

# Romax

ACCELERATES INNOVATION TO COMBAT CLIMATE CHANGE  
MIRELLE BALL, ROMAX TECHNOLOGY

Climate change and the ongoing effects of CO<sub>2</sub> on our environment is a hot topic with good reason. Opinions as to the magnitude and the immediacy of the climate crisis may vary, as do the solutions, but the acceptance of man-made climate change being due to CO<sub>2</sub>, and the need for action, is near universal.

Many companies are signalling their commitment to reducing climate change. However, closer inspection will reveal who is really committed to making a material change to our society. Romax Technology is proud to have contributed in many ways and across many industries to global material reductions in CO<sub>2</sub> emissions. We believe that the answer to tackling this issue is in collaborating, sharing, innovating and adopting new technologies and applying this approach globally.

Whether it is for the generation of energy to power society or the consumption of energy for personal or public transport, the 'engineering of energy' always returns to a familiar theme — rotating machines. It can be the gearbox and generator that sit behind the blades in a wind turbine, the gearbox and motor which drive an electric vehicle, or the super-advanced aero engine power gearbox which has the potential to achieve a step-change in the energy efficiency of commercial air-travel. Rotating machines, and the optimization of their performance, is central to industry's fight against global warming.

For over 30 years Romax has been assisting the industry in optimizing the performance of these machines. Our ethos is built on creating next generation innovation that supports businesses optimising the manufacturing of drive systems/propulsions, and in doing it Right First Time with an aim that by doing so we are enabling design and developers.

Over our business' lifetime we have been committed to our collaboration with leading industrial companies globally through the supply of advanced technology for performance improvement. We don't just consider the design and development process and its impact on optimizing faster-designs-to-market. We work on creating holistic design solutions that are; eco-savvy, consider the designers creating them, work within a CAE community, adhere to safety and quality measures and are efficient, whilst reducing CO<sub>2</sub>.

We believe the encouragement of more efficient practices enables a greater transfer of zero emissions electric vehicle capability worldwide, solutions offered through our eDrive Design Centre.

Emission-free generation of electricity is important for EVs to be truly 'green', and for the electricity to also come from a 'green' source or with consideration of how it gets converted. Our approach to EV design is multi-faceted. We combine our engineering capability on both mechanical and electrical aspects with our patents for hybrid powertrains,

holistic approaches to reducing the noise in addition to other considerations to create a more accessible and desirable EV that is designed to increase up take in society.

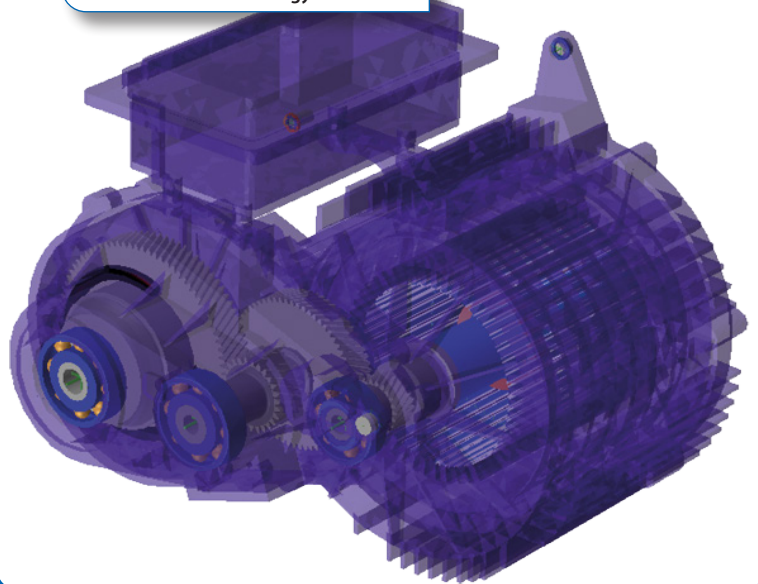
In parallel we also consider the socio-economic and political environment we live in, from our day-to-day living to how CO<sub>2</sub> reduction is set within global initiatives such as the UK Governments' 'Road to Zero Strategy' - the Government's ambition for at least half of new cars to be ultra-low emission by 2030.

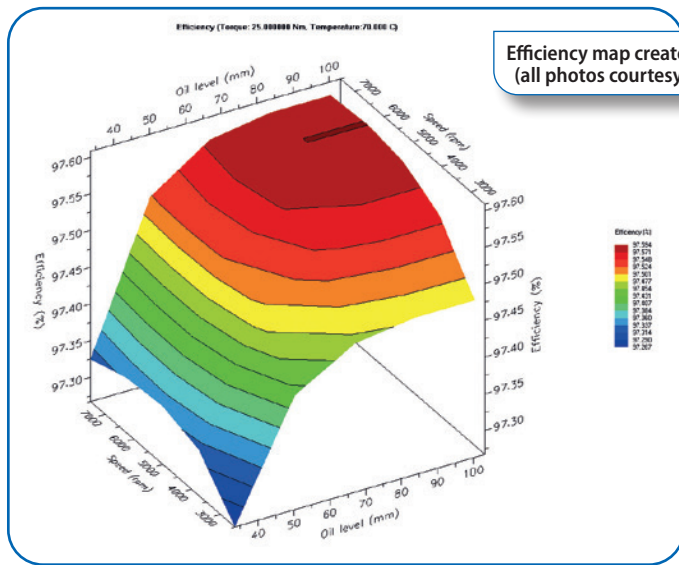
Romax is doing its bit to actively support ambitious targets through combining its practical engineering expertise across all sectors and aligning this with its software creation and unique ability to understand both mechanical and electrical systems. Across the industries, we have been working with the greater aim of increasing efficiency in mind.

In the automotive industry we have been actively supporting technology transfer as traditional engines convert to hybrid and all-electric vehicles, through optimised design and development for over thirty years. In fact, Romax software and engineering experts have had a huge impact in this sector having supported the design and development for over 70% of cars worldwide. We have patent applications looking at improving electric vehicle noise, and hybrid design in addition to improving the efficiency of drivelines.

Streamlining the design and development process with our software had led to more efficient powertrains that produce less CO<sub>2</sub>. Some of our projects have seen huge benefits, for example, we have redesigned the gears of a production electric vehicle gearbox with a 20% efficiency improvement confirmed in testing. Another of our project has seen a 2% improvement in the overall efficiency achieved, and an ETI (Energy Technologies Institute) project which reduced power losses in the axle by 60%.

An electromechanical system modelled in Romax Energy software.





Efficiency map created in Romax Energy (all photos courtesy of Romax).

In recent years, using our IET award-winning understanding of electrical systems and their interactions with mechanical drive systems has led to the development of our eDrives business and the development of our software which have been pivotal in the creation of a new wave of electric vehicles including cars, buses, vans and tractors.

At the pinnacle of this activity and in addition to our expertise, Romax has recently launched Romax Energy, a global efficiency prediction tool for electro-mechanical transmissions. An efficiency software product, Romax Energy offers the ability to quickly generate efficiency maps, and accurately calculate fuel consumption and CO<sub>2</sub> emissions.

Encompassing advanced tribological models and backed-up by continuous internal R&D efforts, Romax Energy empowers users with advanced methods to predict transmission power losses and pinpoint where improvements can be made to optimize efficiency performance.

Numerous customer projects have proven that Romax's efficiency simulation methods and tools can improve powertrain efficiency and reduce fuel consumption and emissions. Romax Energy works with the rest of the Romax Nexus family of products, enabling collaboration across multi-disciplinary engineering functions.

In the wind industry we have made an impact in the development of bearings and drivetrain technology for wind turbines, both on shore and offshore. Our focus in the wind industry was to increase gearbox and bearing reliability to extend the life of the components and provide technological solutions. Within this we created software capability to monitor the wind turbines effectiveness and provide detailed durability analysis to those OEMs operating and maintaining them. This resulted in operators being able to use this analysis to plan and even schedule in maintenance on multiple turbines and look closely at the components reliability which saved millions in time, transport and component costs.

Back in 2008, there were major concerns that the UK wouldn't meet the renewable energy targets set for 2020. 10-15 years on from the explosion of onshore and offshore wind turbine development, we have seen an actual improvement in the design methods due to our role in providing a

better understanding of the reliability of drivetrains. Romax' software simulated what was happening inside the drivetrain and provided an emerging industry with accessibility to understand the constraints, bring about innovations and make huge reliability improvements. Such improvements have paved the way for a transformation in the outlook for electricity generation. In addition, Romax analysis services have been used by over 8 GW of assets (wind turbines). This is akin to powering 16.7 million homes in the UK for a year.

Much of its ability to provide such leading innovation comes from the business' investment in its technology advancement which has always been a key part of Romax. Last year alone Romax invested £3.7 million in its Research and New Product Development with a dedicated team of people who work globally with partners on Romax-led or as part of collaborative projects to develop new technologies. This is in addition to a product development team who take the ideas from research to fruition.

In the aerospace industry, airlines have a challenge on their hands to remain acceptable to younger generations as a result of the emergence of 'flight shaming' and the realisation that air travel emits far more CO<sub>2</sub> per passenger km than other forms of travel. The aerospace industry must change, and is changing, with assistance from Romax.

Here, Romax is using its understanding of holistically considered electric and mechanical drive systems to create changes in technology that will benefit future generations through the innovation of electric aircraft and ultra-light — efficient aeroplanes.

Our projects have included working on the design and development of next generation Geared Turbofans where the industry has plans to reduce CO<sub>2</sub> by as much as 25% when compared to current aircraft engines.

Our expert engineers understand the importance of applying safe, quality-controlled parameters to our design work when considering the development goals for the next generation of propulsion systems.

We believe that in the same way as setting an annual CSR strategy, considering the fundamentals of our place, the global ambitions and the environmental impact we have on the world, or our contribution to reducing CO<sub>2</sub>, is key.

Without the combination of sharing, partnering and collaboration in technology advancement we cannot change the world in which we live for the better. One small cog within a whole gearbox, we strive to work with others collaboratively, to come together in powering this type of change, to showcase the importance of sustainable engineering in everyday life, as part of the company's values to engineer a better world by creating new industry standards. ([www.romaxtech.com](http://www.romaxtech.com))

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# Altra Industrial Motion

LAUNCHES EXPANDED VIRTUAL TRADE SHOW

Altra has recently extended the scope and functionality of its virtual exhibit. The immersive and interactive trade show environment provides visitors around the world with convenient 24/7 access to browse the extensive portfolio of motion control and power transmission products offered by Altra's 27 global brands.



Visitors can quickly and easily navigate through the intuitive virtual exhibit area by clicking on various primary hotspots, including clutches & brakes, couplings, gearing, automation & specialty, PT components, brand websites and a media tower.

Interactive product category kiosks are located within each major section of the exhibit. Users can select specific Altra brands on each kiosk which reveal a series of product family hotspots that link to specific product screens where related literature pdfs can be downloaded. The media tower features links to various videos as well as the Altra literature portal. ([www.altraex.com](http://www.altraex.com))

## Motion Industries

NAMES PACER TO VICE PRESIDENT – CENTRAL GROUP

Motion Industries, Inc. has named **Chris Pacer** to vice president of the company's Central Group — effective January 1, 2020.

A graduate of the University of Toledo with a bachelor's degree in engineering technology (electrical and electronics engineering, 1994), Pacer has more than 24 years of experience within the industry. He has spent the last 22 years with Motion Industries, which were dedicated to various key roles throughout the organization.

Pacer joined Motion Industries as a certified fluid power specialist in 1997, working his way up to branch manager throughout the various markets within Northern Ohio. He then joined the company's Corporate Accounts Team in 2011, before being promoted to his latest position of Detroit Division vice president and general manager in 2014. In that role, Pacer was responsible for the further development and overall growth of 22 branch operations and one service center, creating a positive experience for customers through a



multi-faceted approach to strategic value.

Pacer will report to Mark Stoneburner, Motion Industries senior vice president Eastern Sales & Branch Operations, Mergers & Acquisitions.

"Chris's experience and drive will provide the perfect foundation for his next challenge of leading the Central Group to success," said Stoneburner. "The promotion is well-deserved and we are excited to see him start this new decade in a new leadership role."

Motion Industries President, Randy Breaux, said, "I'm very proud of Chris and his accomplishments to date. Over the years, Chris's acumen for the business, dedication to success, and persistent drive for superior customer service makes him the right person to fill this leadership role. I look forward to seeing accelerated growth and success for the Central Group under his direction." ([motionindustries.com](http://motionindustries.com))

## Siemens Digital Industries Software

PARTNERS WITH ARM ON AUTOMOTIVE TECHNOLOGY

Siemens Digital Industries Software has announced a partnership with global semiconductor IP leader Arm, that will bring leading edge IP, methodologies, processes and tools together to help automakers, integrators and suppliers collaborate, design and bring to market their next-generation platforms much faster. This partnership was formed to address the increasingly complex challenges facing the industry in developing platforms to realize active-safety, advanced driver assistance, in-vehicle infotainment, digital cockpits, vehicle-to-vehicle/vehicle-to-infrastructure and self-driving vehicles. Key advances in computing and sensor technology are enabling companies to redefine mobility beginning with the integrated circuits and software within automotive electronics systems. The combination of Siemens' and Arm's innovative technologies can help automakers and suppliers deliver tomorrow's electronic design and automotive solutions, today.

Siemens' PAVE360 digital twin environment, featuring Arm IP, applies high-fidelity modeling techniques from sensors and ICs to vehicle dynamics and the environment within which a vehicle operates. Using Arm IP, including



Arm Automotive Enhanced (AE) products with functional safety support, digital twin models can run entire software stacks providing early metrics of power and performance while operating in the context of a high-fidelity model of the vehicle and its environment, helping deliver a new future of mobility.

“Developing future transportation solutions requires collaboration across complex ecosystems,” said Dipti Vachani, senior vice president and general manager, Automotive and IoT Line of Business, Arm. “Arm technology has been deployed in applications across the whole vehicle for more than two decades, and our collaboration with Siemens redefines what is possible in terms of safety-capable, scalable heterogeneous compute. We see this as an important catalyst for the next wave of automotive semiconductor innovation.”

Using Siemens’ PAVE360 with Arm automotive IP, automakers and suppliers can simulate and verify sub-system and system on chip (SoC) designs, and better understand how they perform within a vehicle design from the silicon level up, long before the vehicle is built. Arm’s automotive IP is helping to democratize the ability to create safety-enabled silicon, bringing it within reach of the entire automotive supply chain. By rethinking IC design for the automotive industry, manufacturers can consolidate electronic control units (ECUs), leading to thousands of dollars in savings per vehicle by reducing the number of circuit boards and meters of wire within the vehicle design. This in turn reduces vehicle weight which can promote longer range electric vehicles.

“In all we do at Siemens, our goal is to provide transportation companies and suppliers the most comprehensive digital twin solutions, from the design and development of semiconductors, to advanced manufacturing and deployment of vehicles and services within cities,” said Tony Hemmelgarn, president and CEO at Siemens Digital Industries Software. “Siemens believes collaboration with Arm is a win for the entire industry. Carmakers, their suppliers, and IC design companies all can benefit from the collaboration, new methodologies and insight now sparking new innovations.” ([www.su.siemens.com](http://www.su.siemens.com))

## Dana

### OPENS LOUISIANA GEARBOX REPAIR AND SERVICE CENTER

Dana Incorporated has announced that it has opened the doors to a nearly 32,000 square-foot (3,000 square-meter) facility in Slidell, Louisiana, for the repair, service, and assembly of industrial gearboxes, including the ability to custom-make gears up to 6.5 feet (2 meters).

Located in the Fremaux Park development, the new facility replaces the company’s current operations in Slidell, offering a larger footprint to meet the growing demand for industrial gearbox service, repair, and refurbishment. Dana has also invested in gear grinding and hobbing equipment and skilled personnel to increase the ability to quickly turn-around gearboxes for customers.

In addition to the facility in Slidell, Dana has 26 service



and assembly centers around the world that provide custom solutions for gearboxes used in a variety of applications such as mining, steel and metal, pulp and paper, power generation, food processing, marine, cement, wind power, water treatment and much more.

“The additional square footage in this new facility combined with the increased ability to rapidly make gears gives Dana the capacity we need to further support our industrial gearbox customers who come to us for custom, highly engineered solutions,” said Aziz Aghili, president of Dana’s off-highway drive and motion technologies. “Dana’s service and assembly centers provide critical support for our global customers throughout the lifecycle of their machinery, whether they’re building something completely new for a one-off application or maintaining current equipment to ensure maximum performance and uptime.”

With the expanded capabilities in this facility, Dana in Slidell now offers customized open-gearing solutions for

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multiple applications, as well as drop-in replacements gearing and full assemblies for obsolete units. From upgrading customer gearboxes to increasing the quality and capacity, Dana's service and assembly centers are equipped to address each of the challenges faced by its customers, including updating legacy products.

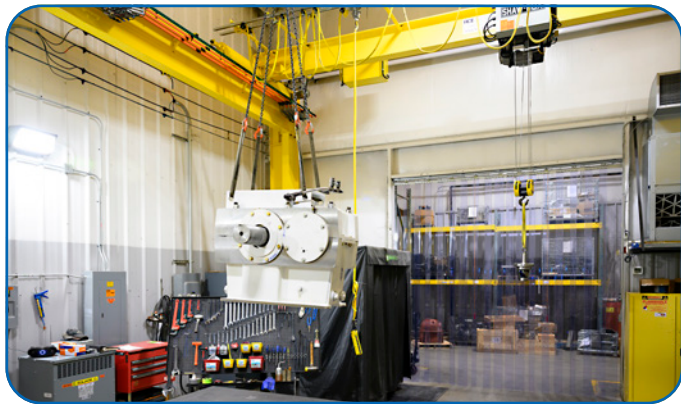
Within its global network, Dana has an extensive inventory of service components, including bearings, seals, shafts, and gearing for its original-equipment brands – Brevini and PIV. The company also provides repair services for a broad range of industrial gearbox brands ranging from small applications to large, 40,000-pound (18,000-kg) industrial gearboxes.

In addition to its service and repair capabilities, Dana partners with customers to offer on-site maintenance training to its to address the importance of maintaining equipment to extend the life of the gearbox. ([dana.com](http://dana.com))

## Timken

### EXPANDS MANUFACTURING CAPABILITY OF SOUTHWEST REGIONAL GEAR REPAIR FACILITY

The Timken Company has announced that renovations are complete and new services operational at the Philadelphia Gear Southeast Regional gear repair facility in Birmingham, Ala. The project includes an isolated assembly bay, the addition of a retractable paint booth and a large industrial parts washer, all designed to facilitate a "clean assembly" environment. "We evaluated our operation from the ground up," said Jay Alexander, manager of the Philadelphia Gear manufacturing and service center. "Our renovated facility is streamlined to simplify production and improve efficiency, and more importantly, expand our service offering."



The newly renovated assembly bay features 3,500 square feet of isolated assembly space, new floors and a crane system capable of handling up to 5-tons. The portable, retractable paint booth includes an integrated air filtration system that can expand to 400 square feet to accommodate all sizes of gearboxes. The paint booth addition is an environmental and quality improvement in the painting process. The other major investment was a large industrial parts washer that can hold gearboxes and components up to 7,000 lbs. It features a 72-inch turntable, 150 psi of washing pressure and 180 degree washing temperature. This unit will reduce cleaning time by four hours per gearbox over manual methods

and eliminate the need for outsourced sand or bead blasting. "We're excited about the improvements in our Birmingham location," said Alexander. "This upgrade will fill a niche in the paper mill industry and provide even better, "cleaner" services for customers across all markets. We are committed to our goal of becoming the trusted, full-service advisor for gearbox repair and service in the Southeast." ([www.timken.com](http://www.timken.com))

## Velodyne Lidar

### ANNOUNCES NEW CHIEF TECHNOLOGY OFFICER

Velodyne Lidar, Inc. announced **Mathew Rekow** as its new chief technology officer (CTO). Rekow assumes the CTO role following Anand Gopalan, who was recently named Velodyne's chief executive officer (CEO). As CTO, Rekow leads Velodyne's customer-focused advanced research and development team. The group designs state-of-the-art lidar solutions for high performance, cost optimization and high-volume production to address a wide range of market needs. Since joining the company in 2015, he has had a significant impact on Velodyne engineering and solution success, including the development of lidar products, such as the Alpha Prime, Vellarray, Velabit and VelaDome.



Rekow was previously a senior director of optical engineering at Velodyne. With 30 years of experience in the development of macro and micro optical systems, semiconductor lasers and detectors, Rekow has proven an effective engineering team and project leader, building and fostering a dynamic research team. Rekow is an accomplished engineer whose work has contributed to numerous U.S. and European patents and successful commercial products and processes. He has written numerous technical articles for leading industry publications.

"Mathew is passionate about addressing customer needs and driving innovation in advanced, cost-effective lidar technology," said Gopalan. "He has been a powerful asset to Velodyne in developing game-changing lidar solutions that help our customers bring to market new products with greater autonomy and safety. Mathew is an outstanding engineering team leader who will guide us in continuing to develop outstanding products and managing a great technical team recognized for invention and growth opportunities."

"As CTO, I will ensure Velodyne's technology and product roadmap remains closely aligned with the needs and vision of our customers as we usher in the autonomous future. Of equal priority is growing our technical talent and mentoring the engineering architects and leaders that will take autonomous technology to the next level. Velodyne has built a diverse and capable engineering team and I will do everything I can to ensure our continued growth and industry leadership," said Rekow. ([velodynelidar.com](http://velodynelidar.com))