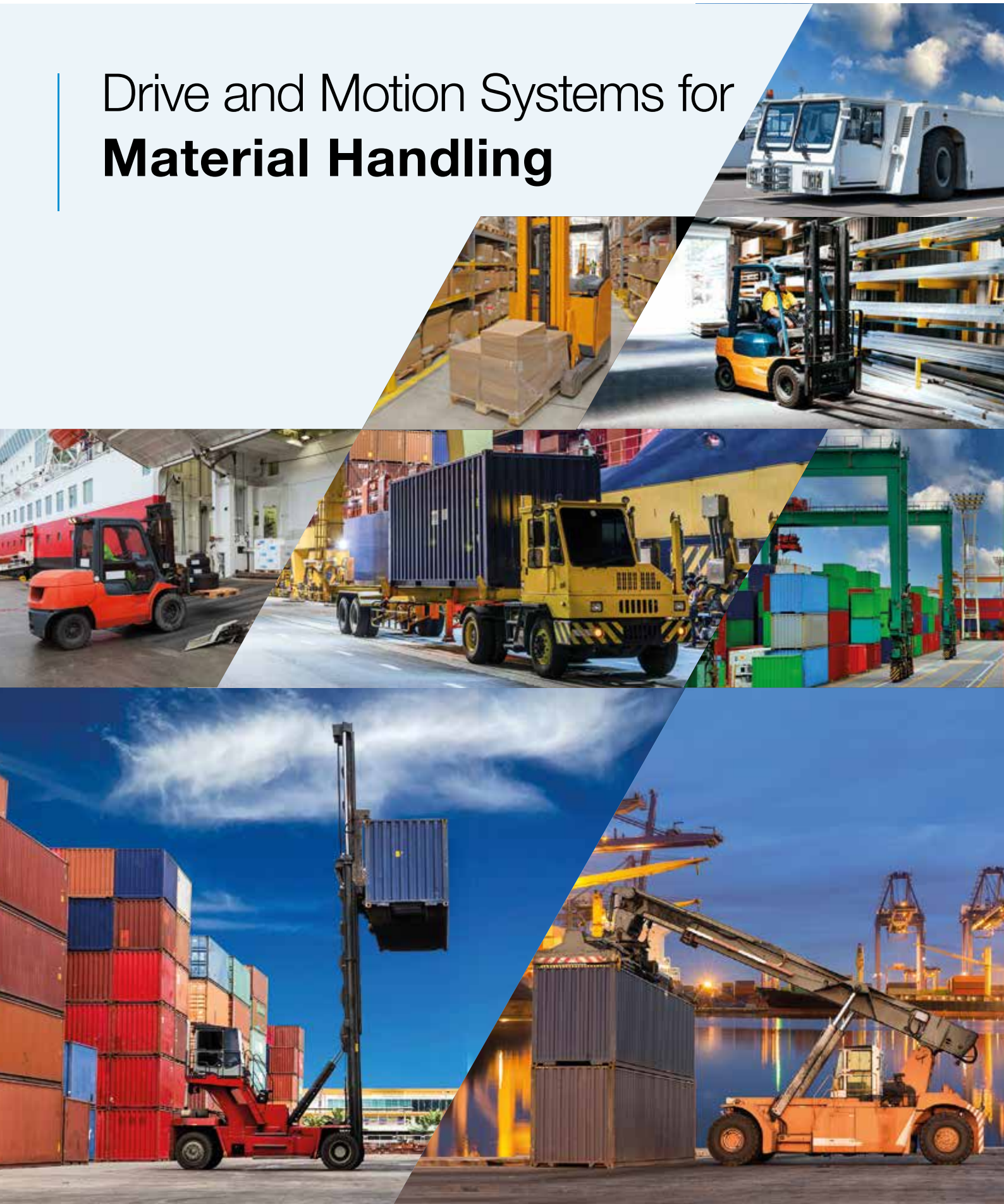




Drive and Motion Systems for **Material Handling**





People Finding A Better Way®

Established in **1904**. Employing **42,000** people in **31** countries across **six continents**. Shipping to **14,000** customers, leveraging a global network of technology centers across **9** countries.

Our Vision

Powering Innovation
To Move Our World

Our Mission

This mission is embodied in our company theme: People Finding A Better Way. Driving stakeholder value by:

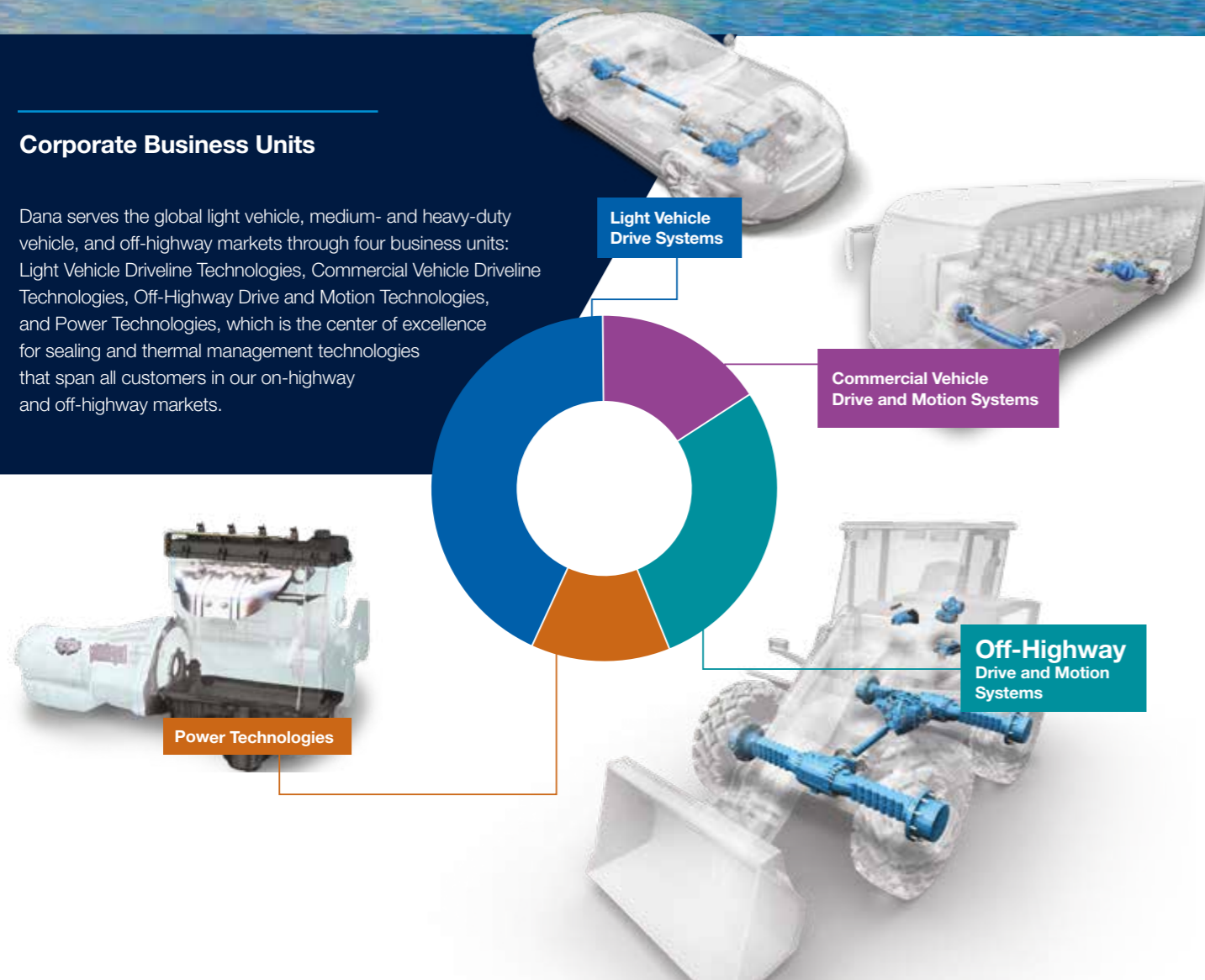
- powering vehicles and machines around the world
- shaping sustainable progress through invention and execution
- making the amazing happen wherever people live, work, and play.

Our Values

- Value Others
- Inspire Innovation
- Grow Responsibly
- Win Together

Corporate Business Units

Dana serves the global light vehicle, medium- and heavy-duty vehicle, and off-highway markets through four business units: Light Vehicle Driveline Technologies, Commercial Vehicle Driveline Technologies, Off-Highway Drive and Motion Technologies, and Power Technologies, which is the center of excellence for sealing and thermal management technologies that span all customers in our on-highway and off-highway markets.



Where there is a need, Dana finds a better way.

A new era of mobility is upon us.

Emissions regulations and government policies are manifesting at an ever-increasing pace, and visions of vehicles that reduce operating costs while enhancing productivity and safety are accelerating the need for alternative propulsion solutions.

For over 20 years, our group of highly focused engineers has been dedicated to the research and development of new technology solutions aimed at electrification. We have built a broad portfolio of award-winning, patented technologies, making us a leader in electrification.

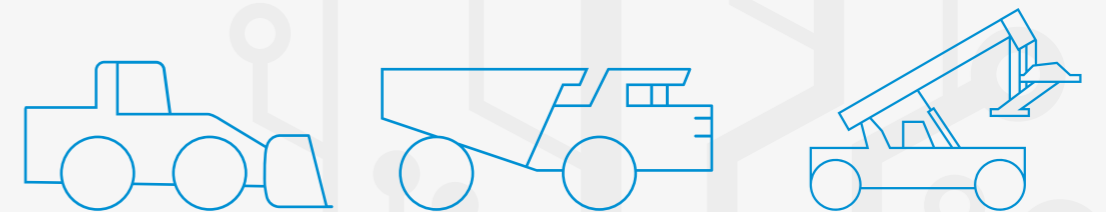
Why should you rely on Dana?

Solutions designed, engineered, and manufactured for maximum efficiency.

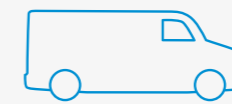
We approach electrification with a trained eye and an insightful, innovative perspective, utilizing market synergies to provide an advantage in electrifying offerings across multiple applications.

A component is only as good as the system in which it operates. That's why we take a systems-focused approach, seamlessly integrating our components into complete electrified systems.

We have an in-house, multi-disciplinary team of system solutions engineers who provide turnkey software and controls for our entire portfolio of technologies. This in-house knowledge and integration produces solutions that provide enhanced performance, packaging optimization, and reduced system weight. All of which results in savings to your bottom line.



OFF-HIGHWAY VEHICLES



LIGHT VEHICLE



COMMERCIAL VEHICLE



WEIGHT REDUCTION
For additional payload or battery capacity



EFFICIENCY
Reduced energy consumption means increased range and cost savings



PACKAGING
Improved vehicle integration for optimized packaging space



COOLING SOLUTIONS
Capability to integrate thermal-management solutions with power sources

Off-Highway Segments

Mobile

Dana leverages our global expertise to engineer the most advanced, customized product solutions for developed and emerging markets. Our drive and motion products serve a wide range of demanding industries, including applications for equipment with wheel and track drives as well as stationary machines.



Leading the Charge in Vehicle Electrification

Dana is a leading drivetrain and motion systems provider for electrified off-highway applications.

Supported by a legacy of innovation in conventional drivetrains, Dana is at the forefront of integrating mechanical and electrical components for alternative propulsion applications. We embrace evolution to be a step ahead in supporting new applications as they emerge and collaborating with customers as they develop tomorrow's vehicles.

Electrification. **Delivered.**TM

Fully integrated e-Drive and e-Motion systems



Material Handling

Our customized drive and motion systems enhance material-handling vehicle performance, productivity, and power. Spicer® transmissions, axles, and driveshafts are designed to work seamlessly in any vehicle to allow operators to engage, lift, and transport heavy loads with more precision.



Agriculture

Our products are engineered to support increased crop yields, optimized harvesting operations, lower emissions, improved operator safety and comfort, and reduced total cost of ownership while complying with evolving emissions standards.



Construction and Forestry

Integrated drive and motion systems from Dana enhance construction and forestry equipment performance, efficiency, and productivity with a range of solutions for vehicles ranging from 3 to 50 tonnes (4 to 55 tons). Spicer® axles, wheel drives, transmissions, driveshafts, and Brevini™ motion products are integrated with the most advanced technologies for improved machine operation on any job site, in any condition.



Mining

Dana designs complete drive and motion systems to meet increasing industry demands for automation and productivity, coupled with high safety standards. Our solutions are specially engineered to maximize vehicle performance in extremely harsh environments.



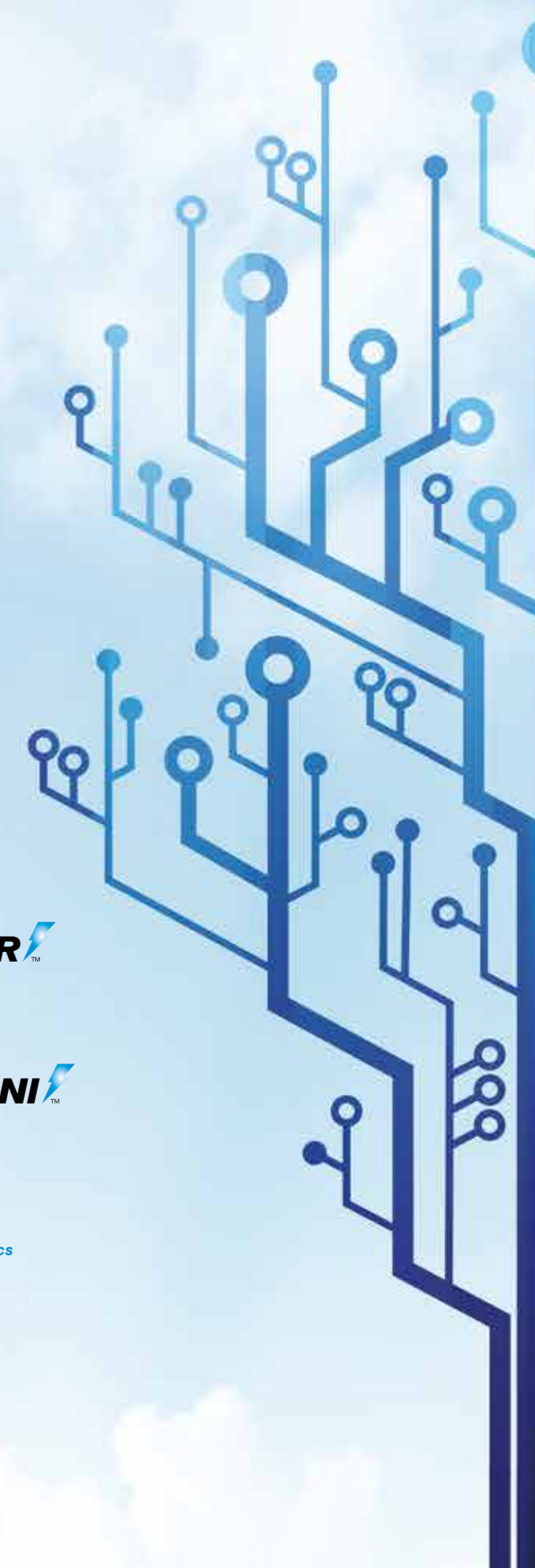
e-Drive Systems



e-Motion Systems



Electric and Hybrid e-Drive Systems



Fully Integrated e-Drive and e-Motion Systems for your Material Handling Vehicles

Material-handling vehicles are the lifeblood of the global economy. With market demands increasing the volume and speed of shipments, Dana is poised with a comprehensive range of drive and motion systems that deliver performance, productivity, precision, and power.

We offer a wide portfolio of innovations for traditional material-handling vehicle architectures as well as complete drive systems and advanced controls for next-generation designs supporting electrification and autonomous operation.



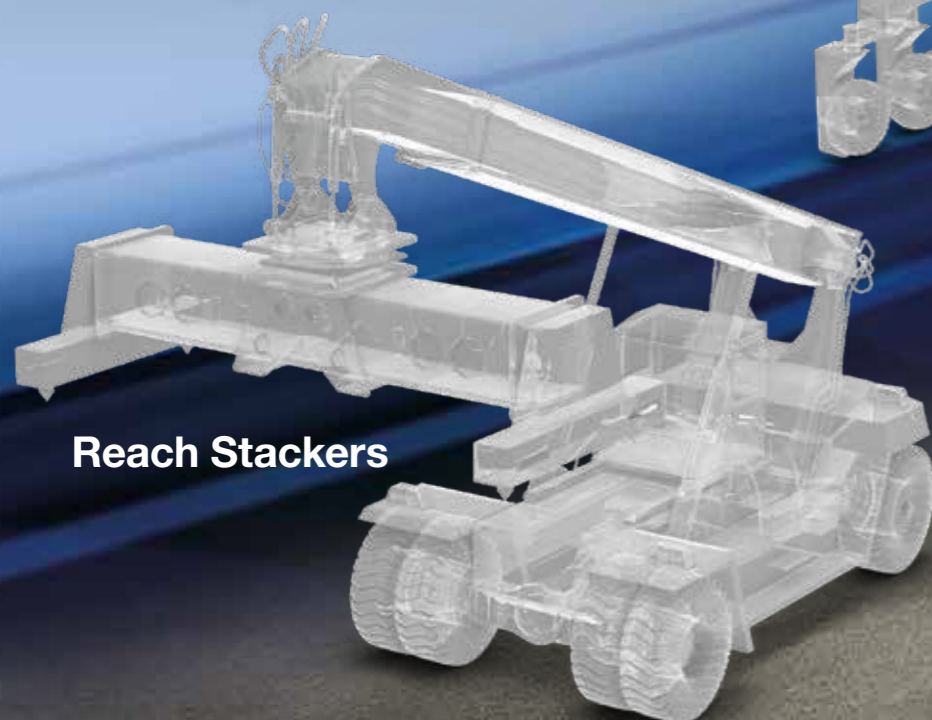
Tow Tractors



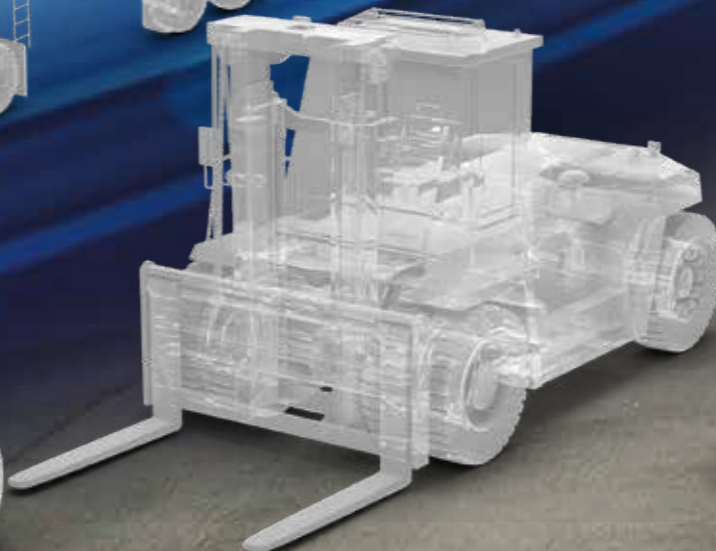
Warehouse Forklift Trucks



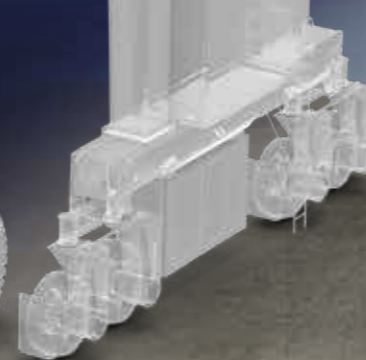
Forklifts Light



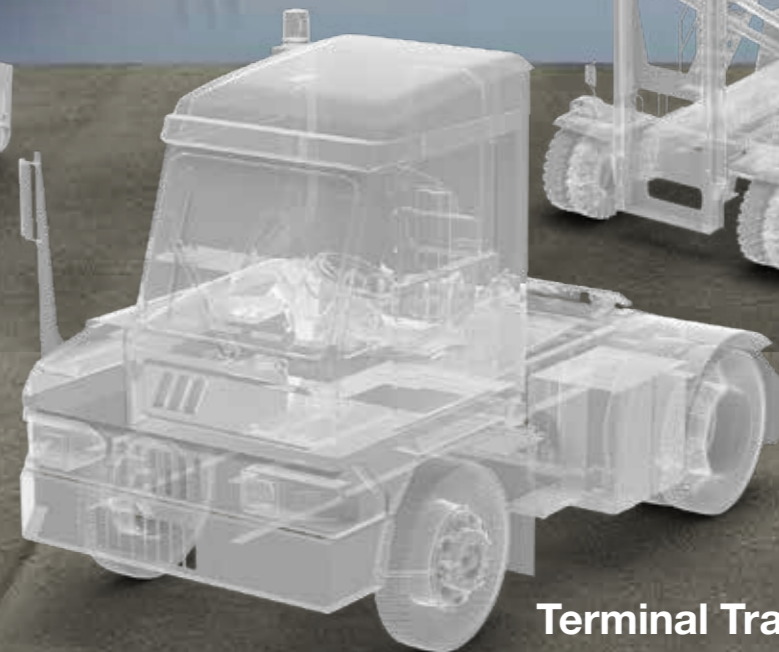
Reach Stackers



Forklifts Heavy



Rubber Tire Gantry Cranes



Terminal Tractors



Empty Container Handlers

Full-System Solutions for Forklifts Light

Our range of drive and motion technologies for light forklift trucks can be customized and fine-tuned to meet specific customer preferences, regional needs, local emission standards, and duty cycle expectations. Our fully integrated system provides the maneuverability and reliability needed to support the demands of the worksite while minimizing fuel costs and environmental impact.



Spicer® Planetary Non-Steering Axle

- Product family range from 1 to 3.5ton
- Performance specific ratio and wet or dry brake options
- Wide range of track widths and wheel options



Spicer® Steering Axle

- Steering angles greater than 100°
- Complete product range from 1 up to 3.5ton



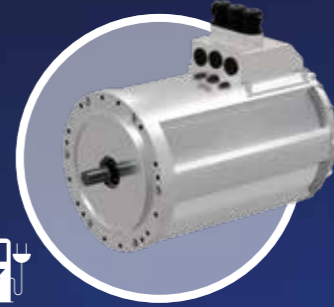
TM4 Electro Dynamics™ e-Pump Motor

- Effective performance and operation with a compact design
- SYR and IPM technology for high-efficiency
- Modular approach



Spicer Electrified™ Torque-Hub

- Designed for Class I Forklifts with up to 2 ton lifting capacity
- Integrated SRIPM, IPM or SR TM4™ e-Motor (24-36-48V)
- Capable of input speeds up to 10,000rpm with gear reductions possible from 26 up to 41:1



TM4 Electro Dynamics™ SRI Motor

- Improved speed range, and power density
- High speed up to 9000 rpm
- Seamless integration with Dana e-systems



Spicer® Driveshafts

- Ideal for the rigorous demands of most mobile off-highway applications
- Designed for minimal maintenance, longer life, and reduced operating costs



TM4 Electro Dynamics™ Next Gen Series LVI400 Low Voltage Inverter

- Most power-dense inverter with patented in-house MOSFET multilayer power modules
- Open and fully flexible application software configuration



Spicer® Powershift Transmission

- Traction continuity and smooth operations in all conditions
- Enables the engine to run at its most efficient speed for better fuel economy



Full-System Solutions for Warehouse Forklift Trucks

Warehouse Forklift Trucks can operate manually or autonomously (Automated Guided Vehicles). They are playing a larger role in increasing throughput and minimizing infrastructure in warehouses and factories. We offer zero-emissions electric-driven solutions with advanced controls that optimize productivity, accuracy, and worksite safety.



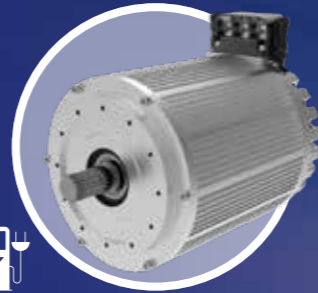
Spicer Electrified™ Motor Drive Unit (MDU)

- Suitable for class II and AGVs forklifts
- IPM high efficiency motor for traction function
- Compact design for reduced space
- Higher efficiency and lower heat generation
- High durability, low maintenance, applied NVH studies for quiet operation



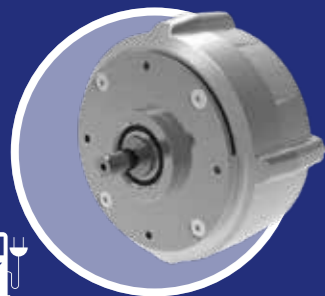
TM4 Electroynamics™ e-Pump Motor

- Effective performance and operation with a compact design
- SYR and IPM technology for high-efficiency
- Modular approach



TM4 Electroynamics™ SYR Motor

- Applicable to traction, pump and other applications
- Efficiency close to a permanent magnet motors, without magnets
- Seamless integration with Dana e-systems



TM4 Electroynamics™ IPM Motor

- Efficiency, best-in-class thermal performance
- Compact size to optimise space and weight
- Fits within a wide-range of applications



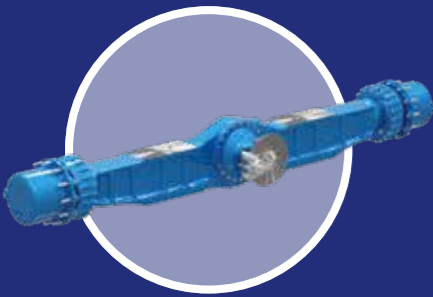
TM4 Electroynamics™ Next Gen - Series LVI400 Low Voltage Inverter

- Most power-dense inverter with patented in-house MOSFET multilayer power modules
- Open and fully flexible application software configuration



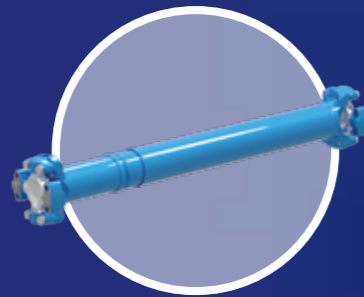
Full-System Solutions for Empty Container Handlers

Our drive and motion solutions provide the power and efficiency needed to help manufacturers of empty container handlers support the decarbonization initiatives of increasingly busy ports, wharfs, and storage yards. We help empty container handlers handle vertical loads quickly, safely, and efficiently, including innovations for electrified vehicle architectures.



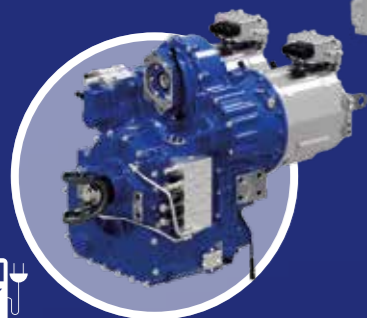
Spicer® Planetary Non-Steering Axles

- Maximum performance and offer easy, low-cost service
- Modular design on several heavy axles and all medium axles
- Maintenance-free brakes and high-integrity sealing
- Many configurations and options available



Spicer® Driveshafts

- Ideal for the rigorous demands of most mobile off-highway applications
- Designed for minimal maintenance, longer life, and reduced operating costs



Spicer Electrified™ eSP502

- Balanced performance, no working interruptions
- Dual-motor setup for system redundancy

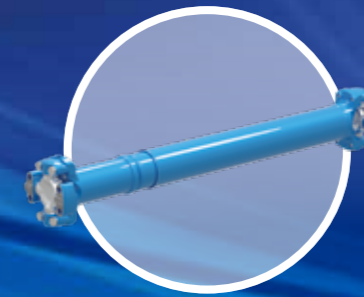
Full-System Solutions for Forklifts Heavy

As port traffic accelerates with the growth of e-commerce, manufacturers of heavy forklifts and other large material-handling vehicles face the demand for rugged, nimble configurations that also support decarbonization. We supply complete Spicer® drivetrain solutions that help reduce the emissions of ICE-powered vehicles as well as leading-edge technologies for advanced electric-drive and autonomous designs.



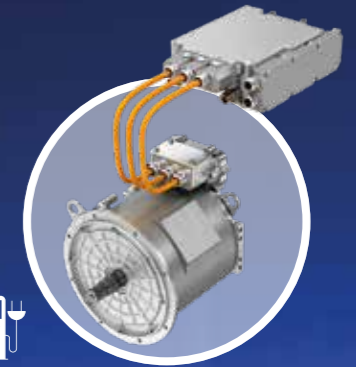
Spicer® Planetary Non-Steering Axle

- Multiple ratios and wheel interfaces
- Different differential options
- Available also as electrified axle



Spicer® Driveshafts

- Ideal for the rigorous demands of most mobile off-highway applications
- Designed for minimal maintenance, longer life, and reduced operating costs



TM4 Electrodynamics SUMO™ LD Motor Inverter System

- High torque/low speed internal permanent magnet motor and inverter combinations
- Designed and validated as per axle mount requirements
- Seamless integration into Dana axles



Spicer Electrified™ eSP502

- Balanced performance, no working interruptions
- Dual-motor setup for system redundancy



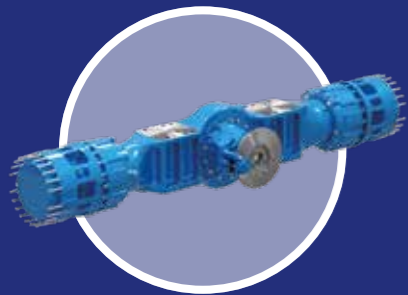
Spicer® Hydrodynamic Transmissions

- Advanced electronic controls
- Highly-efficient aluminum-cast converter with lockup option
- 5 speeds for best performance, heavy duty PTO's

Full-System Solutions for Reach Stackers

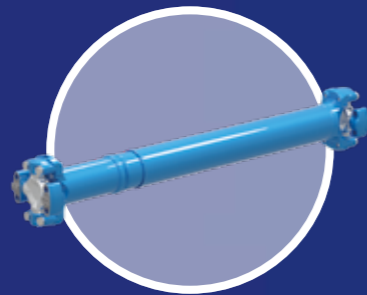
Designed to help reach stackers access, lift, and move heavy loads in crowded ports, our drive and motion solutions check all the boxes for durability, precision, speed, and fuel efficiency.

We also now offer new modular, plug-and-play e-transmission options to further reduce the environmental impact of reach stackers.



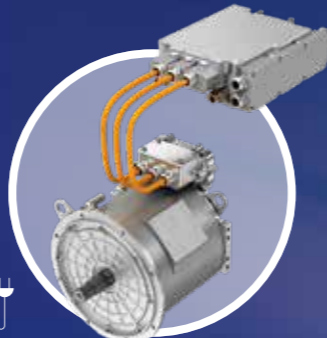
Spicer® Planetary Non-Steering Axles

- Deliver maximum performance and offer easy, low-cost service
- Modular design on several heavy axles and all medium axles
- Maintenance-free brakes and high-integrity sealing
- Many configurations and options available



Spicer® Driveshafts

- Ideal for the rigorous demands of most mobile off-highway applications
- Designed for minimal maintenance, longer life, and reduced operating costs



TM4 Electroynamics SUMO™ LD Motor Inverter System

- High torque/low speed internal permanent magnet motor and inverter combinations
- Designed and validated as per axle mount requirements
- Seamless integration into Dana axles



Brevini™ Industrial Planetary Gearbox

- Nominal torques up to 26,000 Nm
- Inline and right angle configurations available
- Suitable for both hydraulic and electric motors
- Integrated motor adaptor
- Negative multiple disc brake



Brevini™ Industrial Planetary Gearbox

- Nominal torques up to 26,000 Nm
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- Suitable for both hydraulic and electric motors
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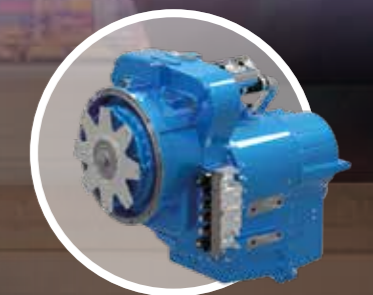
Spicer Electrified™ eSP502

- Balanced performance, no working interruptions
- Dual-motor setup for system redundancy



Spicer Electrified™ Torque-Hub

- Heavy duty wheelhub with wet brakes
- Mated to our highly efficient compact TM4 LD series motor IPM compact



Spicer® Hydrodynamic Transmissions

- Advanced electronic controls
- Highly-efficient aluminum-cast converter with lockup option
- 5 speeds for best performance, heavy duty PTO's

Full-System Solutions for Rubber Tire Gantry Cranes

We serve as a single-source supplier for the key drive and motion components supporting the productivity and reliability of rubber tyre gantry cranes.

We have a wide range of gearboxes, wheel drives, winches and driveshafts to fit manufacturers' demanding requirements for capacity, speed, stability, and maintainability.



GWB® Industrial Driveshaft

- Complete product range featuring flange/ swing diameter from 120 to 1300 mm
- Superior bearing life, high torque capacity
- Ease of maintenance with service-free option
- Minimized total cost of ownership



Brevini™ Industrial Planetary Gearbox

- Anti-sway drive
- New concept design with bevel set on second stage
- High efficiency, low noise
- Drum winch directly fixed on the output shaft



Brevini™ Gearmotor Series

- Extensive torque range
- High efficiency, low noise
- Diverse low speed shaft options



Brevini™ Helical Bevel Helical Gearbox Posired N Series

- Main hoist, dedicated design for single-drum drive
- Shape and cost customization, auxiliary drive system on board
- Spheroidal graphite cast iron housing
- Diverse low speed shaft options



Brevini™ Industrial Planetary Gearbox S Series

- Multiple output shaft options
- Inline and right angle configurations available
- Suitable for both hydraulic and electric motors
- Negative multiple disc brake



Brevini™ Winch Drive SLW Series

- Innovative pure planetary solution, plug-in
- More space for easy access to maintenance and service components
- Optimised weight and easy installation
- Mechanical efficiency improved



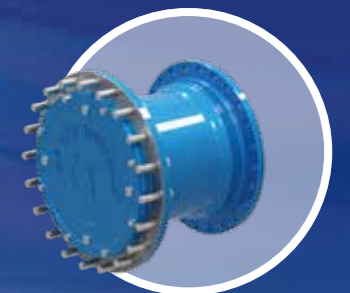
Brevini EvoMax™ Helical Gearbox

- Improved torque density providing more torque and more power without compromising weight and size
- Maximum flexibility offering an asymmetrically shaped housing, optimized to best fit hoisting applications
- Improved torque density



Spicer Torque-Hub™ PHC Series

- Customized solution
- Bevel gear unit at the input for electric motor and/or cardan shaft connection available
- Developed for highly efficient electric drivetrain



Spicer Torque-Hub™ TH5 Series

- Customized solution for highly efficient electric drivetrain
- Bevel gear unit at the input for electric motor and/or cardan shaft connection available



Power-dense performance for Terminal Tractors

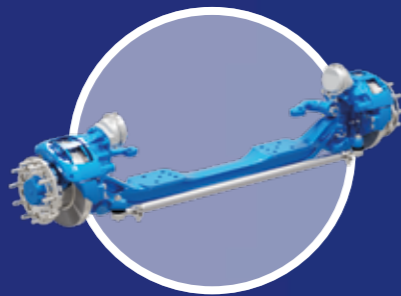
We engineer and supply integrated drivetrain solutions that improve the maneuverability, durability, and productivity of terminal tractors.

We supply complete systems for traditional ICE-powered tractors as well as leading-edge electrified designs with extended runtimes that reduce emissions and increase operating efficiencies.



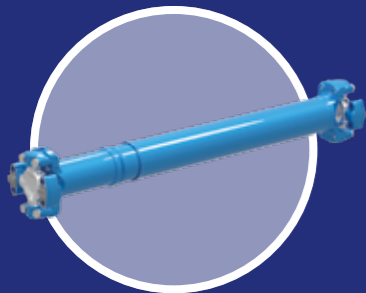
Spicer® Planetary Non-Steering Axles

- Different brake options possible
- Multiple ratios available
- Heavy duty, proven technology



Spicer® Steering Axles

- Improved design more efficient, lowers axle assembly weight
- Greater durability and reduced maintenance
- Superior strength, enhanced maneuverability



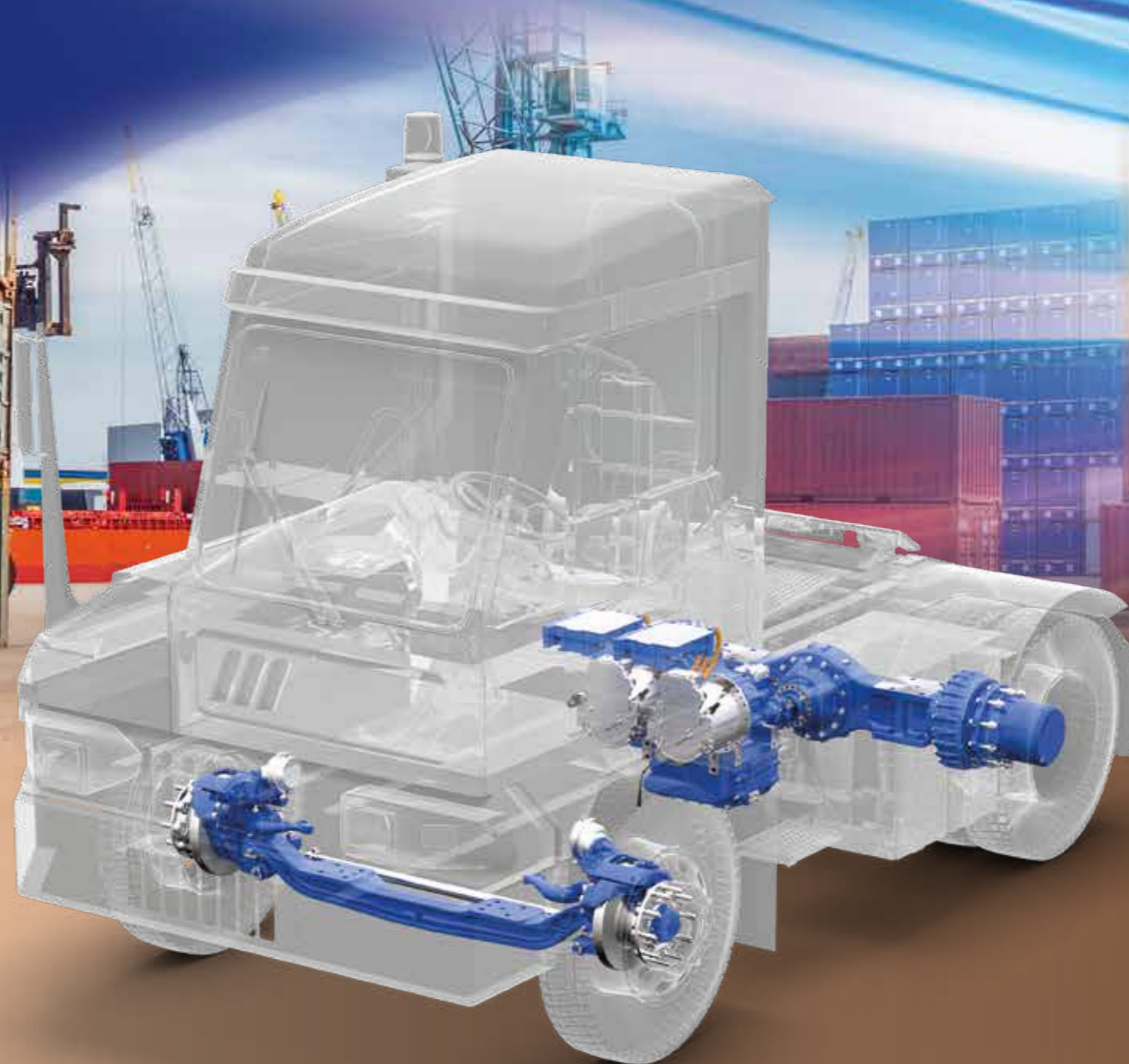
Spicer® Driveshafts

- Ideal for the rigorous demands of most mobile off-highway applications
- Designed for minimal maintenance, longer life, and reduced operating costs



Spicer Electrified™ eSP502

- Balanced performance, no working interruptions
- Dual-motor setup for system redundancy



Full-System Solutions for Tow Tractors

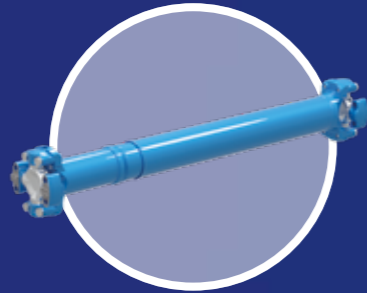
Our Spicer® drive solutions provide aircraft towing tractors with the compact power, low profile, durability, and versatility needed for busy airport environments.

As the aviation industry expands its sustainability initiatives, we're ready today with fully integrated electric-drive configurations that fit within current design envelopes.



Spicer® Planetary Steering Axles

- Deliver maximum performance and offer easy, low-cost service
- Modular design on several heavy axles and all medium axles
- Many configurations and options available



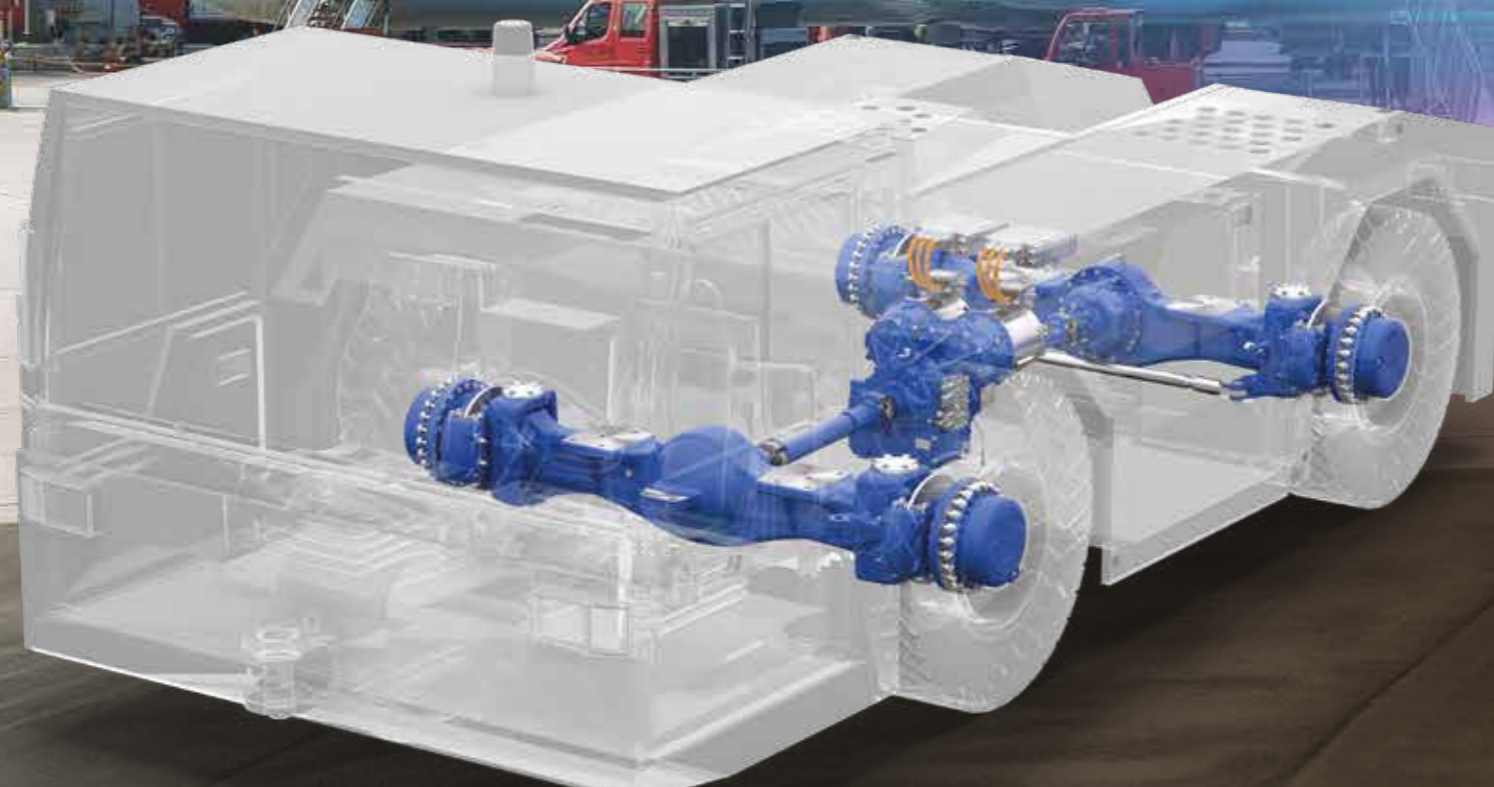
Spicer® Driveshafts

- Ideal for the rigorous demands of most mobile off-highway applications
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Spicer Electrified™ eSP502

- Balanced performance, no working interruptions
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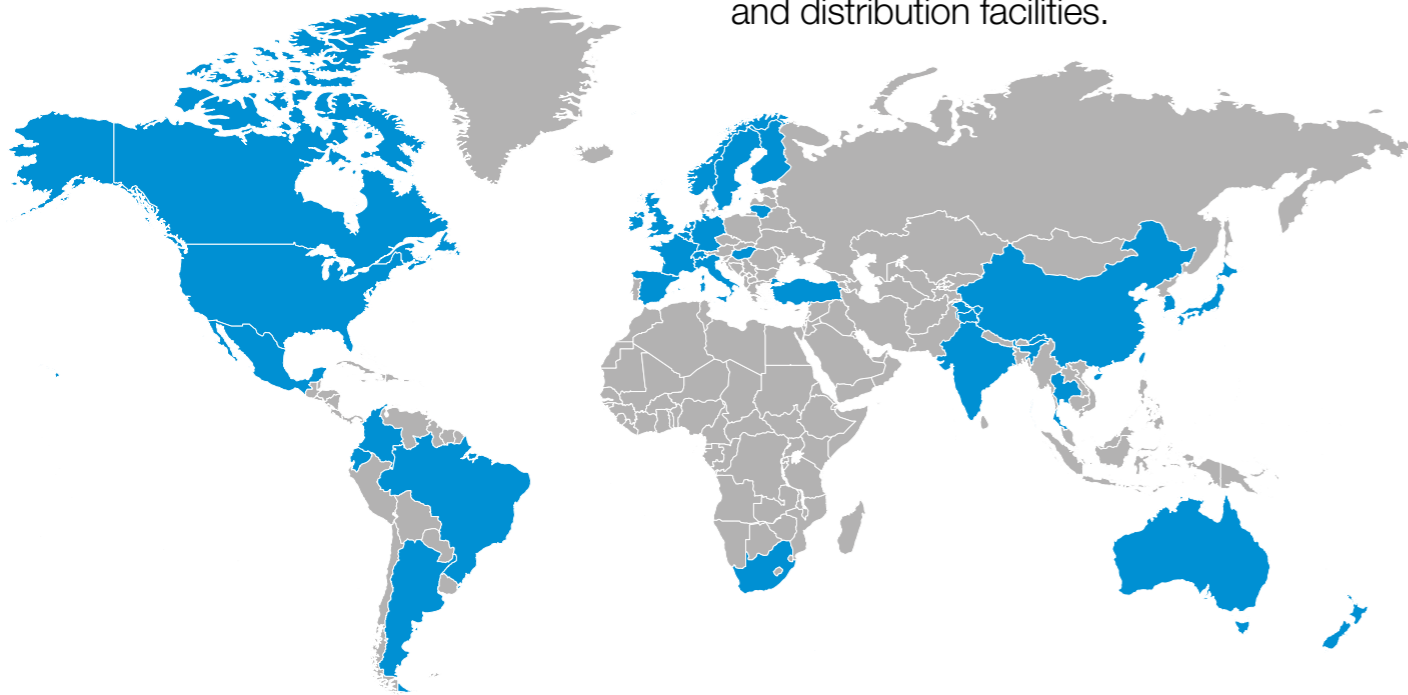
Global Strength

One of the ways we create value is by **positioning** our technical and manufacturing resources where customers need us globally.

Today, that's **31 countries** on **six continents**.

To help customers achieve success, top-tier suppliers must have a global perspective that can be adapted to meet local requirements and end-user expectations.

Dana's **worldwide leadership** is the key to serving clients around the world. We bring our global expertise to the local level with technologies customized to individual requirements through a network of strategically placed technology centers, manufacturing locations, service and assembly centers, and distribution facilities.



Our global logistics network extends our strength across six continents

Aftermarket Services

Our global expertise is delivered to customers at a local level through a constantly growing and improving aftermarket network. Strategically placed service centers provide solutions tailored to individual specifications by an experienced on-the-ground support team. We meet customer needs in every region, on every platform.



Genuine Parts

Dana service parts are manufactured by Dana to the same high standards as original equipment (OE), because they are OE genuine parts. When a part is replaced, a complete interchangeability with existing parts provides total product compatibility, with no change in part numbers. A non-original component can lead to significant vehicle costs down the road. We protect your vehicle's durability and performance.

Dana Distribution Centers

Dana's global network of distribution centers located in Europe, the Americas, Asia, and Australia offer efficient service points supporting regional customer service, inventory, logistics, and packaging operations.

Danaaftermarket.com

E-Commerce Platform

Our technology-enabled e-commerce platform brings Dana's global off-highway network of distribution centers, products, services and premium brands to your device 24/7 to make better decisions, speed up your operations, and make it easier to do business with Dana

Using Danaaftermarket.com, you can quickly:

- Search for part level detail
- View global availability in real time
- Place orders from your phone, desktop or tablet
- Access educational brochures, videos and training
- Order management documentation communicated in real-time
- API developer portal enables cross-platform integration and real time data exchange

Spicer® drivetrain catalog

The new online Spicer® product Catalog features our extensive off-highway axles and driveshaft portfolio. Quickly and conveniently locate products by model type or part number through the search functionality, and access usage descriptions and technical details to select optimal products for every aftermarket need. The product database is always updated as new technologies become available.

Market-Driven **Innovation**

Off-Highway Performance Expectations

Safety

Productivity

Maneuverability

Durability

Serviceability

Total Cost of Ownership

About Dana Incorporated

Dana is a leader in the design and manufacture of highly efficient propulsion and energy-management solutions that power vehicles and machines in all mobility markets across the globe.

The company is shaping sustainable progress through its conventional and clean-energy solutions that support nearly every vehicle manufacturer with drive and motion systems; electrodynamic technologies, including software and controls and thermal, sealing, and digital solutions.

About Dana Off-Highway Drive and Motion Systems

Dana delivers fully optimized solutions to customers in the construction, agriculture, material handling, mining, forestry, and industrial markets.



[Dana.com/oh](https://www.dana.com/oh)

Application Policy

Capacity ratings, features, and specifications vary depending upon the model and type of service. Application approvals must be obtained from Dana; contact your representative for application approval. We reserve the right to change or modify our product specifications, configurations, or dimensions at any time without notice.

