is due to their production features: endless coatings can be vulcanised with different types of rubber, in different colours and shapes, and with smooth, honeycombed or rhomboidal surfaces which can also be made according to the customer's own specifications. In all conditions of use, M.E.C.® ProfilBelt guarantee maximum strength and reliability, in true A Zeta Gomma style. Particularly for this type of belts the great value to be considered is the free set length, which the M.E.C.® ProfilBelt range ensures at the highest levels, providing a leading service, up with the technological developments of machines in the various applications fields.

The great tensile strength of these high-performance belts is combined with optimal flexibility, to minimise the wear and tear of the machines on which they are used. The belts are customisable in every aspect: from the preliminary consultation to the creation of the design, preparation of the sample and final production, thanks to the know-how of the company's internal technical department. This is possible as a result of the A Zeta Gomma's extensive and comprehensive experience in the vulcanising sector: the company is able to rubber or silicone coatings through truly "endless" vulcanisation, to ensure the highest levels of quality. The hot vulcanised

coating on the belt grants a friction for the maximum grip on the conveyed material. The selection of the raw materials is based on the experience acquired by A Zeta Gomma in its numerous years of belt manufacturing, together with constant input from customers, with whom it has almost daily consultations, leading to continuous improvement of the product.

A Zeta Gomma ensures a large availability of its products thanks to the 20,000 m² of floor space, including commercial headquarters, three production units and one warehouse, with 80,000 items immediately available, in order to ensure high standards of product customisation, industrialisation and distribution. A distinctive feature of A Zeta Gomma is the services it offers to its customers: thanks to the direct in-house production of its own item range, A Zeta Gomma is able to meet all customers' needs, no matter how particular or complex. The services begin with customised design support and are always in line with the customer's requirements and expectations. Thanks to its own specialised staff, A Zeta Gomma is also able to make specific products from drawings supplied by the customer or design them in collaboration with the customer. This ensures that each A Zeta Gomma product offers the highest level of quality, with no margins of error. More information about A Zeta Gomma can be found at www.azetagomma.com.

- PIX

Virtual Experience Centre



PIX Transmissions Ltd. is amongst the most reliable manufacturers in the global Mechanical Power Transmission industry with an extensive range of high-performance V-Belts, Timing Belts, and Poly-V Belts to suit a wide array of Industrial, Agricultural, Automotive, and Recreational applications. This IATF 16949 certified, public limited company features state-of-the-art Belt manufacturing units as well as an ultra-sophisticated, automated Rubber Mixing facility.



PIX

Virtual Experience Center





FASTEST EMERGING MANUFACTURER OF POWER TRANSMISSION BELTS GLOBALLY

Why PIX?

- > **Exceptional reliability**
- > **Extensive product range**
- > **Ultra-modern manufacturing facility including an automated Rubber Mixing Plant**
- > **Compelling performance to price ratio**
- > **Public Limited Company with a proven track record**

ISO 9001:2015

IATF 16949:2016

ISO 14001:2015

ISO 45001:2018



5+
DECADES OF EXPERTISE & EXPERIENCE

120K+
EXTENSIVE PRODUCT RANGE

6
GLOBAL LOCATIONS

100+
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Virtual Experience Centre

We're delighted to announce our brand new PIX Virtual Experience Centre. The virtual experience offers a multitude of benefits and is something we will continue to develop and use in parallel for our marketing and sales activities. The interactive aspect of the PIX Virtual Experience Centre could serve as a basic platform for a lot of activities including 3D animated views of our belts, online meetings, online chat, testimonials, presentations/training seminars, podcasts, product launches, demos etc. regardless of time zone or location.

Features

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- A broad selection of all key PIX products
- Empowered by stunning 3D replicas of PIX Belts

- Digital library segment combining multiple levels of content
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- Link : www.pixtrans.com/vec.php

PIX is driven to provide power transmission solutions by developing and delivering an extensive range of products with a compelling performance to price ratio, backed up with unmatched customer care, by following best industry practices, robust processes and sound business ethics.

For more information on the products & channel partners please write to us at info@pixtrans.com or visit our website www.pixrans.com

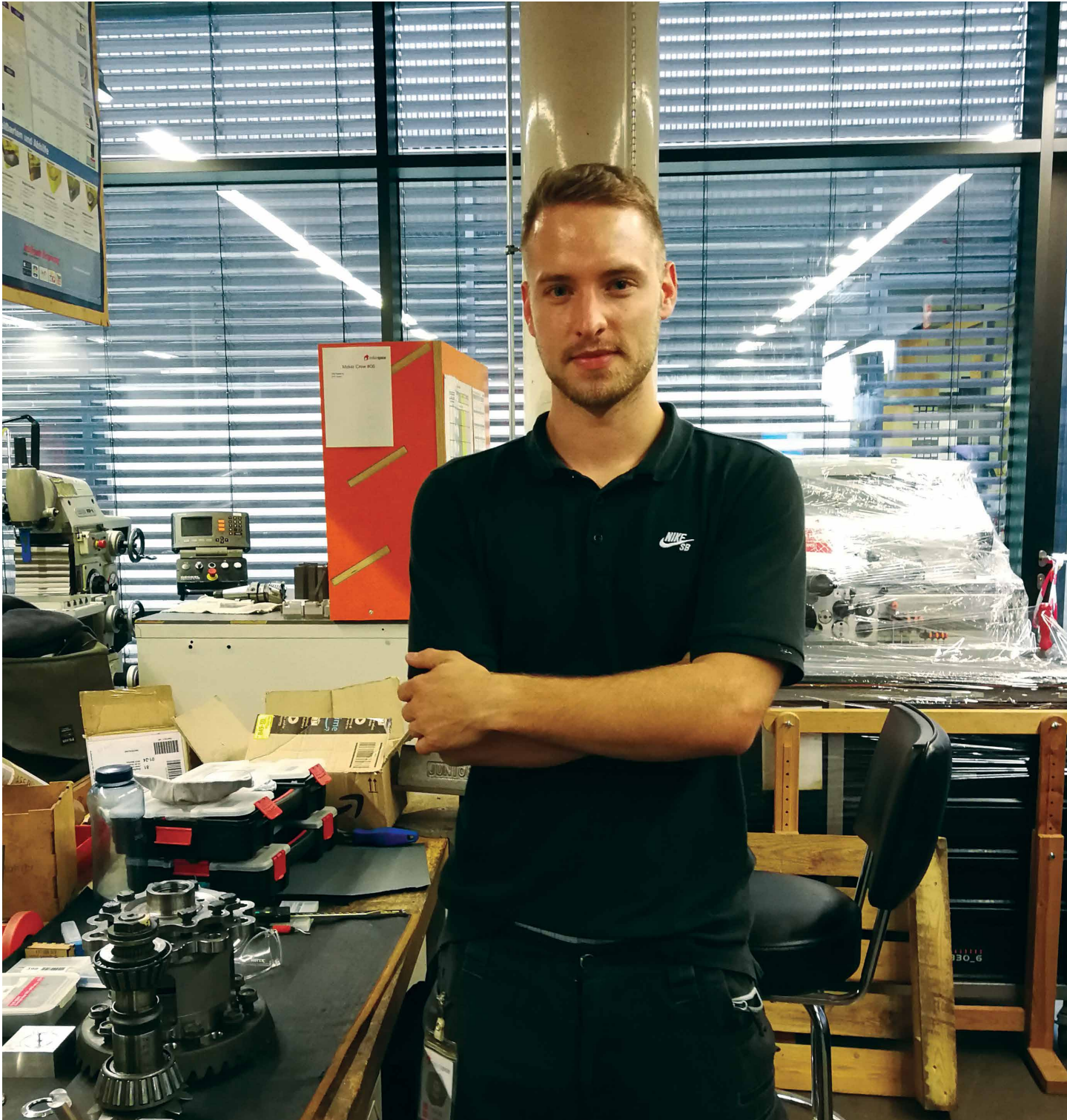
— **Student, start-up founder and motorsports enthusiast:** Jonas Lang explains how adhesives contribute to making his racing parts safer and lighter

Author: Corinna Götz, Market & Customer Activation



An idea that sparks creativity. Experimenting. Assembling. The frustration of failure. Finding new ways and trying again. The feeling of euphoria when your vision has finally come into fruition as a functioning prototype. Jonas Lang is familiar with every step of this process.

He is a student – and has founded a start-up. At the German MakerSpace prototype workshop, at the Technical University of Munich, he refines new designs and products, finds inspiration, and exchanges experiences with other members of the workshop.



Jonas Lang

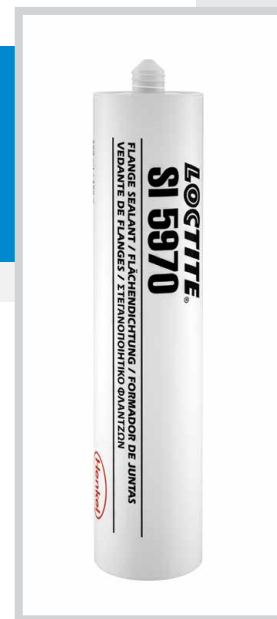
We met him there to talk about his start-up Saltgrain Racing and to find out how adhesives have helped him to implement changes in racing technology as well as developing his first watches.



+ Henkel Loctite 270 50ml Bottle



+ Henkel Loctite 648 50ml Bottle



+ Henkel Loctite SI 5970 Flange Sealant 300ml EMEA

Jonas, could you start by telling us a little bit about yourself? What do you do and how did you come up with the ideas for your products?

Jonas Lang: I have been studying electrical engineering at the Technical University of Munich since March of 2020. Before that, I worked in the department of body material development for a car manufacturer. I have also been a motorsports enthusiast for a long time. Sometimes I participate in racing events as a co-driver. What I find even more interesting, however, is what happens inside a sports car during a race. I started tinkering with gearboxes, trying to optimize components so that they can withstand high pressures while reducing their weight at the same time. At first, I just redesigned and adapted the racing cars of friends and acquaintances. But I enjoyed that so much that I recently registered a business to be able to turn this hobby into a career. Together, with a former colleague of mine, I also work on developing watches.

You design and implement many prototypes here at the MakerSpace prototype workshop. How did you find out about the MakerSpace?

Jonas Lang: I first came to MakerSpace when I was still working at my former job. That was the year before last. I came in to use the water jet cutter for cutting parts. That's how I discovered the prototype workshop. Since then, I've been coming here as often as possible – to test new ideas and refine my prototypes. The MakerSpace is the ideal

place for this purpose: I have any instrument and tool that I would need at my disposal, I can participate in training courses on how to use the various devices available here and I can meet lots of like-minded people with whom I can exchange experiences and tips. It's the ideal place for trial and error. You go through all kinds of feelings here. It can be frustrating when things go wrong or when you've destroyed something yourself, which then may even result in a setback for your entire project. However, when you do finally succeed and when you see that you've made it and your prototype works, all the setbacks are forgotten.

What are your current projects?

Jonas Lang: Last year, I opened an online shop where I sell motorsports parts that I've developed myself. People can go to the shop to buy hydraulic hand brakes, for example. I continuously refine these parts with the aim of making them as lightweight as possible in order to further optimize the speed of the cars. I use adhesives in various places such as retaining compounds for securing ball bearings. Adhesives are the best choice for joining parts in many applications, for example when the seat of a bearing is outside the tolerance range. Another example would be securing angular ball bearings that, due to their construction, cannot be press-fitted into place without changing their bias and that cannot be clamped – for example when making shift paths shorter. I also use liquid threadlockers for securing plastic threaded joints of the ring gear to the differential gear or for securing the cover to the multiple-disc LSD.



+ Henkel Loctite AA 3491 Light Cure Adhesive 25ml EMEA



How did you come up with the idea of using adhesives for your applications?

Jonas Lang: My first contact to Henkel and Loctite goes back to my time at Formula Student. Henkel had a booth at a race where I was able take a look at Henkel's range of adhesives and sealants. I have to admit that I was sceptical at first because I didn't believe that adhesive connections would be able to withstand high pressure. A friend of mine eventually convinced me to give it a try and it turned out to be the best solution. We used mainly Loctite retaining compounds and threadlockers in the Formula Student racing cars. I still use these adhesives for the products I develop today.

You said that you use adhesives in your products. How did adhesives help you to overcome the challenges that you were faced with?

Jonas Lang: Safety is the most important challenge in connection with the gearbox: the screws must never come loose. That's why I use high-strength threadlockers. The ball bearings in the gearbox have to be secured in a very tight space. We also have to join different materials in the gearbox – aluminium on the outside, steel on the inside. The joint needs to be reliable, but it's not possible to press-fit the ball bearing, as it's an angular ball bearing. As the space available is limited, it was not possible to use other joining

techniques. The only useful solution for securing the components to one another was the use of adhesives.

Recently, I also started developing watches together with a friend of mine. Using adhesives for securing the glass to the bezel and the bottom of the case has allowed us to meet our design requirements. We use Loctite's UV adhesive since it's resistant to yellowing caused by sunlight.

It sounds as if your work involves interesting challenges and exciting solutions. What are your future plans?

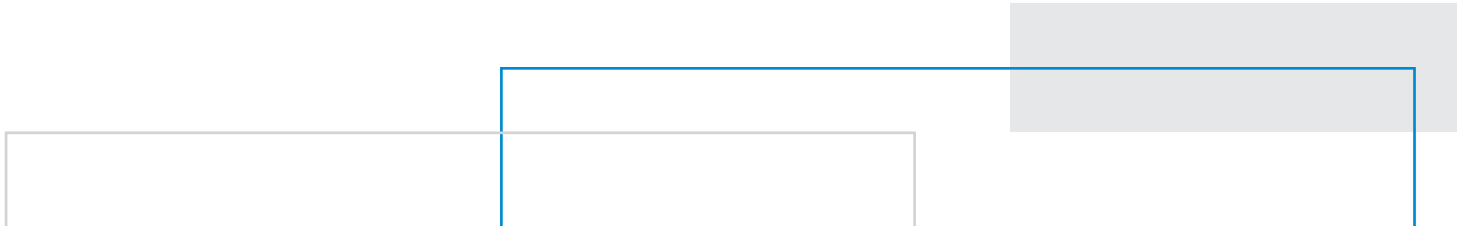
Jonas Lang: Well, I have many plans. I want to further develop our watch production and expand my product portfolio in the racing field. I also want to expand my online shop for motorsports parts and improve my online presence. Another top priority on my to-do list is completing my studies. And then I just want to continue doing what I'm doing now: trying new things, failing, learning my lessons and getting better in what I do.

We want to thank Jonas Lang for sharing his experience and for the great conversation. For more information on Saltgrain Racing and LOCTITE products used by Jonas Lang, you can visit the following websites www.saltgrainracing.com and www.henkel-adhesives.com

- Digital Transformation & Lean Thinking

How to avoid digital muda

+ + + + +



In recent years, considering digitalisation as part of business strategy has enabled organizations around the world to revamp their business models. The application of new digital technologies has produced extraordinary results in a short time, generating integration both at a vertical level, i.e. in the relationship between man and machine, and at a horizontal level, i.e. in the supply chain.

Alongside stories of success, there are many realities in which the challenge of digitisation clashes with a cultural approach which is closed to the re-engineering of processes (not only production processes) in order to maximize the value generation. These are realities in which the traditional approach by functions, i.e. by single operation instead of the whole process, leads to management aberrations with disproportionate times of processes crossing, ineffective communication, late feedback, low staff motivation and related sense of frustration.

What is Lean Thinking

Lean Thinking is an operational strategy aimed at increasing efficiency and eliminating waste in processes. Initially born in Japan in the automotive sector in the first half of the last century thanks to the revolutionary approach of Taiichi Ohno, it is now universally recognized as valid for the most diversified sectors and areas. The five simple application principles which it is based on are as follows:

1. **Value** (i.e. identification of the value offered to the customer, fighting the muda - i.e. waste - that lurks in processes)
2. **Value stream** (i.e. mapping of the value flow, in a systemic processes vision)
3. **Flow** (i.e. to make the stream to flow, giving visibility and organicity to the entire business process)
4. **Pull** (i.e. to bind supply "tightly" with demand)
5. **Perfection** (to strive for perfection to achieve excellence)

The Lean Thinking toolbox consists of a series of methodologies developed over the years to facilitate

the implementation of solutions based on the above principles. These include the 5S (in order to optimize work standards), **TPM** (Total Preventive Maintenance, aimed at maintaining high machinery and systems operating efficiency), **kanban** (as a method of implementing a pull-type logic in the supply chain) or **kaizen** (for the continuous and gradual improvement of a specific activity), just to name a few.

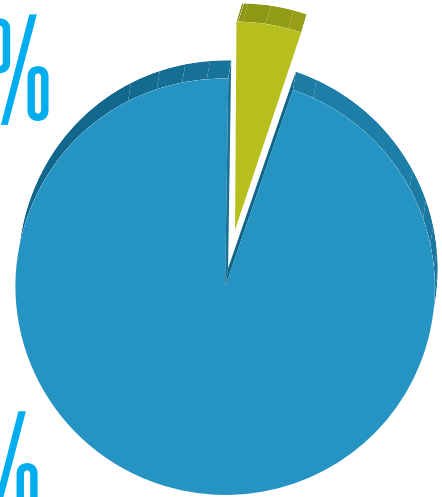
Among these tools, the most powerful is probably represented by **Value Stream Mapping**, that is a method of graphically displaying the value chain of a certain process. Mapping graphically all the operations and activities which contribute to the realization of a product or a service, you can highlight those phases which generate value for the customer (ie "something" for which the customer is willing to pay) and those that create a pure waste, the muda precisely (e.g. excess production, waiting times, transport, inventory, underutilization of resources, etc..). The analysis of the current map of value allows to identify opportunities for improvement and to redesign the future map of value creation, intervening in an organic way on the entire flow and not on the single slice of the process.

Lean Manufacturing



Value Added **5%**

Non Value Added **95%**



VSM allows to focus on the whole flow instead of on the single operation/activity, to understand the real bottleneck of each process (i.e. the slowest operation which affects the whole sequence), to reduce lead-time and to improve the use of resources. It is therefore evident the potential of this tool in the re-engineering of processes.

Digital & Lean Transformation

The combination of lean thinking and the 4.0 digital revolution can allow the manufacturing world to recover a strong efficiency and competitiveness, avoiding “wastes digitising”. In other words, if it is true that digitisation is to be considered a strategic imperative for all companies in order to continue to compete in an industrial world in continuous and rapid evolution, on the other hand it must be considered that, if it is not carried out within a broader framework of application of the principles of lean thinking, it ends up emphasizing waste and inefficiencies in processes. Here are some examples of a “one-size-fits-all approach” to digitization that can only result in an increase in waste (in this case, we talk about **digital muda**):

1. Are your business processes not working?

Let's change the ERP (Enterprise Resources Planning) management system to manage day-to-day activities such as accounting,

purchasing, logistics, etc.;

2. **Is the level of products in the warehouse high?** Let's buy the latest version of the automated vertical warehouse;
3. **Are the machines in plant not efficient?** Let's introduce a Manufacturing Execution System (MES) and collaborative robots into production.
4. **Are customers unsatisfied with the level of service?** Purchase a CRM (Customer Relationship management) to improve your relationship management with them.

In reality, technology alone will not solve these problems. **Digitilising must mean to accelerate what we already know how to do** and, in this sense, **the principles of Lean Thinking are the enabling system of the Digital Transformation**, to allow us to move from traditional industry to the smart factory.

Defining digital and lean business transformation means instead:

- To analyze the current business process value chain;
- To identify pockets of inefficiency in terms of activities with no or little value creation;
- To redefine the flow in order to maximize value creation, make processes more efficient, faster and more flexible and to improve the active and proactive involvement of human resources;



- To identify the enabling technologies functional to the implementation of the new value strategy and to graft them onto powerful processes that serve the business and customer value;
- To define and implement an organic improvement plan, with short, medium and long-term activities.

All this must be inserted into a context of stable and powerful processes (i.e. with defined and complete operating standards) and **open-mindedness to change** (and to the sacrifice that, inevitably, any real structural change entails in the transition phase) on the part of the entire company, but first and foremost on the part of the ownership and top management.

The benefits of such an approach for companies are many:

- **Faster processes**, i.e. reduced lead-times, thus greater operational flexibility;
- **Productivity improvement of the employed resources** (concerned as the ratio of value created for the customer to the factor used), for example of labour rather than financial resources or tangible assets;
- **Reduction of fixed assets** and obsolescence risks;
- **Faster reaction times** to deviations;
- **Improved customer service**;
- Increased staff **satisfaction and motivation**.

It is a fact that companies that have embraced such a digital and lean approach are able to show a better return on invested capital and a better ratio of net financial position to EBITDA. In other words, they are more efficient, more profitable and equipped for the challenges of the future.

ICT proposal

ICT has a **professionals team** able to support the client company in the re-engineering of its own processes in a lean and digital perspective, with the objective of improving the company performances combining Lean Thinking and Process Digitisation.

The innovation management, the knowledge of the technological opportunities and of the enabling

solutions in view of **Industry 4.0**, the know-how of the Lean Thinking tools and the ability of an organic and medium-long term approach to the company vision are the main competences that ICT puts at its clients' disposal.

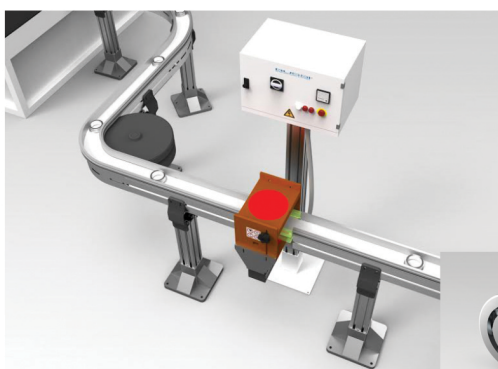
Here are some examples of activities that ICT deals with in this field, in cooperation with its partner company Gruppo 2G S.p.A. (www.gruppo2g.com):

- Critical review of the value chain through the Value Stream Mapping methodology, within a Gap Analysis activity lasting from 2 to 5 days (depending on the size and complexity of the company or of the single process analysed) aimed at identifying areas of improvement, defining a hierarchy of recommended interventions and the relative action plan;
- Flows reorganization and optimization of the same also by means of enabling technologies such as Blockchain, Cyber Security, Internet of Things, Big Data & Analytics as well as the revision of ERP and MES systems in lean key;
- Analysis and review of the business model, design of a strategy for continuous improvement also based on digital and accompaniment in its implementation;
- Staff training in digital and lean techniques, with classroom courses and practical application exercises on concrete problems. Among the courses offered are:

- + Digital transformation in the manufacturing sector
- + Industrial Internet of Things
- + Cloud Computing
- + Big Data & Analytics
- + Blockchain & Smart Contracts
- + Information Security
- + Basic principles of Lean Thinking
- + Lean Supply Chain
- + Value Stream Mapping Methodology
- + Kanban, Pull System and "One Piece Flow"

For more information about these topics, please get in touch with us calling at +39 (0)121 376811 or writing to info@consulting-trading.com

EXTEND BEARING LIFE WITH BUSSI ELECTRONIC DEMAGNETIZERS



During the manufacturing process, the demagnetization, as magnetic pre-washing, is the optimal preparation for the bearing components cleanliness.

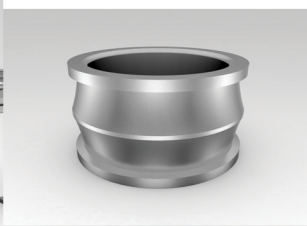
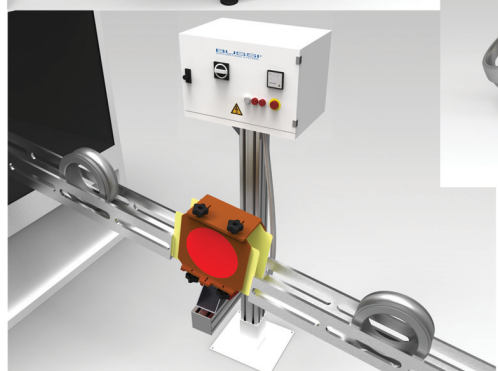
Bussi Demagnetizers prevent from friction, limited fluency, early wear and reduced life of the bearings.



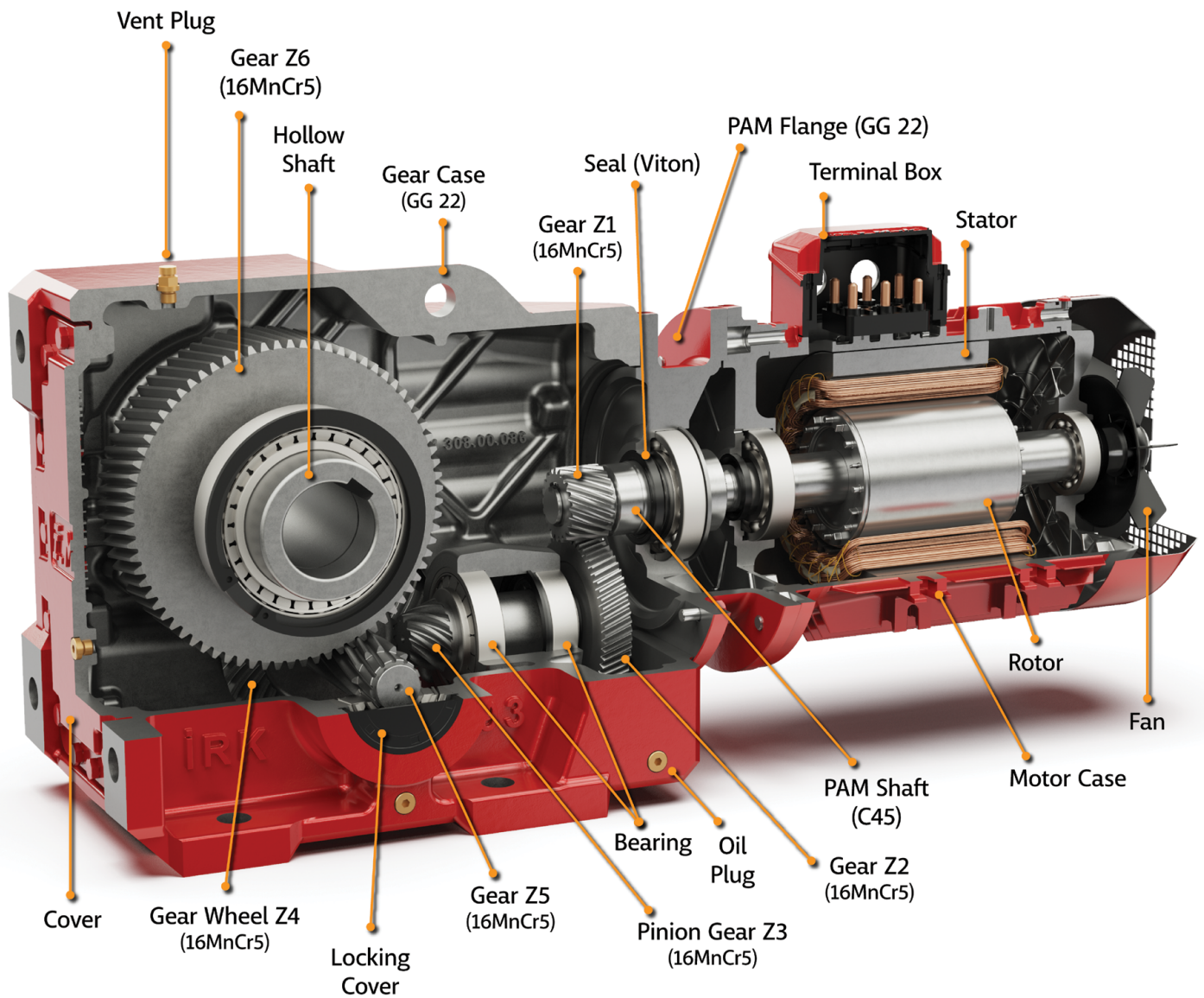
DISCOVER OUR SOLUTIONS DEDICATED TO THE BEARING INDUSTRY

DISCOVER BUSSI DEMAGNETIZERS KEY TECHNICAL ADVANTAGES:

- MINIMUM RESIDUAL MAGNETISM
- MINIMUM ENERGY CONSUMPTION
- HIGH DEMAGNETIZING VALUES REPEATABILITY
- EASY PARTS TRANSFER WITH NO MAGNETIC RETENTION
- EASY IN PROCESS INTEGRATION WITH I/O INTERFACE
- STANDARD A DEDICATED SOLUTION DESIGN
- HIGHLY DURABLE INVESTMENT



HELICAL BEVEL GEAR UNITS



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- Torque Range 160 Nm - 18000 Nm
- Power Range 0,12 kW - 200 kW



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DRIVES**

**HYBRID
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Date : January – December 2022

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