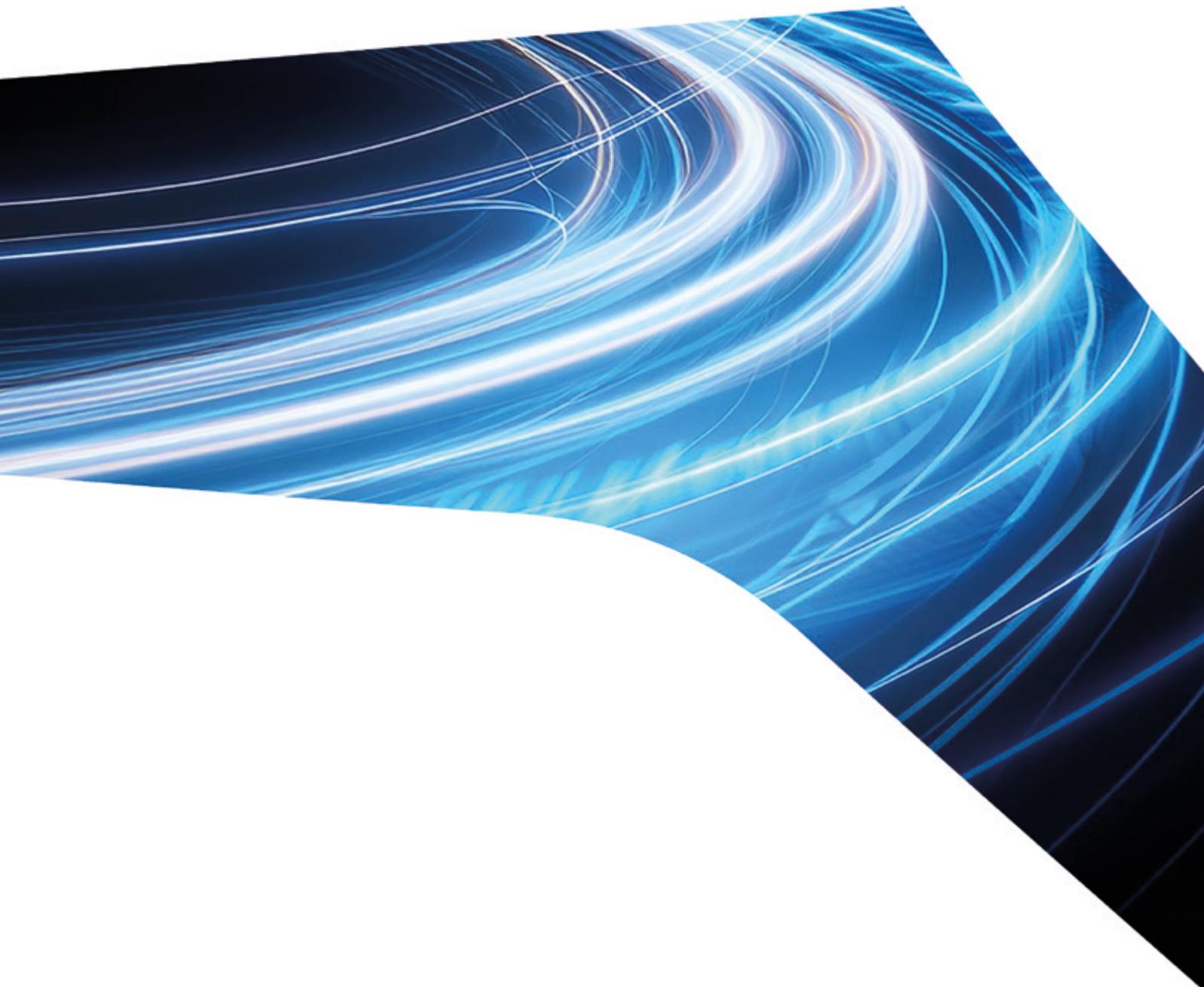




Off-Highway
Drive and Motion Systems
Mobile and Industrial Business



Off-Highway Drive and Motion Systems

As an innovative leader, we continuously improve the performance and efficiency of vehicles and machines worldwide. We aim to be the global pacesetter in efficient power conveyance and energy-management solutions.

Mobile



 AGRICULTURE



 MINING



 MATERIAL HANDLING



 CONSTRUCTION AND FORESTRY



 COMMERCIAL TURF CARE

Industrial



 BULK MATERIAL AND MINING



 ONSHORE AND OFFSHORE MARINE



 INDUSTRIAL AND STATIONARY EQUIPMENT



 HEAVY INDUSTRY: STEEL, SUGAR, AND CEMENT



 WASTE MANAGEMENT AND RENEWABLE ENERGY



 PLASTIC AND RUBBER

Off-Highway Brand Portfolio

Supported by a legacy of innovation in conventional drivetrains, we are 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.

Drivetrain and e-Drive Systems

SPICER™

Motion and e-Motion Systems

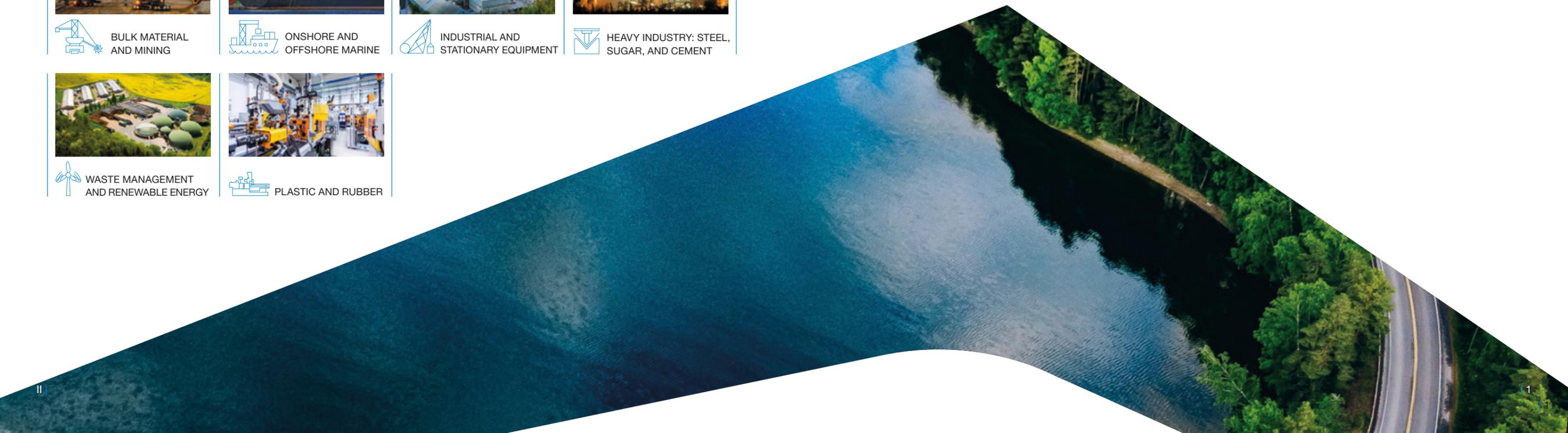
BREVINI™

FAIRFIELD™

PIV™ **GLB™**

Gears and Shifting Solutions

GRAZIANO™



Drive and Motion Solutions

The drivetrain solutions you need, backed by global expertise and support.

Spicer™ Axles and Drives

Spicer™ axles are engineered to improve performance, tractive effort, and operator comfort in harsh working environments while also supporting on-road mobility through high torque density, high reliability, and robustness.

Our power-dense designs deliver maximum performance in a compact package that improves reliability, durability, stability, and safety.

We have a broad range of dedicated solutions matching the different application needs like torque density, specific duty cycle, braking performances, safety standard and robustness.



Spicer™ Driveshafts

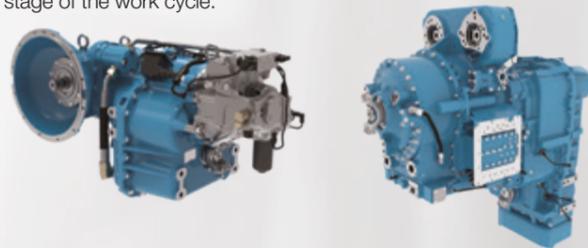
Built to withstand the roughest terrains and heaviest loads, Spicer driveshafts efficiently and reliably manage input torque to improve productivity, reduce operating costs, and simplify maintenance. They can be customized with a complete set of end fittings, flanges, and service options for any requirement.



Spicer™ Transmissions with Electronic Controls

From basic gearboxes to leading-edge powersplit configurations, We supply a wide range of powerful, efficient transmissions and electronic controls that improve fuel efficiency, handling, tractive effort, and operator comfort while reducing noise and ensuring easy maintenance.

Our advanced electronic controls provide multiple smart operating modes that optimize productivity, monitoring and efficiency at every stage of the work cycle.



Graziano™ Custom Gears and Shifting Solutions

Our custom-designed high-precision gears and shafts improve the performance, reliability, and durability of final reduction components. We also support technically challenging and complex vehicle applications by leveraging our engineering expertise to supply customized crown wheel and pinion sets.

We offer a range of heavy-duty synchronizers and other shifting solutions that help vehicle and transmission manufacturers overcome the limited availability of engineering resources while giving vehicle operators better control, shifting performance and improved productivity.

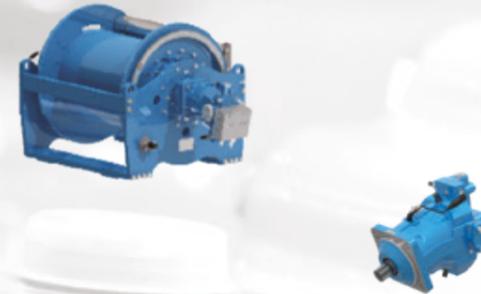
Additionally, we leverage our in-house design, prototype, and validation capabilities to produce custom drive assemblies for highly specialized applications with accelerated development timelines.



Brevini™ Motion Systems

We serve OEMs as a single supplier for the wide variety of components that maximize the productivity and efficiency of vehicle work functions.

Our comprehensive selection of Brevini™ motion products includes gearboxes, slewing drives, winches and winch drive solutions.



System Solutions

Vehicle intelligence, autonomous driving systems, AI, electrodynamics, telematics, cybersecurity, and other digital innovations are enabling quantum leaps in vehicle performance and efficiency.

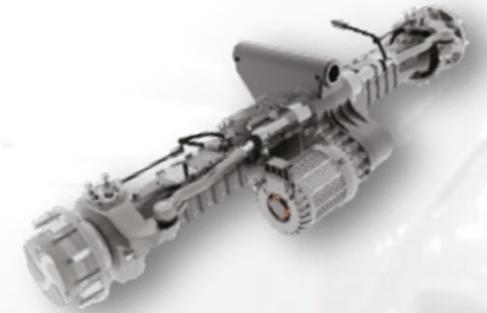
Our multi-disciplinary team of system solutions engineers provides turnkey solutions for electric vehicle integration by collaborating with customers. Our holistic approach helps OEMs seamlessly integrate transformative digital technologies with our proven drive and motion systems for the next generation of vehicles.



e-Drive and e-Motion Solutions

We leverage our complete portfolio of e-Propulsion Systems — e-Axles, e-Drive Units, and e-Hub Drives — as well as e-Powertrains, e-Motion Systems, and electrodynamic modules to enable vehicles to meet the highest standards for efficiency, reliability, and performance.

We can help OEMs adapt current ICE-driven applications with effective, low-risk, quick-to-market drive solutions today as we plan for future vehicle configurations with fully integrated systems that deliver superior productivity while reducing manufacturing complexity and total cost of ownership.



Drive Systems Spicer™ Axles

Agriculture

Tractors



Spicer™ Independent Front Suspension Axle

Range		
970	980	990



Spicer™ Standard Suspension Axle

Range			
730	740	750	770



Spicer™ Portal Axle

Range		
P71	P72	P73



Spicer™ Modular Axle

Range						
M20	M30	M40	M50	M60	770	

Combines and Harvesters



Spicer™ Front Axle

Range	
N07	N09



Spicer™ Rear Standard Suspension Axle

Range		
730	740	750



Spicer™ Rear Adjustable Axle

Range
733

Telehandlers



Spicer™ Planetary Steering Axle

Range				
211	212	223	213	214

Material Handling

Small Forklifts & AGVs



Spicer™ Planetary Steering Axle

Range
141

Container Handlers



Spicer™ Planetary Non-Steering Axle

Range	
145	147

Forklift Trucks



Spicer™ Planetary Non-Steering Axle

Range			
137	138	139	144

Rough Terrain Cranes



Spicer™ Planetary Steering Axles

Range
246

Ground Support Equipments



Spicer™ Planetary Non-Steering Axle

Range			
111	112	123	113



Spicer™ Planetary Steering Axle

Range					
211	212	213	223	214	246

Mining

Underground Mining Loaders



Spicer™ Planetary Non-Steering Axle

Range				
182	183	17D	20D	53R

Mining Trucks



Spicer™ Planetary Non-Steering Axle

Range				
182	183	17D	20D	53R

Drill Rigs



Spicer™ Planetary Non-Steering Axle

Range							
111	112	113	114	115	116	123	125



Spicer™ Planetary Steering Axle

Range	
213	223

Construction and Forestry

Compact Wheel Loaders



Spicer™ Planetary Non-Steering Axle

Range					
109	111	112	123	113	114

Large Wheel Loaders



Spicer™ Planetary Non-Steering Axle

Range			
115	116	125	126

Wheeled Excavators



Spicer™ Planetary Steering Axle

Range			
162	262	163	263



Spicer™ Planetary Non-Steering Axle

Range			
111	211	112	212

Telehandlers



Spicer™ Planetary Steering Axle

Range				
211	212	223	213	214

Single Drum Rollers



Spicer™ Planetary Non-Steering Axle

Range		
192	193	194

Motor Graders



Spicer™ Bogie Axle

Range					
GA10	GA14	GA17	GA15	GA20	FG65

Forestry Applications



Spicer™ Rear Axle

Range					
113	114	115	116	125	126

Drive Systems

Spicer™ Wheel and Track Drives

Agriculture



Sprayers



Spicer Torque-Hub™
CT Series

Range					
CT11	C016(*)	C021	C024	C030(*)	C036

(*) = under development



Spicer Torque-Hub™
C0 Series

Windrowers



Spicer Torque-Hub™
C0 Series

Range	
C024	HW5



Spicer Torque-Hub™
HW5 Series

Material Handling



Rubber-Tire Gantry Cranes



Spicer Torque-Hub™
RCT Series

Range		
RCT9083	RCT9103	RCT9133



Spicer Torque-Hub™
PHC and TH Series

Range	
PHC3850	TH510

Crawler Cranes



Spicer Torque-Hub™
CTU Series

Range	
CTU3500.1	CTU3700.1



Spicer Torque-Hub™
RCT Series

Range		
RCT9083	RCT9103	RCT9133

Mining



Drill Rigs / Mobile Crushers and Screeners



Spicer Torque-Hub™
CTU Series

Range				
CTU3150.1	CTU3200.1	CTU3300.1	CTU3500.1	CTU3700.1



Spicer Torque-Hub™
RCT Series

Range		
RCT9083	RCT9103	RCT9133

Construction and Forestry



Compact Track Loaders



Spicer Torque-Hub™
CT Series

Range			
CT05	CT07	CT11	CT17

Forestry Applications



Spicer Torque-Hub™
RCT Series

Range		
RCT9083	RCT9103	RCT9133

MEWPs



Spicer Torque-Hub™
H Series Hydraulic

Range					
4H	7H	8H	11H	13H	18H



Spicer Torque-Hub™
eS-AW Series Electric

Range				
eSAW04	eSAW07	eSAW11	eSAW13	eSAW17



Spicer Electrified™ e-Drive Drop Box,
Spindle and Hub Output

Range				
eS04D	eS05D	eS08D	eS10S	eS10H

Road Equipment



Spicer Torque-Hub™
RCT Series

Range
RCT7102



Spicer Torque-Hub™
CTU Series

Range				
CTU3150.1	CTU3200.1	CTU3300.1	CTU3500.1	CTU3700.1



Spicer Torque-Hub™
CTU Series



Spicer Torque-Hub™
RCT Series

Range		
RCT9083	RCT9103	RCT9133

Drive Systems Spicer™ Transmissions

Agriculture



Telehandlers



Powersplit Transmission

Range
HVT1



Powershift Transmission

Range
PS09 PSR09 T/VDT12000

Sprayers



Powersplit Transmission

Range
HVT2

Construction and Forestry



Wheel Loaders



Hydrostatic Transmission

Range
312 315 318 319



Hydrostatic Double Speed

Range
358 367



Powershift Transmission

Range
TE32 TE50



Powershift Transmission

Range
TE18 TZL16 TZL18



Powersplit Transmission

Range
HVT2

Mobile Elevated Work Platforms



Hydrostatic Transmission

Range
301

Telehandlers



Powershift Transmission

Range
T/VDT12000



Powersplit Transmission

Range
HVT1



Hydrostatic Transmission

Range
318



Hydrostatic Transmission

Range
319



Hydrostatic Two-Speed Transmission

Range
358 367 368

Forestry Equipments



Powersplit Transmission

Range
HVT2

Wheeled Excavators



Hydrostatic Two-Speed Transmission

Range
358 367



Hydrostatic Transmission

Range
342 343

Motor Graders



Powershift Transmission

Range
TMG14

Material Handling



Forklifts



Powershift Transmission

Range
T/TE08 T12000 TE08 TE10 T/TE14 TE17 TE30



Powershift Transmission

Container Handlers



Powersplit Transmission

Range
HVT2



Powershift Transmission

Range
T/TE14 TE17 TE30

Rough-Terrain Cranes



Powershift Transmission

Range
T20000 24000



Powershift Transmission

Range
T/TE14

Mining



Underground Mining Loaders and Trucks



Powershift Transmission

Range
T20000 36000 C8000 + 8000



Powershift Transmission



Powershift Transmission

Range
T/TE14 TE32 TE50



Powershift Transmission

Utility Vehicles



Powershift Transmission

Range
T12000 T20000 24000



Powershift Transmission

Range
T/TE14

Underground Mining Drill Rigs



Powershift Transmission

Range
T20000 24000



Powershift Transmission

Range
T/TE14

Mining Electrified



Powershift Electrified Transmission



Long Drop Powershift Transmission

Range
eRTE14 eRTE32



e-Powershift Transmission

Range
eSP502

Drive Systems

Graziano™ Custom Gears and Shifting Solutions

Synchronizers



Graziano™ Synchronizer DC 95/100



Graziano™ Synchronizer SC 184



Graziano™ Synchronizer TC 102/110/118



Graziano™ Synchronizer CSS

Gears and Shafts



Graziano™ Gears



Graziano™ Shaft



Graziano™ Ring Gears

Ring Gears

Powershift Clutches



Graziano™ Powershift Clutches



Graziano™ Powershift Units

Bevel Sets



Graziano™ Crown Wheel and Pinion



Graziano™ Bevel Gear

Custom Gears



Fairfield™ Custom Gears

Drive Systems

Spicer™ Driveshafts

Tractors



Spicer™ SPL55



Spicer™ Wing™ Series 8.5C



Spicer™ Centered Double Cardan



Spicer™ Double Universal Joint 93B35



Spicer™ Wing™ Series 7C

Combine Harvesters

Reach Stackers



Spicer™ Wing™ Series 6C



Spicer™ Wing™ Series 7C

AGVs



Spicer™ Wing™ Series 5C

Forklifts



Spicer™ Wing™ Series 5C

Telehandlers



Spicer™ Double Universal Joint 82B30



Spicer™ 10-Series 1410

Motor Graders



Spicer™ Wing™ Series 7C

Compact Wheel Loaders



Spicer™ Centered Double Cardan 2015-CDC



Spicer™ SPL55

Large Wheel Loaders



Spicer™ Wing™ Series 15C



Spicer Compact Plus™ 2045+

Wheeled Excavators



Spicer™ 10-Series 1410

Forestry Applications



Spicer™ Wing™ Series 7C with Bearing Support



Spicer™ Wing™ Series 8.5C

Underground Mining Loaders



Spicer™ Wing™ Series 9C

Drill Rigs



Spicer™ Wing™ Series 9C

Mining Trucks



Spicer™ Wing™ Series 14C

Motion Systems

With global expertise in the design and manufacturing of high-efficiency technologies for industrial and stationary equipment applications, Motion Systems fully integrates into our offer Brevini™ gearboxes, winches, PIV™ extruders drives, GWB™ industrial driveshafts, Fairfield™ custom gears.

Supported applications include on- and offshore equipment, green technologies, mining, heavy industries, and earthmoving.



Brevini™ Planetary Gearboxes



S-Range

Range	Nominal Torque [Nm]
S300-S20000	34,000-2,170,000



Industrial Slewing Drives

Range	Nominal Torque [Nm]
RPR030-RPR2050	5,000-24,000
SLS300-SLS850	34,000-200,000



Industrial and E-Range Planetary Gearboxes

Range	Nominal Torque [Nm]
E10-E260	1,300-25,000
EM1010-EM1320	1,000-24,000

Brevini™ Helical and Bevel Helical Gearboxes



Brevini EvoMax™ Gearbox

Range	Nominal Torque [Nm]
E2H-E3H- E4H-E3B- E4B-E3C- E4C	10,000-290,000



Posired™ 2

Range	Nominal Torque [Nm]
PC-PD-PE-PLC-PLD 60 - 91	340,000-1,100,000
PB / PLB 16 - 45	5,700-113,000



Posired™ N

Range	Nominal Torque [Nm]
ND-NE 18 - 56	8,200-286,000



Posired™ TS

Range	Nominal Torque [Nm]
TS18 - TS63	8,200-400,000



Posired™ D

Range	Nominal Torque [Nm]
ILC14 - ILC25	3,100-22,800

Brevini™ Gearboxes



Gearboxes

Range	Power [Kw]
ML32 - 52	10-100
B585 - 602	30-55
RD33 - 52	6-12

Brevini™ Plano Helical Gearboxes



High Power

Range	Nominal Torque [Nm]
SL2PLB85016 SL2PLB200031	90,000-2,170,000



Posiplan

Range	Nominal Torque [Nm]
PH, BPH 13-28	3,900-35,000

Brevini™ Winches



Hoisting Winches

Range	Max Line Pull at First Layer [kg]
DW 050-090	500-900
BWE 015-160	1,500-16,000



Recovery Winches

Range	Max Line Pull at First Layer [kg]
BWT 10.000-30.000	10,000-30,000

Brevini™ Gearmotors



Gearmotors

Range	Nominal Torque [Nm]
M, N, K, D 00-97	50-18,000



Winch Drives

Range	Max Output Torque [Nm]
PWD 2100-31100	10,000-110,000
SLW 300-850	85,000-190,000
SMW 1200-3500	300,000-850,000
RCW 908-913	80,000-130,000

GWB™ Industrial Driveshaft



Driveshafts for Industrial Applications

Range	Torque Range Tcs [Nm]	Flange Diameter [mm]
687/688-598	35 up to 21,500	00-225 / 600-1,300
687-688	2,400-35,000	100-225
587	43,000-57,000	225-285
390/392/ 393/492	60,000-1,170,000	225-550
498/598	210,000-15,000,000	600-1,200

Keep Driveshaft - Special Design
super short coupling, tunnel shaft, high speed design, carbon fiber tube
electrical insulation, remote lubrication, automatic lubrication,
condition monitoring

Brevini™ Pump Drives



BZ

Range	Nominal Power [Kw]
BZ265	110-130
BZ290	170-190
BZ340	220-240
BZ470	380-480

PIV™ Extruder Drives



Posirex

Range	Nominal Torque [Nm]
XC-XD-XE 16 - 80	5,100-720,000



Positwin

Range	Centre Distance	Torque / Shaft [Nm]
15B2N 146B2N	15-146	40-35,000



Special Gearboxes for Plastic & Rubber

Motion Systems

Fairfield™ Custom Drives



Jacking System Drives



Tram System Drives



Transfer Case



Custom Drive Components

Range	Max Jacking Torque [Nm]
S60A-S2000	82,000-2,260,00

Brevini™ Sensing and Control



Solenoid Valve Drivers



Motors and Pumps Drivers

Type	Description
MAV1152	Control unit for one proportional and up to 5 ON/OFF directional valves
MAV4211	Control unit for up to 4 proportional bidirectional valves

Type	Description
MAV4211SH	Control unit for pumps, motors and hydrostatic transmissions control



Levelling Control Units



Electronic Control Units

Type	Description	Axis	On-Off / PWM
GP200	Outriggers / stabilizers self levelling controller	2	ON/OFF
IDXYmp-ID3	Single or dual axis ON/OFF self levelling	1-2	ON/OFF

Type	Description
M92	Pre programmed limitation controller

Brevini™ Sensing and Control



Angle / Tilt Sensors



Load Sensors

Type	Description	Axis	Range
IDXYm-p-MKII	Double axis (X-Y) programmable tilt switch	1-2	±20
IDXYmp-ID3-MKII	Double axis programmable tilt switch	1-2	±20
TAC MKII	Single axis inclinometer	1	90-180-270-60
SP MKII	High accuracy double axis inclinometer	1-2	±20

Type	Description	Load range [kg]	Integrated amplification
TT	Shear beam load cell	350 - 10.000	Optional
TPE	Pin load cell	200 - 100.000	Optional
TC	Compression load cell	200 - 100.000	Optional
TR	Traction load cell	500 - 50.000	No
TAN	Ring load cell	500 - 3.000	No



Length Sensors



Pressure Sensors

Type	Description	Maximum displacement [m]
AS-TL	Aluminum enclosure. High accuracy length measurement. Integrated angle sensor (optional)	12.5
ASu55-TLu66	Low profile body. High accuracy length measurement. Integrated angle sensor (optional)	5
ASu-TLu	Compact body. High accuracy length measurement. Integrated angle sensor (optional)	5.5

Type	Description	Range [bar]	Output
TPV	Single pressure transducer	0-250 0-400	0.5-4.5 V
TPA	Single pressure transducer	0-250 0-400	4-20 mA
TPA	Doublelele pressure transducer	0-250	4-20 mA 20-4 mA

Electrification Capabilities

Our comprehensive portfolio of drive and motion technologies helps OEMs efficiently transition toward electrification.

Our multi-disciplinary team of engineers develops turnkey solutions ranging from plug-and-play components to fully integrated systems.

Electronics and Mechatronics

e-Drive



High Efficiency Transmission



High Efficiency Transmission



e-Powershift Transmission



e-Powershift Transmission



e-Axle Compact



e-Axle Heavy



e-Hub Drive Compact



e-Hub Drive Heavy

e-Motion



e-Slew Drive

EV Components



e-Software

CTIS



Electronic Control Units



Position Sensors



Inclinometer



Angle Transducer

Force Sensors



System Solutions

We are a world-class collaborator with OEMs in delivering innovative, best-in-class engineering solutions. With resources located near our customers, we can leverage our core competencies in systems development to produce ground-breaking technologies that boost business performance.

Our systems approach is combined with our industry-leading portfolio of advanced technologies to help OEMs maximize the value of their offerings and find a better way forward.

System Thinking

We adopt a **holistic perspective** to systems that fortifies our offerings

System Contents

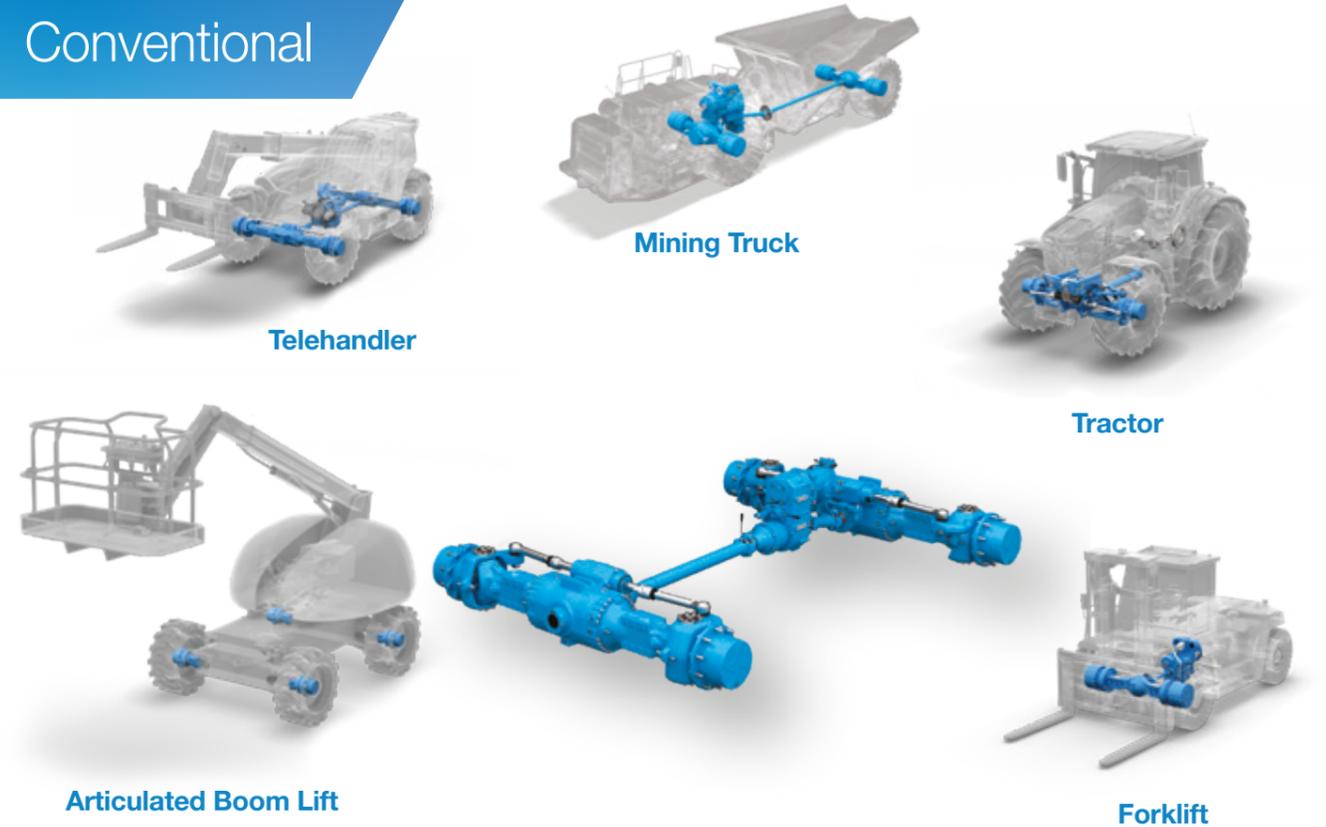
We develop **systems** by using our deep portfolio of innovations to address our **customers' needs**

Knowledge sharing

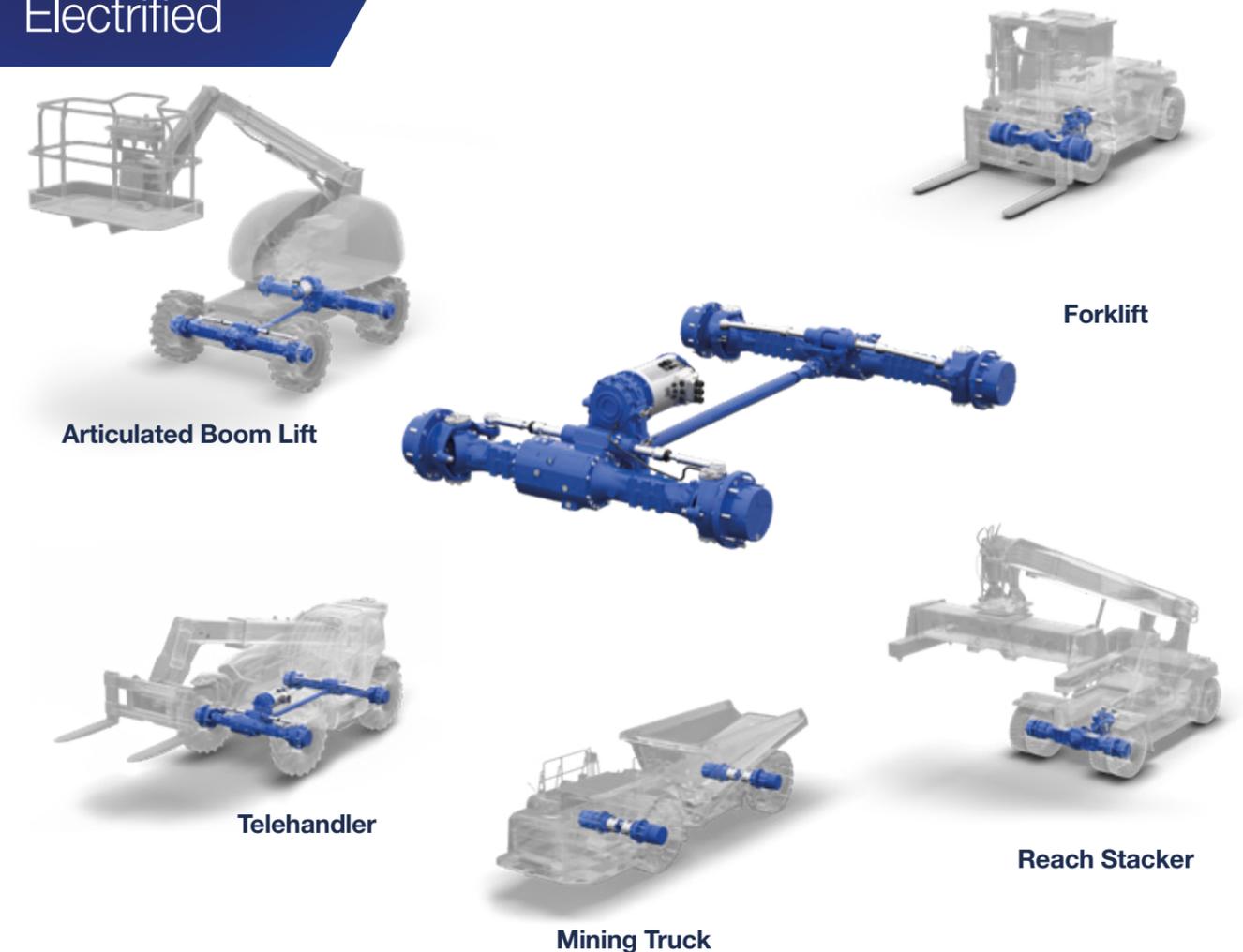
Our culture of **continuous improvement** enables our systems engineering teams to share best practices across markets and geographies

Think Why, Think Wider, Think Systems

Conventional



Electrified



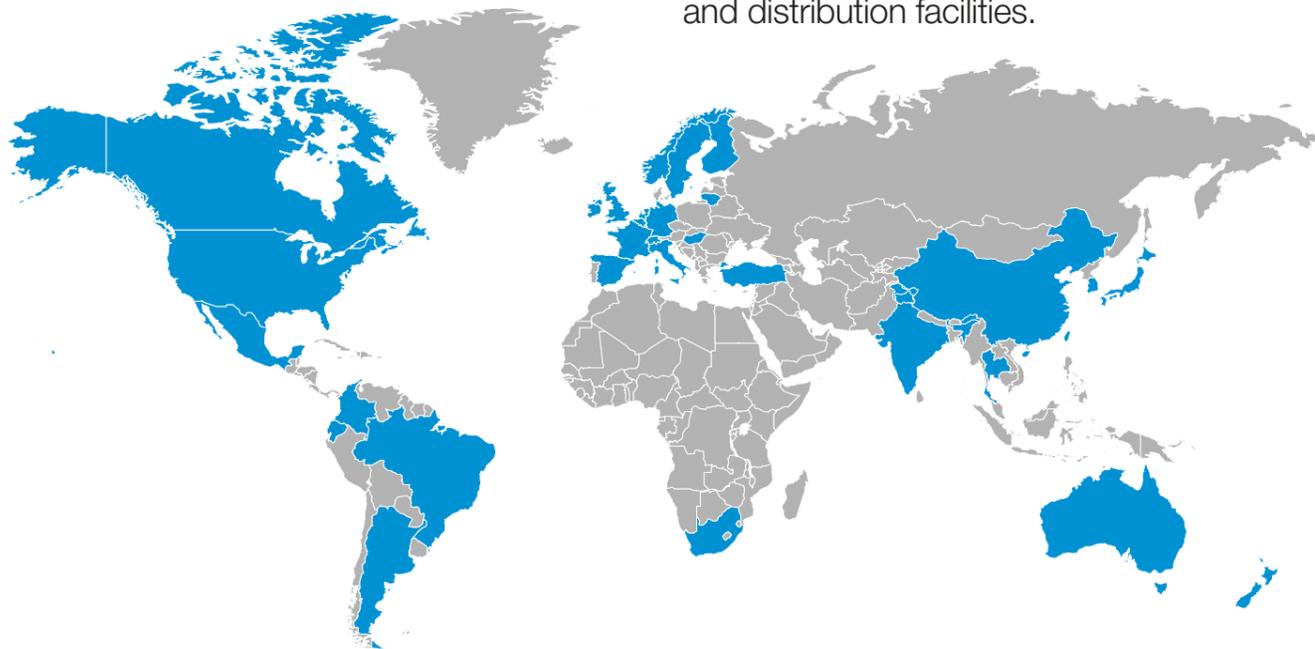
Global Strength

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

Today, that's **30 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.

Our **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 strength is being over six continents thanks to our global logistic network.

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

Our service parts are manufactured 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 durability and performance.

Distribution Centers

Our global network of distribution centers, located in Europe, America, Asia and Australia, offer efficient service points supporting regional customer service, inventory, logistics and packaging operations.

OHAftermarket.com

E-Commerce Platform

A technology enabled e-commerce platform that brings our 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 ease doing business with us.

Using OHAftermarket.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 online Spicer™ product catalog features the extensive off-highway axles and driveshaft portfolio. Quickly and conveniently locate products by model type or part number through the search functionality and access to 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 Off-Highway Innovation

About Dana Incorporated

Over 39,000 Dana dreamers in over 30 countries drive mobility and transportation forward — wherever the road, or offroad, takes our customers and communities.

A leader in the design and manufacture of propulsion and energy-management solutions, Dana powers vehicles and machines in all mobility markets across the globe.

Delivering groundbreaking drive systems. Advancing revolutionary motion technologies. Championing leading-edge power management innovations across thermal technologies for e-Propulsion; controls and software; battery management systems; and fuel cell plates.

With a balanced portfolio — including complete in-house electrification capabilities — Dana provides class-leading products and systems supporting traditional, hybrid, and EV manufacturers. Everywhere.

About Dana Off-Highway Drive and Motion systems

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

Dana.com/oh
Dana-industrial.com

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.

