



SPICER® | **BREVINI®**

Drive and Motion Systems for **Material Handling Applications**





Founded in 1904, Dana Incorporated is a world leader in highly engineered solutions for improving the efficiency, performance, and sustainability of powered vehicles and machinery. Dana supports the passenger vehicle, commercial truck, and off-highway markets, as well as industrial and stationary equipment applications.

We maintain a competitive advantage in the marketplace with a commitment to delivering on the five dimensions of our enterprise strategy – leveraging the core, strengthening customer centricity, expanding global markets, commercializing new technology, and accelerating hybridization and electrification.

Employing thousands of people in 33 countries, on six

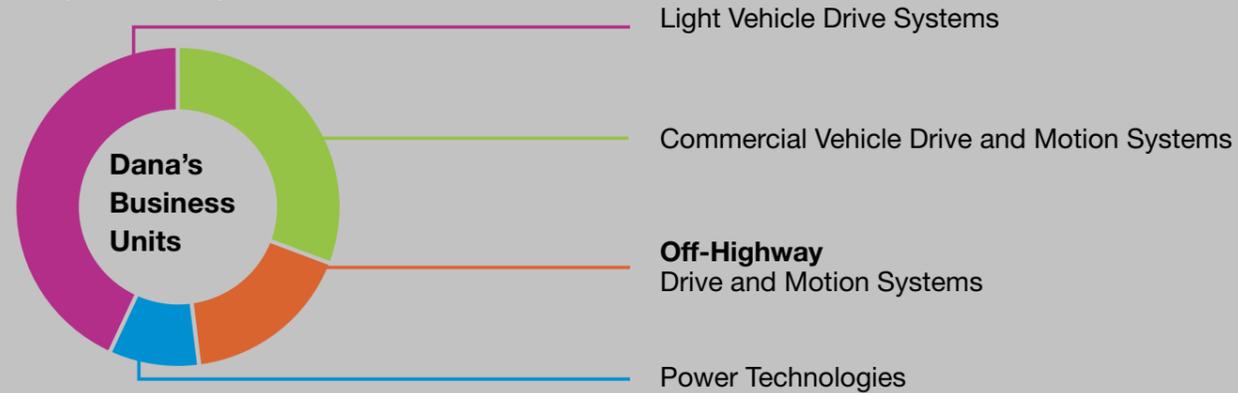
continents, our people work tirelessly to deliver long-term value to customers around the world. We have earned our position as a trusted, top-tier supplier by collaborating with customers to develop, integrate, and support the innovations required to improve vehicle performance and efficiency.

Each day, in both large and small ways,
Dana is defined as People Finding A Better Way®.



Corporate Business Units

Dana serves global light vehicle, medium/heavy vehicle, and off-highway markets through four business units – Light Vehicle Driveline Technologies (Light Vehicle), Commercial Vehicle Driveline Technologies (Commercial Vehicle), Off-Highway Drive and Motion Technologies (Off-Highway), 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.



Off-Highway Brands

Off-Highway Sectors

Drivetrain Systems



Motion Systems



Thermal Management



Sealing



MOBILE

Agricultural

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

Integrated drive and motion systems from Dana enhance construction 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 and Forestry

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.

Material Handling

Our custom drive and motion systems enhance material-handling and surface-mining 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.

INDUSTRIAL

Dana's portfolio of advanced motion technologies has been engineered to support increased productivity and reliability, lower emissions, improved operator safety and comfort, and reduced total cost of ownership.



Drive and Motion Systems

Your Single-Source Provider for Port Handling Equipment



SPICER®

BREVINI®

The port equipment market evolves according to the constant growth of global needs and to the different goods that must be handled. Dana has a complete range of advanced drive and motion products for port handling equipment that address the market trends. We design and manufacture fully integrated drive and motion products for all types of equipment used within the port handling sector.

Forklift Trucks

Our new selection of electrified drive and motion technologies are available for Class 1-5 forklift trucks. We also offer industry-proven mechanical drivetrain products for applications ranging from 1.5 tonnes to 55 tonnes.

Automated Guided Vehicles

New electric-driven solutions for autonomous ports support the trend toward electrification and zero-emission targets.

Rubber-Tire Gantry Cranes

We offer a customized solution to meet a range of OEM needs, including modular design and add-on accessories, for both driving and lifting functions.

Reach Stackers

Dana provides the most diverse range of drive, motion, and control technologies to cover all container handling applications. Our solutions are focused on improved productivity and reduced emissions to meet customer requirements today, as well as anticipated future needs.

Full-System Solutions for Forklift Trucks

We precision engineer each product to meet customer preferences, regional needs and required duty cycles, all to lower operating cost and emissions while providing ultimate reliability. Our products allow operator to expertly maneuver vehicle with more precision, while enhancing comfort.



Spicer® Planetary Non-Steering Axles

Scalable modular solutions uniquely designed for industrial lift trucks
 Built to carry heavy loads while offering durability, reliability, and ease of maintenance
 Proven modular design and technology expertise
 Maintenance-free brakes and high-integrity sealing
 Many configurations and options available



Spicer® Driveshafts

A century of quality and innovation
 Ideal for the rigorous demand of most off-highway applications
 Multiple driveshaft and end-fitting combinations
 Designed for minimal maintenance, longer life and reduced operating cost



Brevini® Graphic Display Opus Series

Large size panel up to 12"
 Bright TFT screen for outdoor usage
 Waterproof robust plastic body
 With and without touchscreen and / or physical keyboard



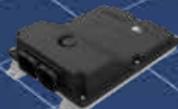
Spicer® Hydrodynamic Transmissions

Best-in Class Efficiency
 Full powershift options with or without lockup
 Advanced electronic controls
 Highly efficient aluminum-cast converter



Brevini® Proportional Directional Valve - HPV Series

Wide range: regulated flow up to 600l/m – 370 bar working pressure
 High flexibility with valve and block combinations
 Remote, electronic operation
 Smooth control to improve work function performance
 Available with MSB CANbus module



Spicer® Electronic Controls

Enables communication between driveline components
 Best-in-class controls optimize productivity, maximize life, and reduce maintenance
 Support for OEM movement in digitalization and automation
 Individual functional controls
 Capability to combine drive and motion on one platform



Spicer® Hydromechanical Variable Transmission

Stepless drive with no interrupted acceleration enhances comfort
 Precise, dynamic and adjustable tractive effort
 Provide optimal handling and the highest possible throughput with maximum fuel savings



Brevini® Fan Drive Gear Motor

Cast iron body for improved efficiency especially at high oil temperature
 High volumetric and mechanical efficiencies
 Low noise level
 Built-in proportional relief valve for fan speed control
 Built-in anti cavitation valves



Brevini® Angle – Transducer TLx and Asx Series

Waterproof, robust and compact body
 1 or 2 axis, integrated inclinometer available
 Dual/redundant outputs available for PLd EN13849 safety systems
 Length up to 12,5 meter



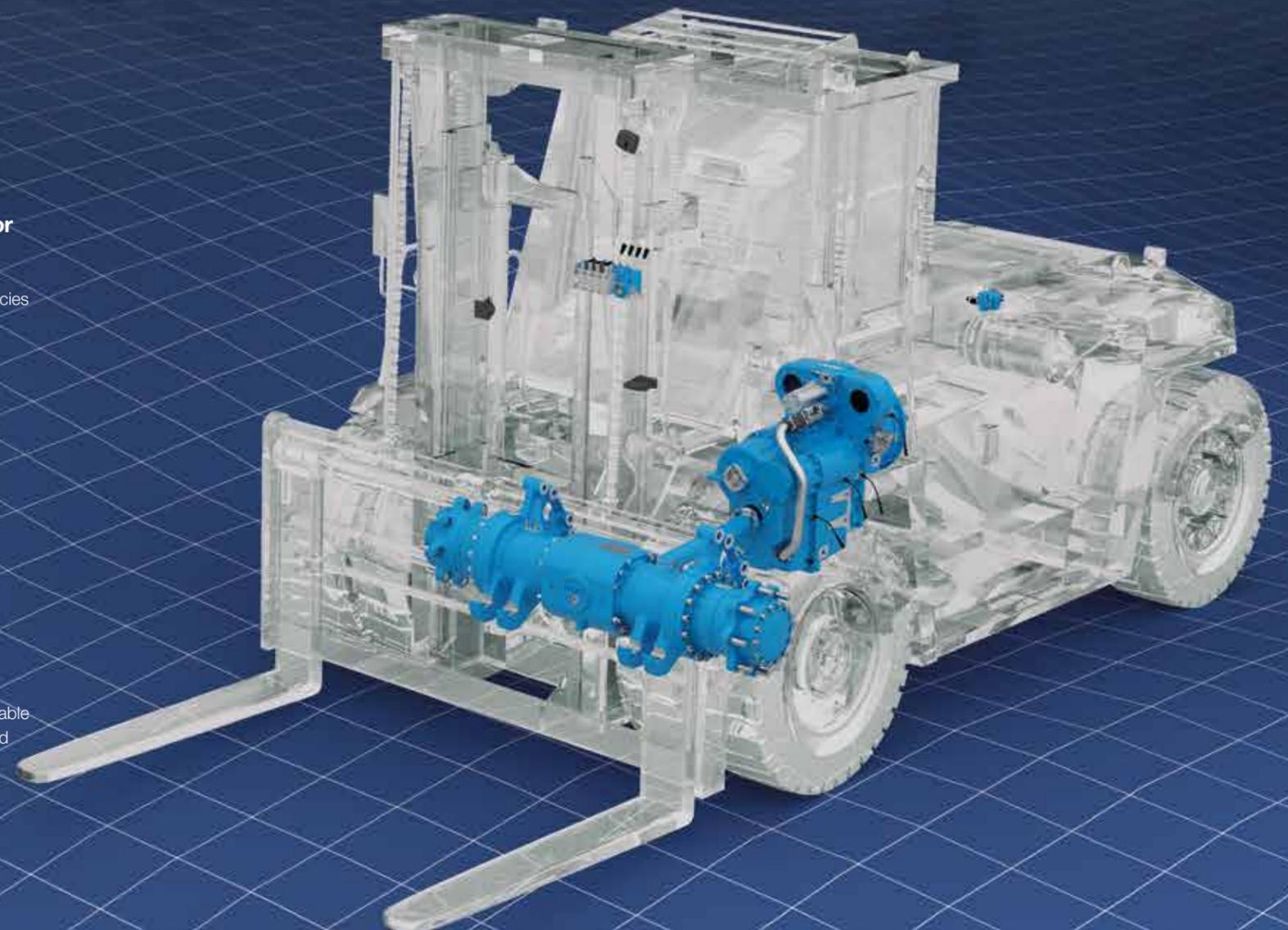
Brevini® Digital Inclinometers TAC Series

Waterproof robust plastic body
 1 or 2 axis measurement
 Dual/redundant outputs available for PLd EN13849 safety systems
 Optional thermal compensation available
 Customizable signal filtration
 Customizable hardness on demand



Brevini® Shear Beam Load Sensor

Waterproof robust and compact body
 Dual/Redundant output available for PLd EN13849 safety systems
 Optional thermal compensation available



Full-System Solutions for Reach Stackers

Dana is a leading supplier of Spicer® Drive and Brevini® Motion products for material handling vehicles that are designed to work seamlessly and allow operators to engage, lift, and transport heavy loads with speed and precision. Our technologies improve the performance, fuel efficiency, safety, and durability.



Spicer® Planetary Non-Steering Axles

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



Spicer® Driveshafts

A century of quality and innovation
Ideal for the rigorous demand of most off-highway applications
Multiple driveshaft and end-fitting combinations
Designed for minimal maintenance, longer life and reduced operating cost



Brevini® Fan Drive Gear Motor

Cast iron body for improved efficiency especially at high oil temperature
High volumetric and mechanical efficiencies
Low noise level
Built-in proportional relief valve for fan speed control
Built-in anti cavitation valves



Spicer® Hydrodynamic Transmissions

Best-in Class Efficiency
Full powershift options with or without lockup
Advanced electronic controls
Highly efficient aluminum-cast converter



Brevini® Slewing Drives

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



Brevini® Graphic Display Opus Series

Large size panel up to 12"
Bright TFT screen for outdoor usage
Waterproof robust plastic body
With and without touchscreen and / or physical keyboard



Spicer® Hydromechanical Variable Transmission

Stepless drive with no interrupted acceleration enhances comfort
Precise, dynamic and adjustable tractive effort
Provide optimal handling and the highest possible throughput with maximum fuel savings



Brevini® Proportional Directional Valve - HPV Series

Wide range: regulated flow up to 600l/m – 370 bar working pressure
High flexibility with valve and block combinations
Remote, electronic operation
Smooth control to improve work function performance
Available with MSB CANbus module



Spicer® Electronic Controls

Enables communication between driveline components
Best-in-class controls optimize productivity, maximize life, and reduce maintenance
Support for OEM movement in digitalization and automation
Individual functional controls
Capability to combine drive and motion on one platform



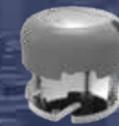
Brevini® Joystick BJ200

Waterproof robust plastic body
Ergonomic grip
Customizable button options
Available in both analogue and CANbus versions



Brevini® Boom Angle/Length Extension Sensor AS Series

Draw-wire length sensor robustly designed
Available with dual/redundant output for PLd EN13849 compliance
Voltage: 4-20mA or CANbus output
From 5 to 12.5m length range



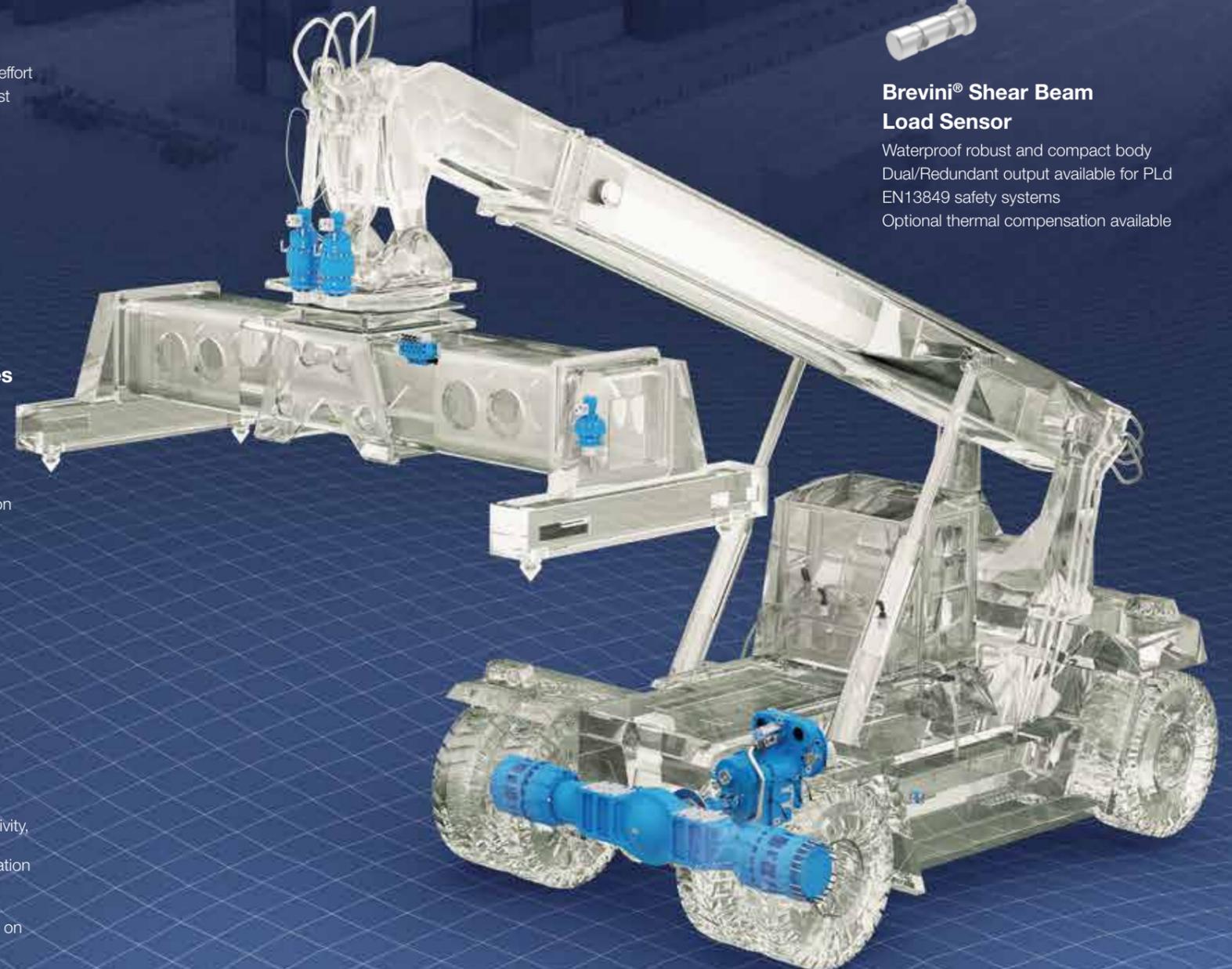
Brevini® Tilt Sensor IDXY Series

Constantly measures vehicle tilt
Single and double axis measurement
Dual Output
Waterproof



Brevini® Shear Beam Load Sensor

Waterproof robust and compact body
Dual/Redundant output available for PLd EN13849 safety systems
Optional thermal compensation available



Full-System Solutions for Rubber-Tire Gantry (RTG) Crane

Dana offers customized solutions for Rubber-Tire Gantry Cranes to meet a range of OEM needs, including modular design and add-on accessories, for both driving and lifting functions.



Brevini® Industrial Planetary Gearboxes – S Series

- Wheels steering system drive
- Ratio range up to 5.000:1
- Modular design
- Marine painting cycle
- Others options solution on request also for 16W



Spicer® Torque-Hub® Wheel Drives

- Wheel drive and driven
- Customized solution
- Developed for highly efficient electric drivetrain
- Benefit in cost in the of electric consumption



GWB® Industrial Driveshafts

- Complete product range featuring flange/ swing diameter from 120 to 1300 mm
- Superior bearing life
- High torque capacity
- Designed for ease of maintenance with service-free option
- Engineered to withstand harsh conditions, proven with a 70-year history on the market
- Minimized total cost of ownership



Brevini® Industrial Planetary Gearboxes

- 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® Winch Drives

- Main hoist; innovative pure planetary solution
- Plug-in planetary solution
- More space for easy access to maintenance and service components
- Lighter weight and easier installation
- Mechanical efficiency improved



Brevini® Helical Bevel Helical Gearboxes – Posired 2 Series

- Main hoist
- Dedicated design for single-drum drive
- Shape and cost customization
- Auxiliary drive system on board
- Marine painting
- Extensive ratio range
- Supports torque range up to 1300 kNm
- Spheroidal graphite cast iron housing
- High efficiency
- Diverse low speed shaft options
- Premium sealing
- Reliable operation
- Low noise



Brevini® Helical Bevel Helical Gearboxes

- Extensive torque range
- High efficiency
- Diverse low speed shaft options
- Low noise
- GG20-22 housing



Drive and Motion Systems

Your Single-Source Provider for Cranes



SPICER®

BREVINI®

Dana provides drive and motion systems for tracked and wheeled cranes with a wide range of lift capacities. Our full line of Spicer® and Brevini® solutions features the latest technologies to keep cranes running efficiently, reliably and safely even in the most demanding environments.



Crawler Crane

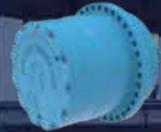
Our new selection of Spicer Torque-Hub Track Drives and Brevini Motion technologies are engineered to deliver performance, durability and reliability to meet manufacturer preferences. Move freely, swivel smoothly, lift easily with Dana.

Rough Terrain Crane

Dana engineers and manufactures advanced drive and motion systems that are fully customizable with additional features and configuration options to achieve the highest levels of fuel efficiency and productivity.

Full-System Solutions for Crawler Crane

Dana is ideally positioned to provide drive and motion systems for high performance crawler cranes. Our product offering is engineered to deliver performance, reliability, durability and safety to support manufacturer's needs worldwide.



Spicer® Torque-Hub® RCT Series Track drive

- 1 Product range specifically designed for tracked applications
- Torque ratings from 80 kNm to 450 kNm
- High Torque Density for High-performance machines
- High Strength material engineered for low temperature
- Best in class efficiency package with hydraulic or electric motor



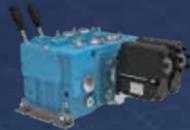
Brevini® Slewing Drive Series

- Designed for a variety of Off-Highway applications
- Several sizes, with different output torques up to 80 kNm
- Compact design delivers high performances and zero noise operations
- Available in a wide range of brake settings
- Integer shaft pinions available



Brevini® Hydraulic Pump HD1 100

- Designed for use in closed circuit hydrostatic transmissions
- 2 built-in pressure relief valves to protect the circuit from pressure overloads
- Maximum pressure up to 450 bar [6500 psi]



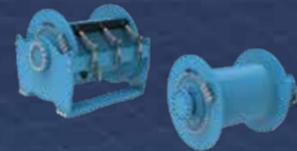
Brevini® Proportional Directional Valve - HPV Series

- Wide range: regulated flow up to 600l/m – 370 bar working pressure
- High flexibility with valve and block combinations
- Remote, electronic operation
- Smooth control to improve work function performance
- Available with MSB CANbus module



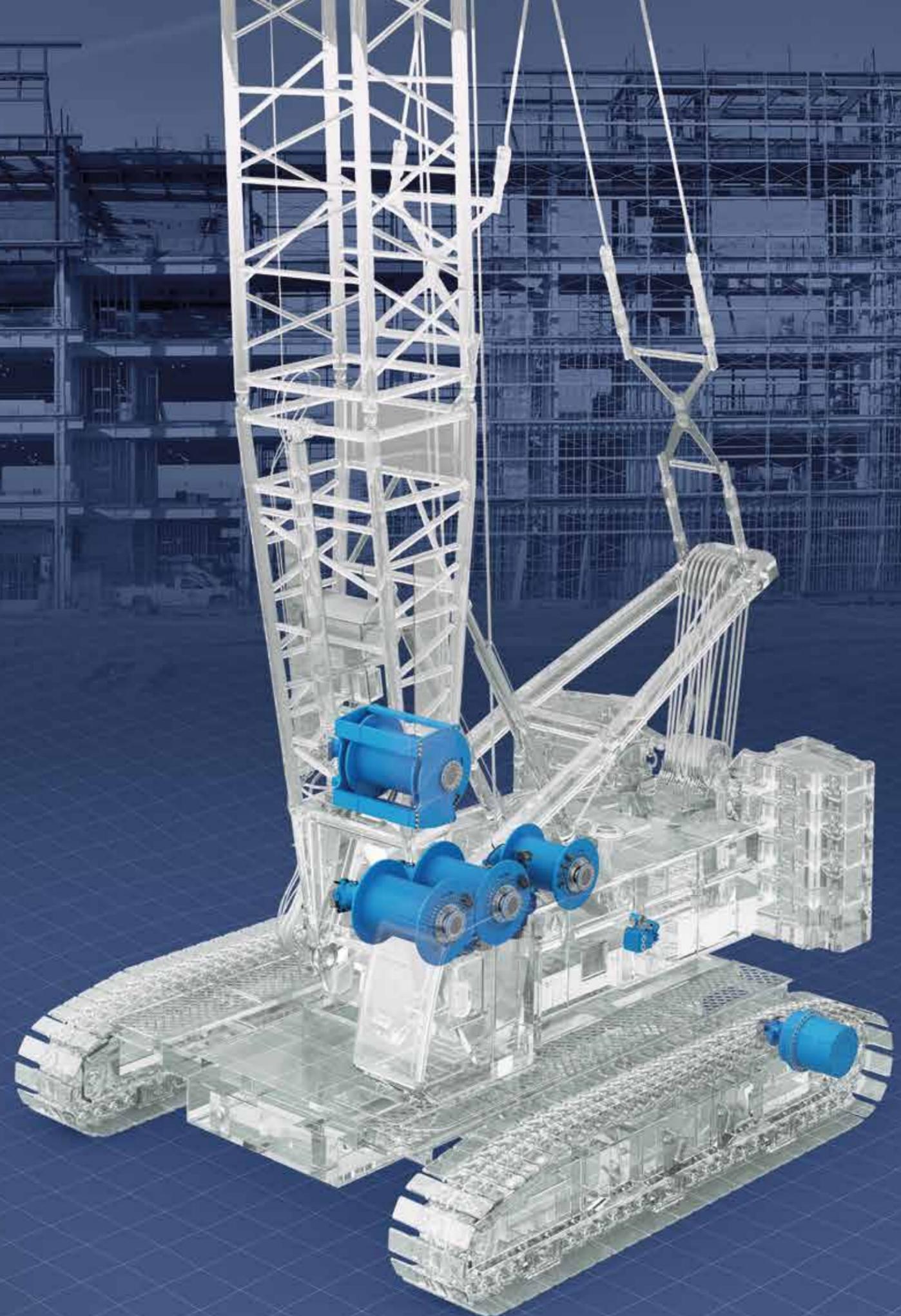
Brevini® Fan Drive Gear Motor

- Cast iron body for improved efficiency especially at high oil temperature
- High volumetric and mechanical efficiencies
- Low noise level
- Built-in proportional relief valve for fan speed control
- Built-in anti cavitation valves



Brevini® Evolution™ Series Winches BWE

- Line pull up to 16 Tons
- High speed axial piston motor variable displacement
- Wide range of safety controls available
- Motordrum option available
- Embedded torque sensor



Full-System Solutions for Rough Terrain Crane

OEMs and operators can rely on Dana to deliver premium drivetrain products, with over 50-year history of developing successful rough-terrain crane applications. Our full line of Spicer® and Brevini® solutions features the latest technologies to keep rough-terrain cranes running efficiently and reliably, even in the most demanding environments.



Spicer® Planetary Steering Axles

State-of-the-art design offers structural integrity
Robust modular axle platforms leveraging proven components
2 or 4 caliper dry disc brakes per axle
Viton® rotating radial lip seals ensure high-integrity sealing



Spicer® Hydrodynamic Transmissions

Lift capacities up to 120 tonnes
Flexible options for performance, layout, and controls
Full reversing range shift and full powershift options
Exclusive gear ratios significantly improve gradability and travel speed
Multiple mounting configuration: Integral, Mid-mount and Remote



Spicer® Torque Converters

Designed for reliability in many off-highway applications
Offer flexible options to match most engine requirements
Engineered to maximize machine performance and efficiency
Can be matched to Spicer remote transmissions



Spicer® Driveshafts

A century of quality and innovation
Ideal for the rigorous demand of most off-highway applications
Multiple driveshaft and end-fitting combinations
Designed for minimal maintenance, longer life and reduced operating cost



Brevini® Slewing Drives

Designed for a variety of Off-Highway applications
Several sizes, with different output torques up to 40 kNm
Compact design delivers high performances and zero noise operations
Available in a wide range of brake settings
Integer shaft as well as loose pinions available



Brevini® Evolution™ Series Winches BWE

Line pull up to 16 Tons
High speed axial piston motor variable displacement
Wide range of safety controls available
Motordrum option available
Embedded torque sensor



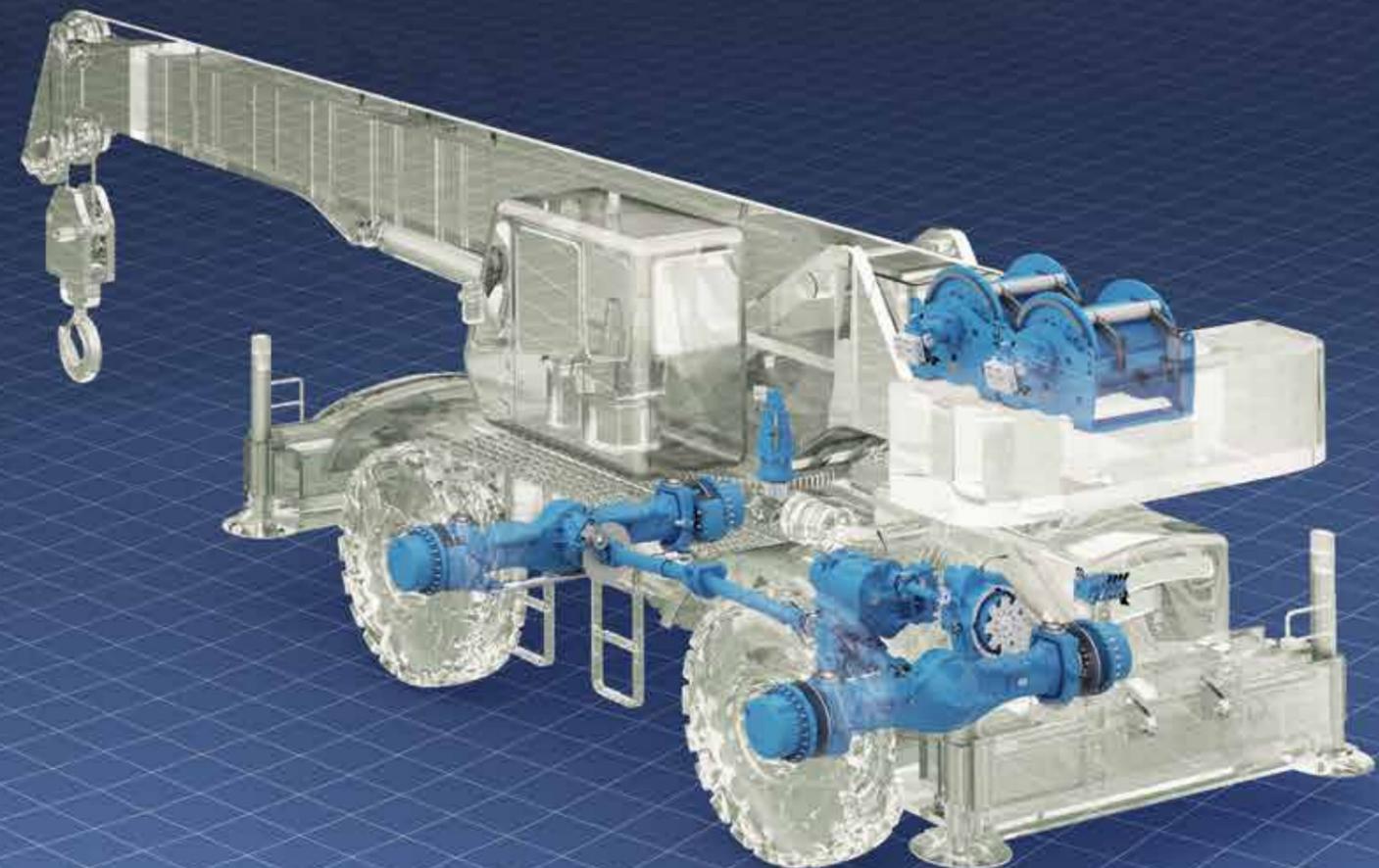
Brevini® Proportional Directional Valve HPV Series

Wide range: regulated flow up to 600l/m – 370 bar working pressure
High flexibility with valve and block combinations
Remote, electronic operation
Smooth control to improve work function performance
Available with MSB CANbus module



Spicer® Electronic Controls

Enables communication between driveline components
Best-in-class controls optimize productivity, maximize life, and reduce maintenance
Support for OEM movement in digitalization and automation
Individual functional controls
Capability to combine drive and motion on one platform



Fully Integrated e-Drive and e-Motion Systems

Today we can proudly say that we are the only supplier with the capability to help manufacturers bring electric-driven vehicles to market through our collaborative, system-oriented approach and decades of expertise.

Dana offers a full product portfolio and multiple technologies for electrification needs. Through our market-proven brands, we can provide motors, inverters and controllers for low- and high-voltage applications ranging from 24 to 800 V. Our product offering includes solutions for both drive and motion systems.



Low-Voltage Applications

Pioneering Electrification, Protecting the Environment.



Dana offers electrified solutions tailored to the voltage needs of your applications.

High-Voltage Applications





Technologies Customized to **Every Part of the Globe**

With a presence in 33 countries, Dana Incorporated boasts more than 145 engineering, manufacturing, and distribution facilities. Our worldwide network of local service centers provides assurance that each customer will benefit from our proximity and responsiveness.

About Dana Incorporated

Dana is an integral partner for virtually every major vehicle and engine manufacturer worldwide. We are a leading supplier of drivetrain, sealing, and thermal technologies to the global automotive, commercial-vehicle, and off-highway markets. Founded in 1904, we employ thousands of people across six continents.



About Dana Off-Highway Drive and Motion Systems

Dana delivers fully optimized Spicer® drivetrain and Brevini® motion systems to customers in construction, agriculture, material handling, mining, and industrial markets. We bring our global expertise to the local level with technologies customized to individual requirements through a network of strategically located technology centers, manufacturing locations, and distribution facilities.

Learn more about Dana's drivetrain and motion systems at dana.com/offhighway.

Dana.com/oh/contact

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.

