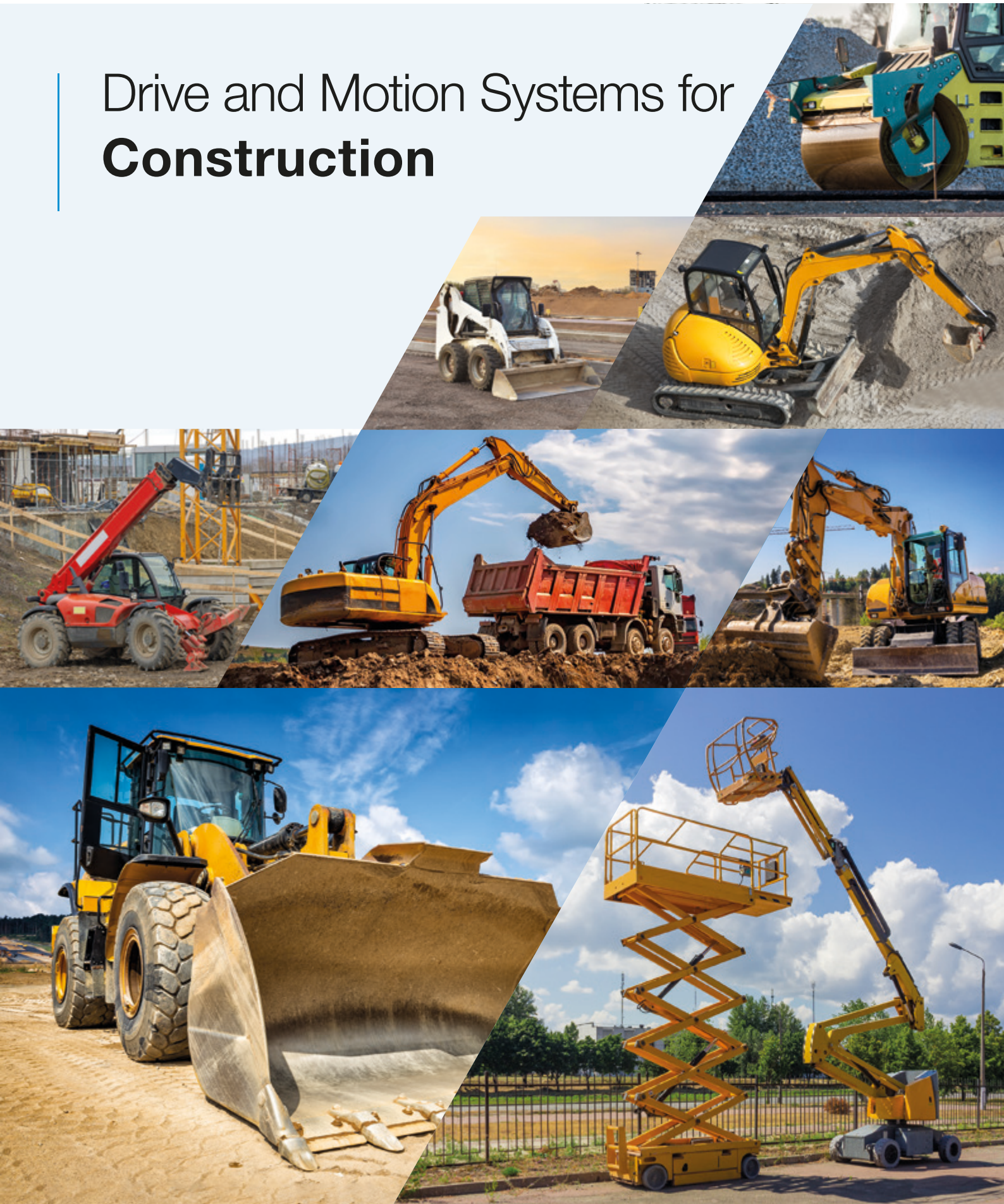




# Drive and Motion Systems for **Construction**





# People Finding A Better Way®

Established in **1904**. Employing **40,000** people across **141** major facilities in **31** countries. 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:

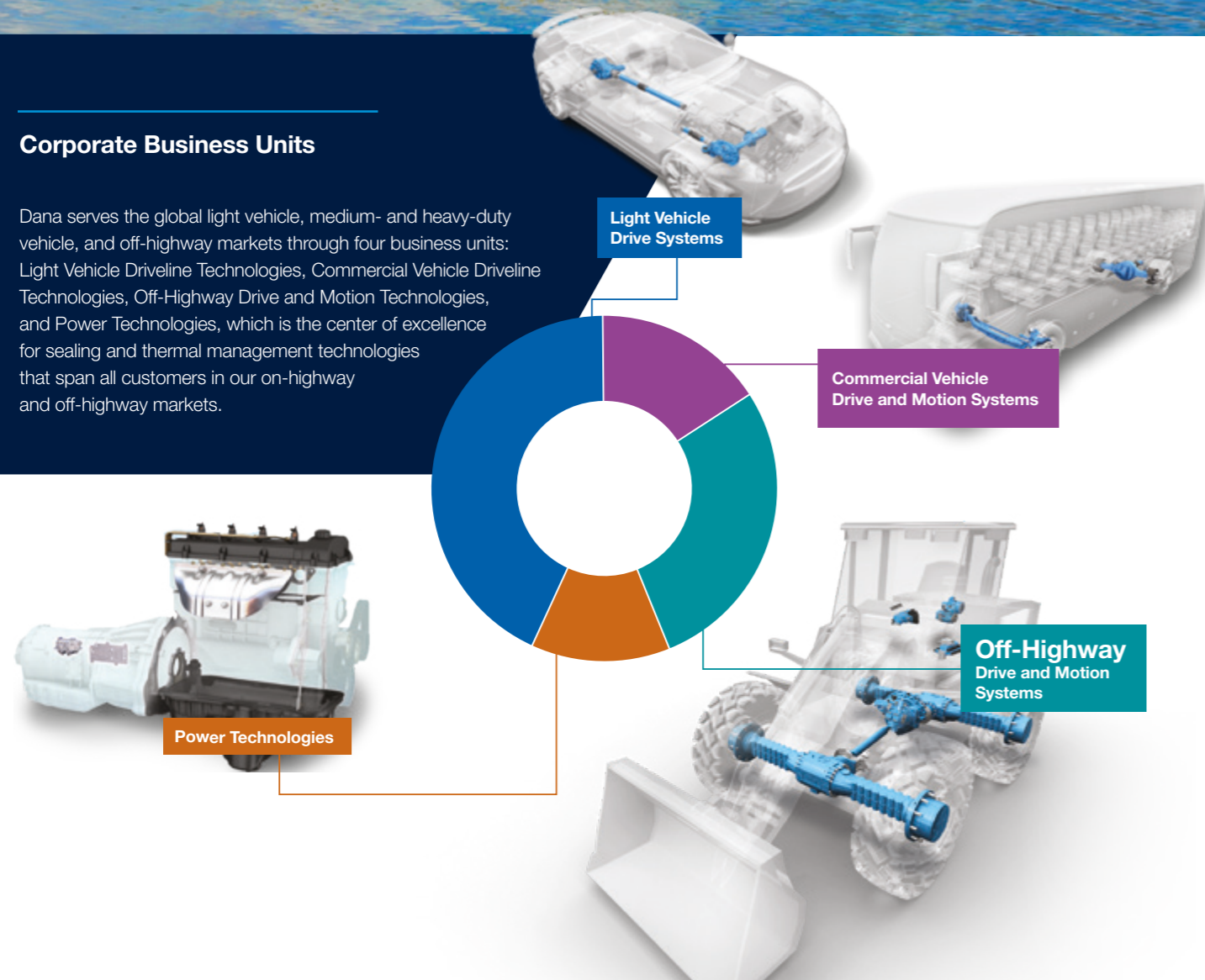
- powering vehicles and machines around the world
- shaping sustainable progress through invention and execution
- making the amazing happen wherever people live, work, and play.

### 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.

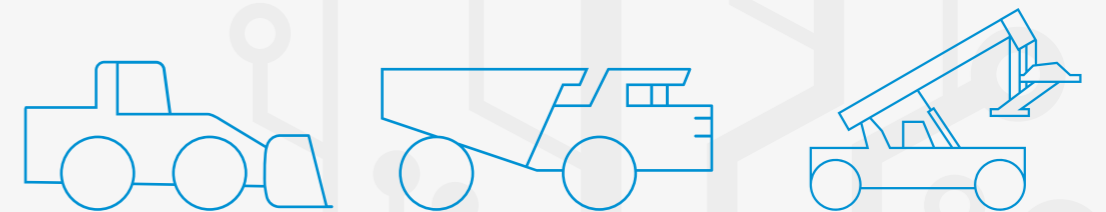
## Why should you rely on Dana?

### Solutions designed, engineered, and manufactured for maximum efficiency.

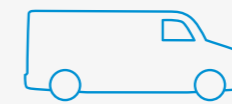
We approach electrification with a trained eye and an insightful, innovative perspective, utilizing market synergies to provide an advantage in electrifying offerings across multiple applications.

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.



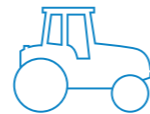
### Construction and Forestry

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.



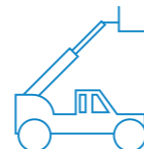
### Agriculture

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.



### 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.



### 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.



## Electrification. **Delivered.**<sup>™</sup>

### Fully integrated e-Drive and e-Motion systems

e-Drive Systems



e-Motion Systems

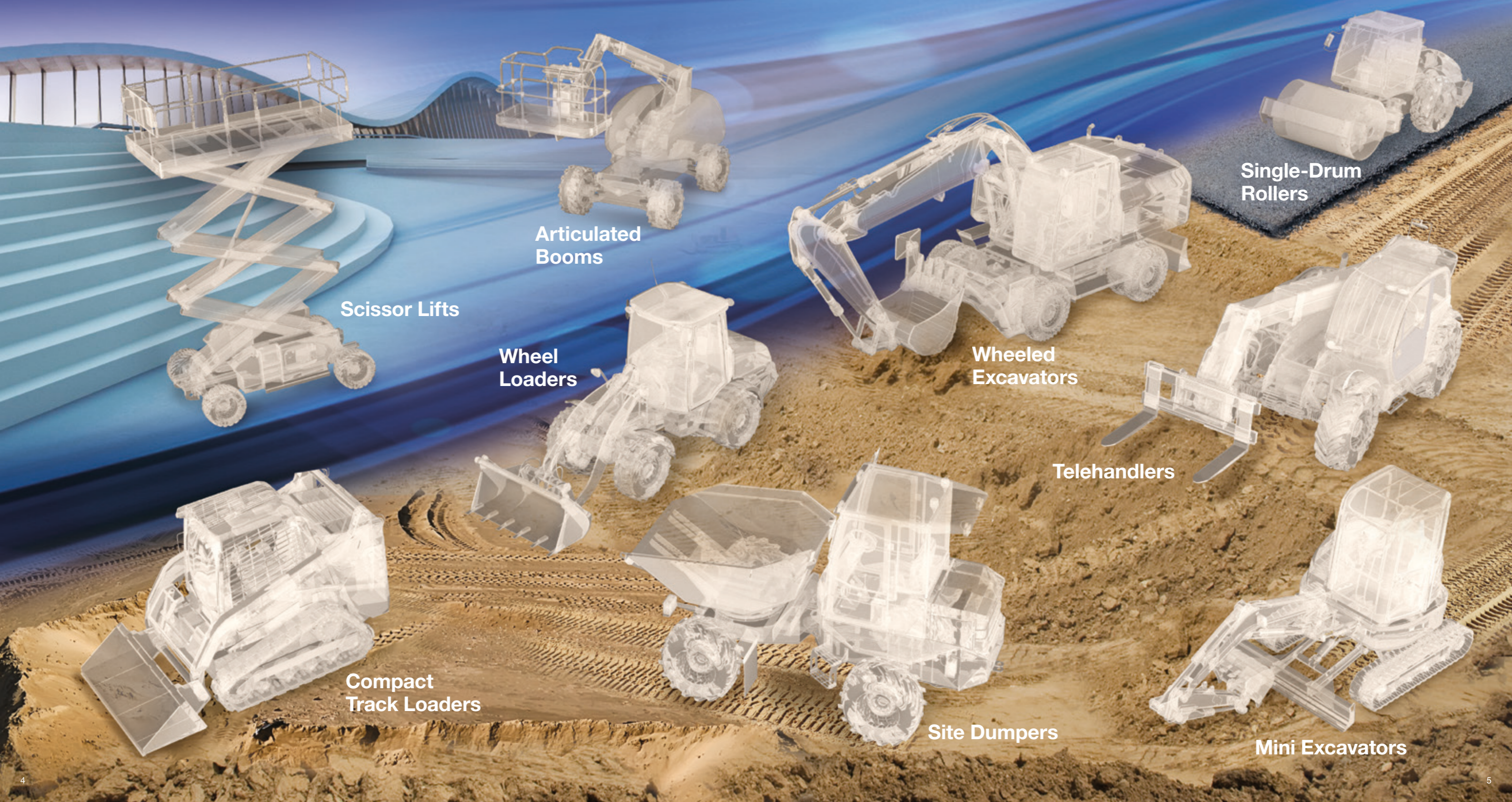


Electric and Hybrid e-Drive Systems



# Fully Integrated e-Drive and e-Motion Systems for your Construction Vehicles

Dana helps manufacturers bring electric-driven vehicles to market through its collaborative, system-oriented approach and decades of expertise. We offer a full product portfolio and multiple technologies for electrified and conventional vehicles. You can rely on our products to work continuously in challenging environments where vehicle performance, efficiency, and reliability are critically important.



Scissor Lifts

Articulated Booms

Wheel Loaders

Wheeled Excavators

Single-Drum Rollers

Telehandlers

Compact Track Loaders

Site Dumpers

Mini Excavators

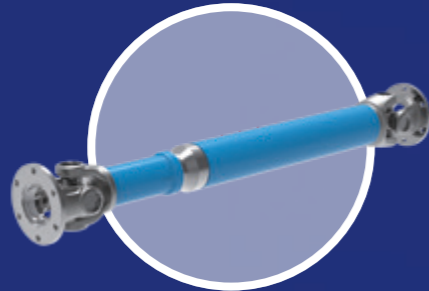
# Full-System Solutions for Wheel Loaders

Dana's solutions cover the complete range of wheel loaders, from compact to heavy-duty. For electrified compact wheel loaders we offer a full electrified driveline, which offers power-loss reduction, noise emission, improved efficiency, reduced TCO, and precision-engineered interface for connecting high-performance motors. With the best match between mechanical, electric components and control software, we are delivering the best-in-class and most efficient drivetrain solution suitable for many construction vehicles.



## Spicer® Planetary Non-Steering Axle

- Available with disc or drum brakes
- Multiple configurations available



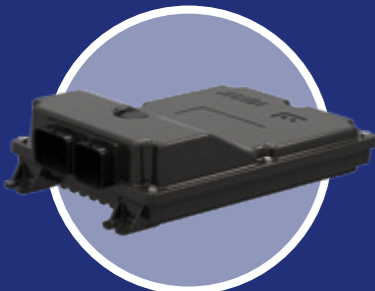
## Spicer® Driveshafts

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



## TM4 Electro Dynamics™ e-Pump Motor

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



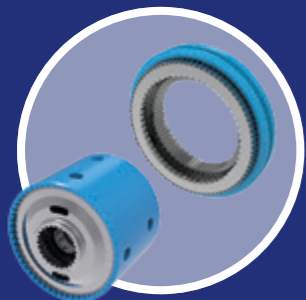
## Spicer® Electronic Controls

- Enables communication between driveline components
- Support for OEM advances in digitalization and automation



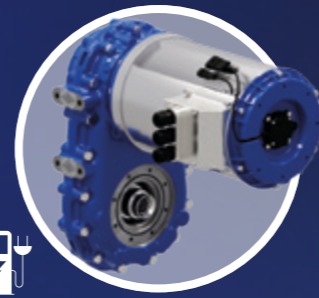
## TM4 Electro Dynamics™ AC-X1 Inverter

- Up to 50% higher power density
- High-efficiency and long life power stage – DBC (Direct Bonded Copper) patented MOSFET multilayer power module technology



## Graziano™ Shifting Solutions

- High-efficiency powershifts
- Enhanced shifting performance and driver comfort



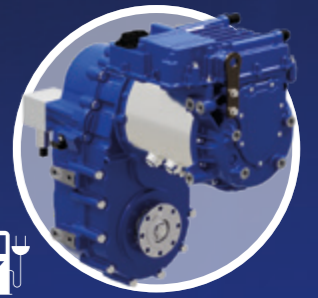
## Spicer Electrified™ eSG001

- High-efficiency single-speed
- Ideal for high-performance motors
- Compact and light



## Spicer Electrified™ eSG101

- High-efficiency single-speed
- Ideal for high-performance motors
- Enhances vehicle mobility



## Spicer Electrified™ eSG102

- High-efficiency, two speed
- Ideal for high-performance motors
- Enhances vehicle mobility



## Spicer Electrified™ eSP502

- No downtime, no working interruptions
- Dual-motor setup for system redundancy



## Spicer® Hydrodynamic Transmissions

- Advanced electronic controls
- Highly-efficient aluminum-cast converter



## Spicer® Hydrostatic Transmissions

- Allows forward, reverse, and braking with hydrostatic motor
- Delivers high torque at low speeds



## Spicer® HVT

- Maximizes fuel savings
- Precise low-speed maneuvering control
- Increased travel speeds

# Full-System Solutions for Mini Excavators

Dana's solutions improve the worksite performance of electric-driven mini excavators through numerous advanced technologies. Improved rotational efficiency and controllability enable smooth, precise positioning, while electronic load-sensing capabilities improve system efficiency and safety.

Dana electric systems covers all the functions that allow the best balance between cost and performance. This system includes an e-Pump motor, e-Slew drive, and inverters working in synergy to create the best conditions for sustainable work.



## Brevini Electrified™ e-Slew Drive

- Compact and efficient
- Allows the drive to fit into the existing machine frame
- Delivers the best efficiency for longer battery life



## TM4 Electroynamics™ e-Pump Motor

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



## 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



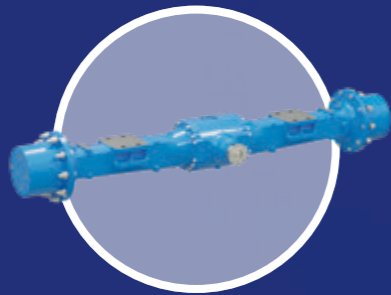
# Full-System Solutions for Wheeled Excavators

Dana's innovative approach delivers best-in-class engineering solutions to help OEMs maximize their offerings. For wheeled excavators, we provide a complete drivetrain featuring front and rear axles, driveshaft, and transmission for both conventional and electrified vehicles. Dana's Spicer® drivetrain system integrates outboard wet disc brakes to ensure jerk-free braking and smoother operation. This contributes to the already excellent comfort enjoyed by the driver, who also benefits from precise maneuvering capabilities and ease of use. Built to accept a broad range of power units, customers are free to choose the motor that works best.



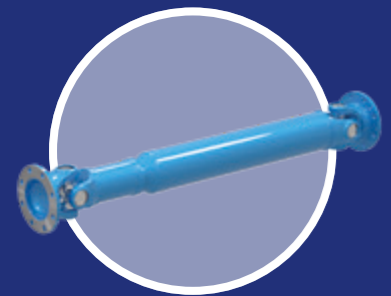
## Spicer® Planetary Steering Axle

- Unique brake design reduces parasitic power loss
- Precise maneuvering capabilities and ease of use



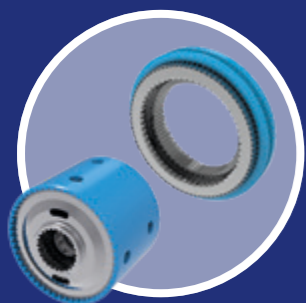
## Spicer® Planetary Non-Steering Axle

- Multiple configurations available
- Outboard wet disc brakes for smoother operation



## Spicer® Driveshafts

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



## Graziano™ Shifting Solutions

- High-efficiency powershifts
- Enhanced shifting performance and driver comfort



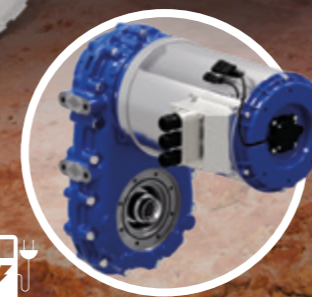
## Spicer® Powershift Transmission

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



## Spicer® Two-Speed Gearbox

- Extremely compact and versatile
- Enhances vehicle mobility and precise shifting



## Spicer Electrified™ eSG001

- High-efficiency single-speed
- Ideal for high-performance motors
- Compact and light



## Spicer Electrified™ eSG101

- High-efficiency single-speed
- Ideal for high-performance motors
- Enhances vehicle mobility

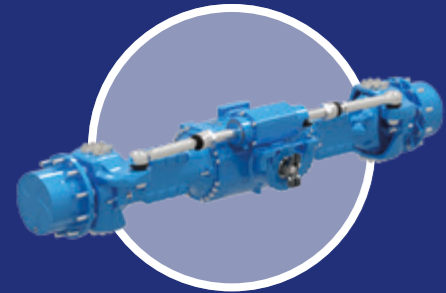


## Spicer Electrified™ eSG102

- High-efficiency, two speed
- Ideal for high-performance motors
- Enhances vehicle mobility

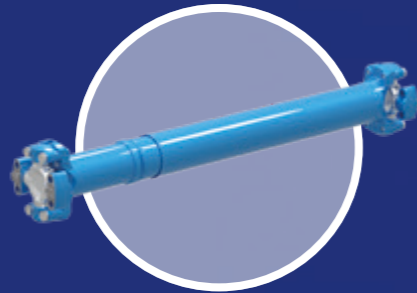
# Full-System Solutions for Telehandlers

Reliability, durability, and optimal cost of ownership are the common expectations from both rental fleets and individual machine purchasers in the construction market. Dana has the expertise, global reach, and system know-how to support the needs of construction telehandler manufacturers worldwide.



## Spicer® Planetary Steering Axles

- High driveline efficiency
- Reduce heat generation and minimize power loss



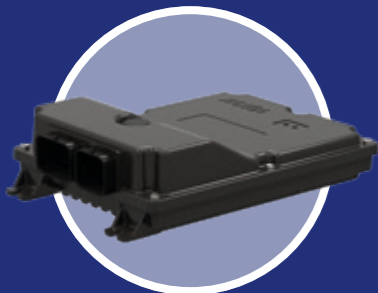
## Spicer® Driveshafts

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



## TM4 Electro Dynamics™ e-Pump Motor

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



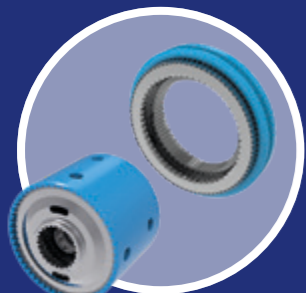
## Spicer® Electronic Controls

- Enables communication between driveline components
- Support for OEM advances in digitalization and automation



## TM4 Electro Dynamics™ AC-X1 Inverter

- Up to 50% higher power density
- High-efficiency and long life power stage – DBC (Direct Bonded Copper) patented MOSFET multilayer power module technology



## Graziano™ Shifting Solutions

- High-efficiency powershifts
- Enhanced shifting performance and driver comfort



## Spicer Electrified™ eSG001

- High-efficiency single-speed
- Ideal for high-performance motors
- Compact and light



## Spicer Electrified™ eSG101

- High-efficiency single-speed
- Ideal for high-performance motors
- Enhances vehicle mobility



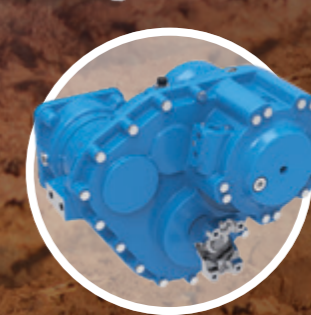
## Spicer Electrified™ eSG102

- High-efficiency, two speed
- Ideal for high-performance motors
- Enhances vehicle mobility



## Spicer® Hydrodynamic Transmissions

- Advanced electronic controls
- Highly-efficient aluminum-cast converter



## Spicer® Hydrostatic Transmissions

- Allows forward, reverse, and braking with hydrostatic motor
- Delivers high torque at low speeds



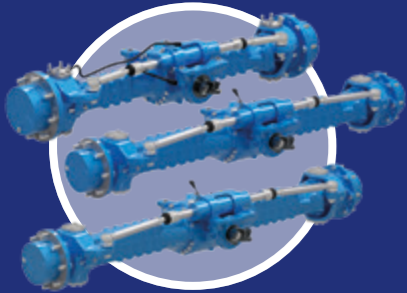
## Spicer® HVT

- Maximizes fuel savings
- Precise low-speed maneuvering control
- Increased travel speeds



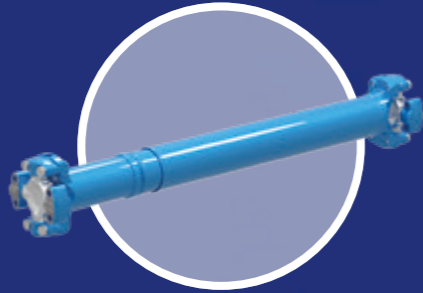
# Full-System Solutions for MEWPs

Dana designs and manufactures a complete range of best-in-class drive and motion products for mobile elevated work platforms (MEWPs). Our expertise, global reach, and systems know-how support the needs of manufacturers worldwide with dedicated and customized solutions.



## Spicer® Planetary Axles

- Rigid planetary axles with a modular design
- Available in a variety of configurations and ratios



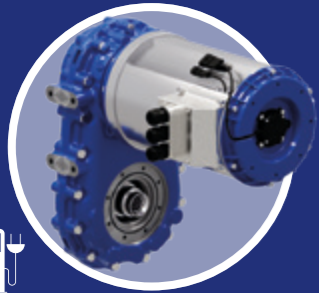
## Spicer® Driveshafts

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



## TM4 Electroynamics™ 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 Electrified™ eSG001

- High-efficiency single-speed
- Ideal for high-performance motors
- Compact and light



## Spicer Electrified™ Torque-Hub

- Torque outputs engineered to fulfill industry targets for performance, serviceability and durability
- Improves machine performance with hybrid and fully electric drive systems
- Fully integrated electro-mechanical system



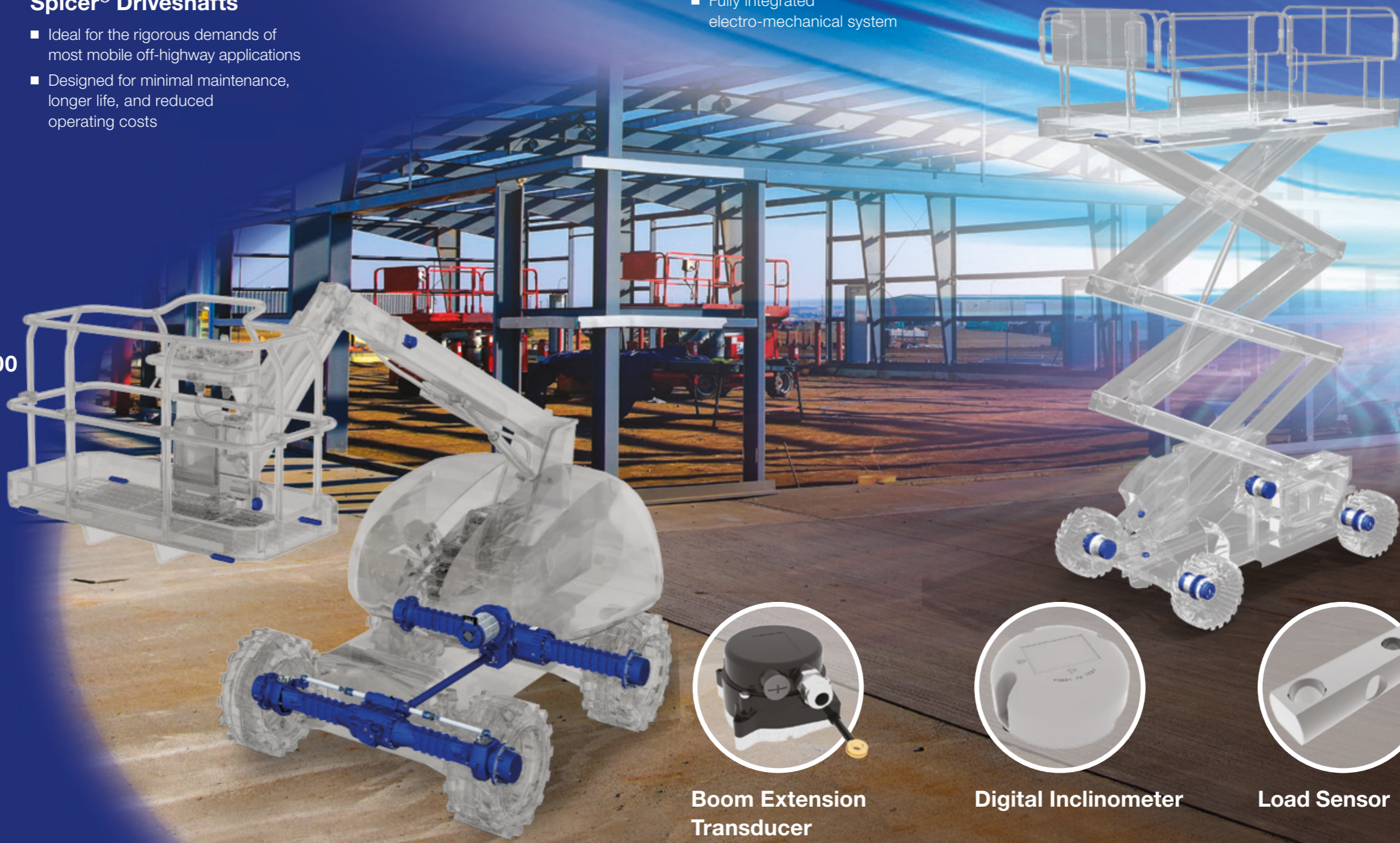
## Spicer Torque-Hub™ H Series

- Product range engineered for best-in-class efficiency and reliability
- Delivers exceptional maneuverability and proven robustness to final drive
- Low maintenance requirements and easy to service



## Brevini™ Slew Drive P Series

- Complete solution with hydraulic orbital motor
- Plug and play assembly complete with lifting lugs
- Two-stage reduction with multiple ratios available



## Boom Extension Transducer



## Digital Inclinometer



## Load Sensor

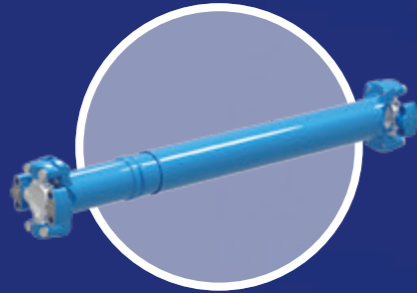
# Full-System Solutions for Site Dumpers

Dana works with leading OEMs in electric innovation to build the construction equipment of the future today. Our electrified driveline for site dumpers offer improved efficiency, reduced power losses, and lower noise—all in emission, all in a compact and high-performance solution. These machines are able to withstand the toughest working conditions with improved operator comfort and exceptional productivity in any conditions.



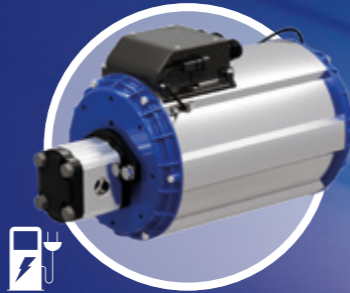
## Spicer® Planetary Non-Steering Axle

- Available with disk or drum brake
- Multiple configurations available



## Spicer® Driveshafts

- Ideal for the rigorous demand of most off-highway applications
- Designed for minimal maintenance, longer life and reduced operating cost



## TM4 ElectroDynamics™ e-Pump Motor

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



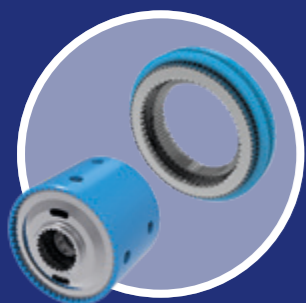
## Spicer® Electronic Controls

- Enables communication between driveline components
- Support for OEM movement in digitalization and automation



## TM4 ElectroDynamics™ AC-X1 Inverter

- Up to 50% higher power density
- High-efficiency and long life power stage – DBC (Direct Bonded Copper) patented MOSFET multilayer power module technology



## Graziano™ Shifting Solutions

- High-efficiency powershifts
- Enhanced shifting performance and driver comfort



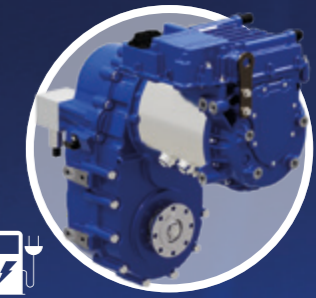
## Spicer Electrified™ eSG001

- High-efficiency single-speed
- Ideal for high-performance motors
- Compact and light



## Spicer Electrified™ eSG101

- High-efficiency single-speed
- Ideal for high-performance motors
- Enhances vehicle mobility



## Spicer Electrified™ eSG102

- High-efficiency, two speed
- Ideal for high-performance motors
- Enhances vehicle mobility



## Spicer® Two-Speed Gearbox

- Extremely compact and versatile
- Enhances vehicle mobility and precise shifting

## Power-dense performance for Compact Track Loaders

Suitable for hydraulic and electric vehicles, our Spicer Torque-Hub™ CT Series track drives feature an integral parking brake, soft shift control and optimized drive design.

Assembled using advanced automation technologies with error proofing, each unit receives a quality certificate and will ensure at least 10,000 service hours.

The integrated package, consisting of a two-speed hydraulic motor and a track drive, provides superior torque, maneuverability, and travel speeds.

Engineered for low maintenance requirements, these track drives will keep the cost of ownership to a minimum.



### Spicer Torque-Hub™ CT Series Track Drive

- Engineered to maximize performance
- Reliable everywhere
- Customization and sustainability

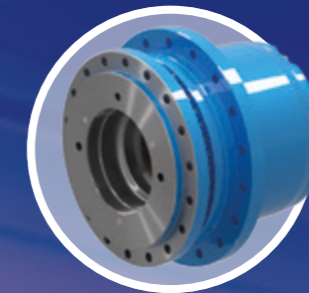
## Full-System Solutions for Single-Drum Rollers

Dana designs and manufactures fully integrated drive systems for a range of compactors, including road compactors and waste compactors.

Compactors are used globally across many markets for a variety of purposes, including road and waste compaction. The compactor market is transforming rapidly as machine weight ranges are becoming wider while end users demand increased performance and lower environmental impact.

Drum roller designs are becoming increasingly versatile, enhancing operator comfort, productivity, and fuel economy, while accommodating advanced emissions controls and other new systems.

Dana has emerged as the market and technology leader, supporting OEMs of all sizes with this application.



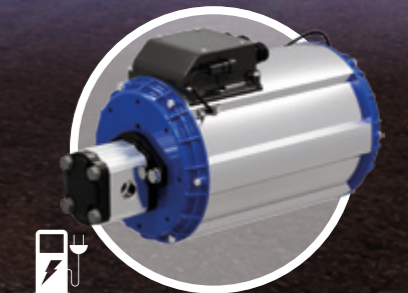
### Spicer Torque-Hub™ CTU Series Track Drive

- Internal multi-disc parking brake
- High radial and axial load capacity bearings



### Spicer® Planetary Rigid Non-Steering Axle

- Designed for small-and medium-sized machines
- Enables OEMs to reduce the package size of motors, pumps, and other hydraulic components



### TM4 Electro Dynamics™ e-Pump Motor

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

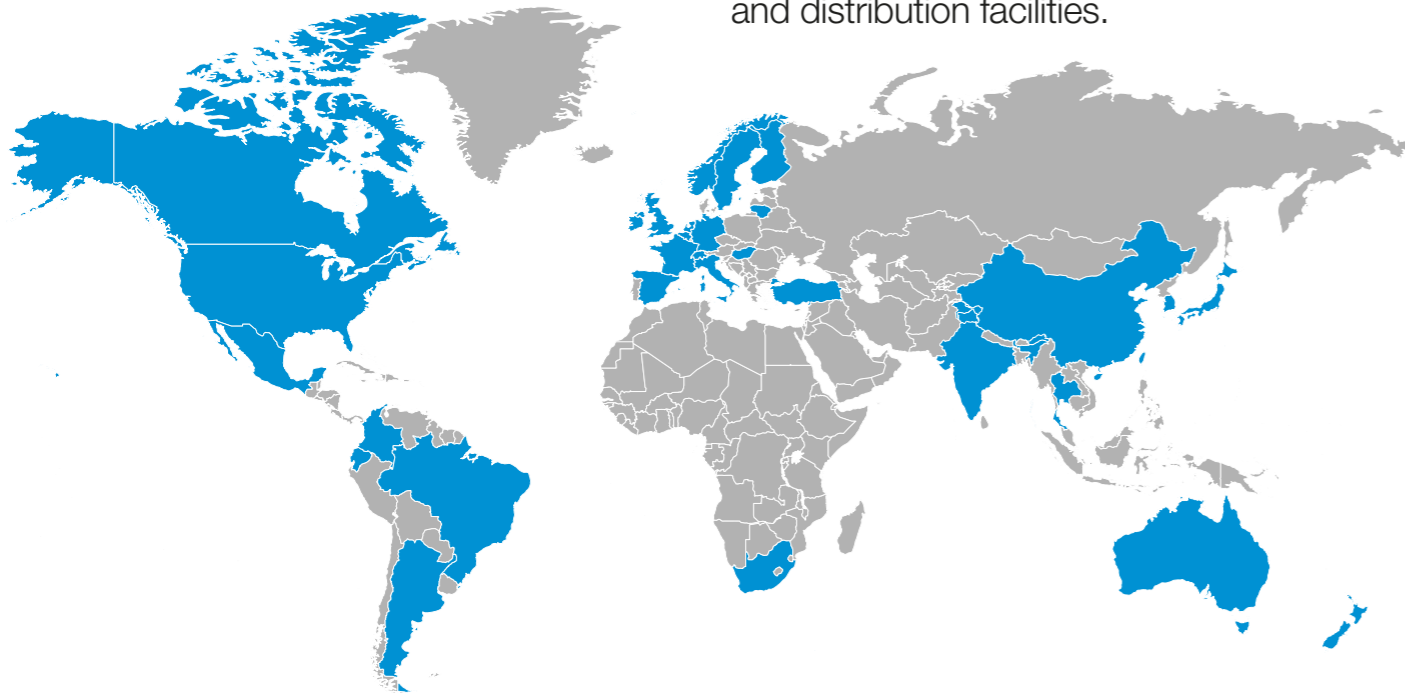
# Global Strength

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 for all mobility markets across the globe.

The company's conventional and clean-energy solutions support nearly every vehicle manufacturer with drive and motion systems, electrodynamic technologies, 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.

