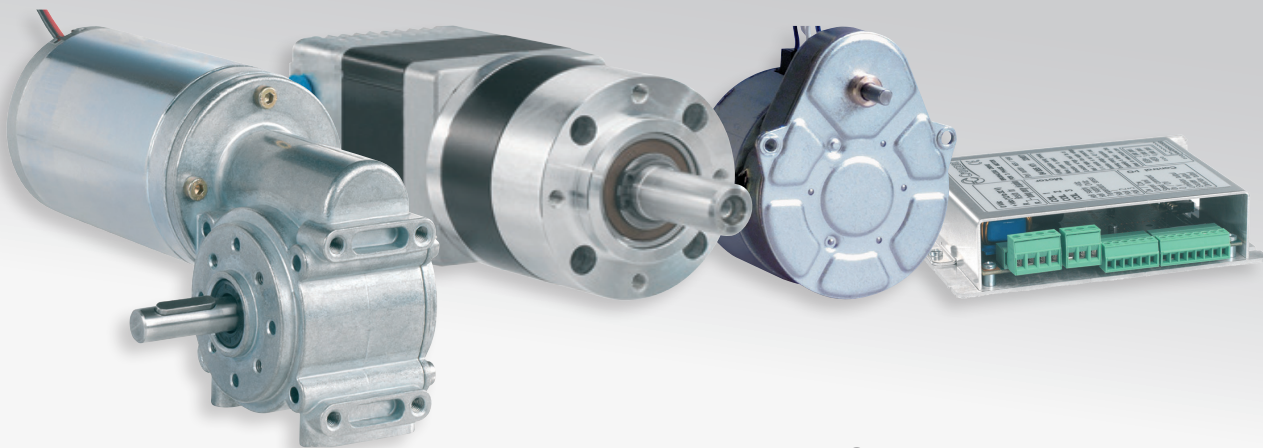


OVERVIEW

INDUSTRIAL MOTORS



- › DC Brush motors
- › DC Brushless motors
- › External electronics
- › Stepper and synchronous motors

ABOUT CROUZET MOTORS

All around the world for more than 50 years, Crouzet Motors has been providing innovative engineering expertise, high quality service and a complete offering of standard and customized direct drives, geared motors and motion control solutions for applications where performance is key.

Crouzet Motors is a brand of InnoVista Sensors™

With a long-term commitment to technological excellence, the engineering teams have mastered the following core technologies and know-how:

- > Electromagnetism
- > Thermal dynamics
- > Electromechanical systems
- > Electronic drives

Covering the power range from 1 to 1000 W peak (1/100 to 1HP+) and available with spur, worm or planetary gearboxes, plus adapted controllers, our offer is specifically designed for access control systems, pumps and valves, railway applications, electrical equipment, medical equipment and the industry.

INNOVISTA SENSORS

InnoVista Sensors™: your trusted partner of choice to face industrial challenges of today and tomorrow.

InnoVista Sensors™ is a worldwide industrial specialist of sensors, controllers and actuators for automated systems.

Through its brands, Crouzet Aerospace, Crouzet Automation, Crouzet Control, Crouzet Motors, Crouzet Switches and Systron Donner Inertial, InnoVista Sensors™ offers a wide range of reliable, efficient and customizable components dedicated to the Aerospace & Defense, Transportation and Industrial market and segments.

Thanks to the recognized expertise of its teams and a strong innovation policy, InnoVista Sensors™ brings performance enhancing solutions to its customers worldwide.

www.innovistasensors.com

Designs & Manufactures



Sensors



Controls



Actuators

For



Aerospace & Defense



Transportation



Industry

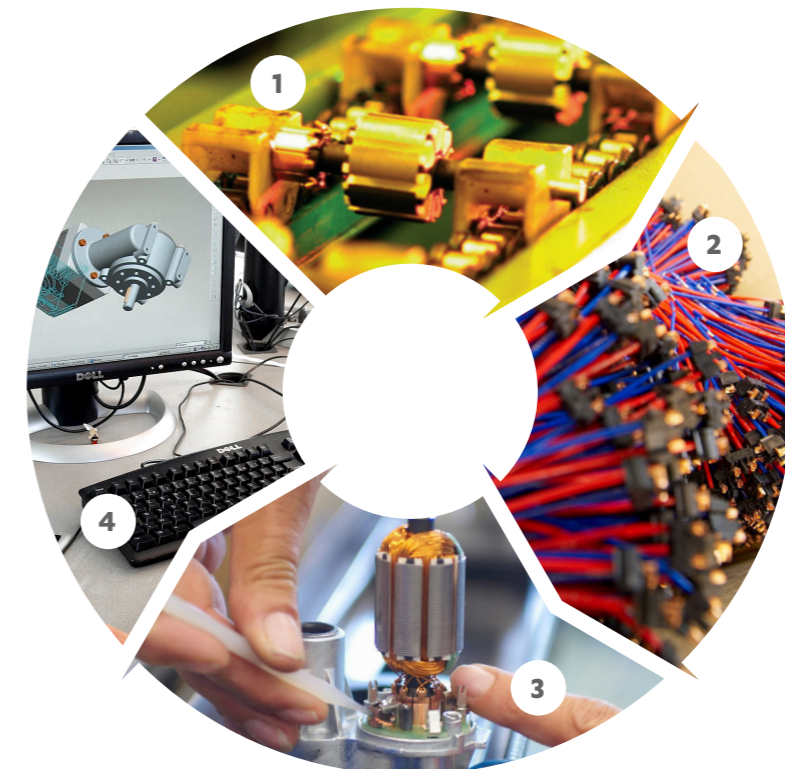
With commercial brands



ADAPTATION WHEEL

To meet market expectations and provide customers with the right solutions within the shortest timeframes, Crouzet Motors has structured its processes around the different types of product available: standard products, adapted products or products specially developed for a customer.

Introducing the adaptation wheel...



1 STANDARD PRODUCTS

Sales service

A full range of motors, geared motors and associated controllers. You can create your automation control applications as quickly as possible

2 PRODUCTS WITH ADDED VALUE

Customer Adaptation Centre

All our standard products can have additional factory-mounted auxiliaries or accessories: connectors, leads, special terminals, customized shafts, adaptor plates, etc. Seamless integration in your equipment means you benefit from simpler logistics and optimum installation reliability.

3 ADAPTED PRODUCTS

Customer Adaptation Centre

Defined in coordination between your project teams and our specialists, these adapted products have exactly the right levels of performance and functionality you need for your applications.

4 SPECIAL PRODUCTS

Engineers and teams Dedicated project

From the very start of a project, Crouzet Motors' experts work closely with your teams to develop the specification. All our design, industrialization and approval expertise goes into developing Motion Control solutions that are tailored to your requirements.

DC BRUSH MOTORS AND GEARED MOTORS

| Gearboxes | | | | Nominal torque (Nm) | | | | | | | | | | | | | | | | |
|---------------------|------------------|----------------------|---------------------|---------------------|--------|--------|-------|--------------|-------|-------|--------|--------|-------|--------|-----------|--------|-----|--------|--------|--------|
| | | | | 0.5 | | 1.2 | | 2 | | 3 | 5 | | 6 | 10 | 25 | | | | | |
| Direct drive motors | | | | Type of gearbox | | | | | | | | | | | | | | | | |
| Family | | | | Spur | | | | | | | Spur | | | | Planetary | | | | | |
| Diameter (mm) | Usable power (W) | Nominal torque (mNm) | Nominal speed (rpm) | RPT5 | Ovoid | PPGM | GDR | Double ovoid | RE1 | RE2 | 3 Nm | RC65 | RC5 | GDR2 | 90° | P42 | P42 | P52 | P52 | |
| Ø 24 | | | | | | | | | | | | | | | | | | | | |
| 82710 | 1 | 3 | 3365 | 827120 | 827140 | | | 827190 | | | | 827130 | | | | | | | | |
| Ø 28 | | | | | | | | | | | | | | | | | | | | |
| 82720 | 3 | 7 | 3500 | 82722 | 827240 | | | 827290 | | | | 827230 | | | | | | | | |
| Ø 32 | | | | | | | | | | | | | | | | | | | | |
| 82860 | 3 | 7.7 | 3700 | 82862 | 82861 | | | 82869 | 82863 | 82864 | | 82867 | | | | | | | | |
| Ø 36 | | | | | | | | | | | | | | | | | | | | |
| 82730 | 6.8 | 20 | 3265 | | | 82738 | | | | | 827330 | 827370 | | | | | | | | |
| 82740 | 11 and 20 | 35 | 4600 | | | 827480 | | | | | 827430 | 827470 | | | | | | | | |
| Ø 42 | | | | | | | | | | | | | | | | | | | | |
| 82810 | 8.7 and 13 | 41.5 | 2750 | | | | 82812 | | 80813 | 80814 | | 80817 | 80815 | 828125 | | | | | | |
| 82800 | 16 and 22 | 75 | 3070 | | | | 82802 | | 80803 | 80804 | | 80807 | 80805 | 828025 | | 808092 | | | | |
| 82850 | 32.5 and 33.5 | 100 | 3200 | | | | | | | | | | 80855 | | | | | 808593 | | |
| Ø 63 | | | | | | | | | | | | | | | | | | | | |
| 82830 | 27 and 50 | 172 | 2770 | | | | | | | | | | 80835 | 828325 | 808310 | | | | 808394 | |
| 82890 | 90 and 95 | 270 | 3360 | | | | | | | | | | | | 808910 | | | | | 808995 |

■ Adapted

Note: All motors can be supplied with 12 or 24 V DC (Ø 42 and Ø 63 versions are also available in 48 V DC).

OPTIONS

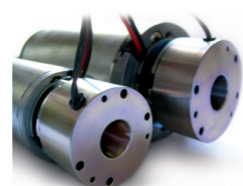
Encoder

› The entire Crouzet motor range is also available with a factory-mounted encoder (optical, magnetic).



Brake

› Ø 42 mm and Ø 63 mm products can be fitted with a mechanical brake at power switch off.



APPLICATIONS

Industrial

- › Pool robot
- › Peristaltic pump
- › Access control
- › Printing.

Medical

- › Endoscopy
- › X-ray equipment
- › Dental equipment.

DC BRUSHLESS MOTORS AND GEARED MOTORS

| Control electronics | | | | | | | | | | | | | | | | | | | | | | |
|---------------------|-------------------|---------------------|-----------|--------|--------|--------|-----------|--------|--------|--------|-------------|--------|--------|--------|--------|--|-----|--|----|--|----|----------------------------------|
| Gearboxes | | Nominal torque (Nm) | 5 | | 1.2 | | 6 | | 4.5 | | 15 | | 25 | | 50 | | 120 | | 10 | | 20 | |
| Gearbox reference | | | 81037 | 81035 | 810320 | 810326 | 810491 | 810493 | 810494 | 810495 | 810496 | 810497 | 810410 | 810412 | | | | | | | | |
| Type of gearbox | | | Spur | | | | Planetary | | | | Right angle | | | | | | | | | | | |
| Family | | | RC65 | RC5 | GDR1 | GDR2 | P32 | P42 | PK52 | P52 | P62 | P81 | RAD10 | RAD20 | | | | | | | | |
| Direct drive motors | | Output | | | | | | | | | | | | | | | | | | | | |
| Cross-section (mm) | Usable power (W)* | Output | | | | | | | | | | | | | | | | | | | | |
| | | Wires | Connector | | | | | | | | | | | | | | | | | | | |
| Ø 28 | | | | | | | | | | | | | | | | | | | | | | |
| 801005 | 17.5 | ✓ | | | | | | | 801091 | ■ | | | | | | | | | | | | BDE30 BDE40 |
| □ 42 | | | | | | | | | | | | | | | | | | | | | | |
| 801100 | 25 | ✓ | | 801170 | | | | | 801191 | ■ | | | | | | | | | | | | BDE30 BDE40 |
| 801103 | 50 | ✓ | | | | | | | | ■ | 801194 | | | | | | | | | | | BDE30 BDE40 |
| 801106 | 100 | ✓ | | | | | | | | | 801197 | ■ | | | | | | | | | | BDE40 |
| □ 57 | | | | | | | | | | | | | | | | | | | | | | |
| 80040 / 80140 | 40 | ✓ | ✓ | 800455 | 800420 | 800425 | | | | ■ | 801495 | 801496 | 80141 | | | | | | | | | BDE30 BDE40 SNI10 TNI20 |
| 80180 | 80 | ✓ | ✓ | | | | | | | | ■ | 801896 | 801897 | 80181 | | | | | | | | BDE30 BDE40 TNI20 |
| 80050 / 80080 | 40/80 | ✓ | | | ■ | ■ | ■ | | | | ■ | ■ | ■ | 800897 | 800810 | | | | | | | Motomate |
| Ø 57 | | | | | | | | | | | | | | | | | | | | | | |
| 801905 | 150 | ✓ | | | | | | | | | | 801996 | 801997 | 801915 | | | | | | | | BDE40 |
| Ø 86 | | | | | | | | | | | | | | | | | | | | | | |
| 801203 | 205 | ✓ | | | | | | | | | | | 801297 | | 801213 | | | | | | | BDE40 |

*With 24 V DC

■ Adapted

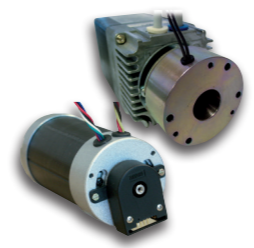
OPTIONS

- Connections**
- › Cables
 - › Office connectors
 - › Industrial connectors



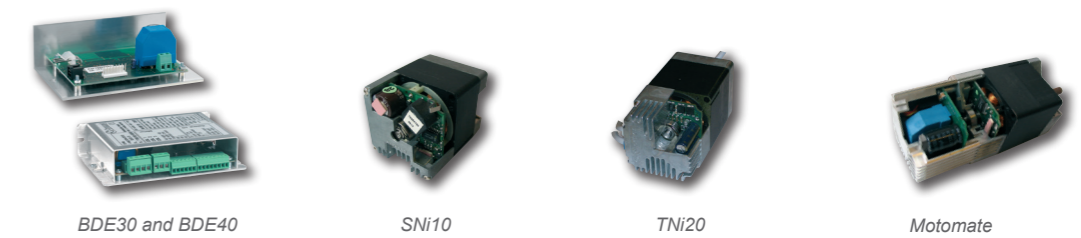
- Encoder**
- › Encoder with up to 1000 points per revolution

- Brake**
- › Mechanical brake at power switch off



ELECTRONIC CARDS

For more information, see pages 8-9







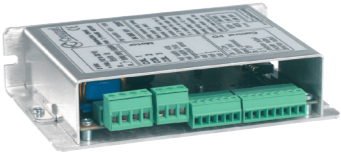
BDE30 and BDE40

SNI10

TNI20

Motomate

CONTROL ELECTRONICS (BRUSHLESS) INTERNAL OR EXTERNAL

| Control circuits for brushless motors | | Internal | | | External | |
|---------------------------------------|--|--|---|---|---|---|
| Type | | SNi 10 | TNi 20 | Motomate | BDE 30 | BDE40 |
| | |  |  |  |  |  |

| Operating characteristics | | | | | | |
|---|--------------------------|----|---------------|----|----|---------------|
| Supply voltage (c V) | Min. | 18 | 18 | 20 | 18 | 11 |
| | Max. | 28 | 37 | 37 | 36 | 36 |
| Current (A) | Nominal | 2 | 5 | 5 | 5 | 10 |
| | Max. | 3 | 6 | 6 | 6 | 14 |
| Torque limiting | | | ■ | ■ | ■ | ■ |
| Speed adjustment | | ■ | ■ | ■ | ■ | ■ |
| Positioning | | | M | ■ | M | M |
| Torque limit adjustment | | | | | | |
| Speed adjustment | 0-10 V + PWM | | ■ | | ■ | ■ |
| | 0-10 V | | ■ | | ■ | |
| | PWM | | ■ | | ■ | |
| | 0-10 V + PWM | ■ | | | | ■ |
| Data bus | Open loop | ■ | ■ | | ■ | ■ |
| | Closed loop | ■ | ■ | | ■ | ■ |
| 2 quadrants (without braking) | | | ■ CAN, Modbus | | | ■ CAN, Modbus |
| 4-quadrant braking | | ■ | ■ | | ■ | |
| Hold in position | Fixed, without rejection | ■ | ■ | | ■ | ■ |
| | Adjustable | | | | | |
| | Energy-absorbing | | | | | |
| Encoder output (3 x number of poles) | Adjustable | | ■ | | ■ | ■ |
| Direction output | | ■ | ■ | | ■ | ■ |
| Torque limit reached output | | | ■ | | ■ | ■ |
| Safety stop after 1 second of stalling | | | ■ | | ■ | ■ |
| "Current limited to max. current" safety function | | ■ | ■ | | ■ | ■ |
| Electronic temperature safety function | | ■ | ■ | | ■ | ■ |
| Motor temperature safety function | | ■ | ■ | | ■ | ■ |
| Emergency stop by motor short circuit | | | ■ | | ■ | ■ |

Logic controller (4 inputs/4 outputs) integrated in the motor with TNi 20 control electronics

■ Standard - ■ Adapted - M With external logic controller (e.g. Millenium 3, Crouzet Automation)

STEPPER MOTORS - 5 TO 12.5 W LINEAR STEPPER MOTORS

Stepper motors and geared stepper motors

| Gearboxes | | Max. torque (Nm) | 0.5 | 2 | 3 | 5 |
|---------------------|-------------|-----------------------|---------------------|-----------------|---------|-------|
| Gearbox reference | | | 81021 | 81033 | 81023 | 81037 |
| Type of gearbox | | Spur | | | | |
| Family | | Ovoid | Double ovoid | 3 Nm | RC65 | |
| Direct drive motors | | | | | | |
| Dimensions (mm) | Part number | Power consumption (W) | Holding torque (Nm) | Number of steps | Ø 35/50 | |
| | 829105 | 5 | 25 | 20 | 24 | |
| | 829100 | 5 | 20 | 15 | 48 | |
| Ø 51/77 | | | | | | |
| | 829200 | 7.5 | 70 | 57 | 48 | |
| Ø 58/79 | | | | | | |
| | 829300 | 10 | 180 | 155 | 48 | |
| Ø 65/65 | | | | | | |
| | 829400 | 12.5 | 300 | 240 | 48 | |

Linear stepper motors (2 or 4-phase)

| Dim. (mm) | Part number | Angular step of motor (°) | Avg. thrust force at 100 Hz (N) | Nominal stroke (mm) | Step (mm) |
|-----------|-------------|---------------------------|---------------------------------|---------------------|-----------|
| Ø 35/50 | | | | | |
| | 809100 | 7.5 | 58 | 10 | 0.0167 |
| | 809105 | 15 | 43 | 10 | 0.033 |

- › Special output shaft.
- › Special cable length.
- › Customised electronics.
- › Special supply voltage.
- › Special mounting plate.
- › Special connectors.

NON REVERSIBLE / REVERSIBLE SYNCHRONOUS MOTORS SYNCHRONOUS LINEAR MOTORS

Synchronous motors and geared motors

| Gearboxes | | Max. torque (Nm) | 0.5 | 2 | 3 | 5 | |
|---------------------------------------|-------------|------------------|----------------------|---------------------|-----------------------|-------|--|
| Gearbox reference | | | 81021 | 81033 | 81023 | 81037 | |
| Type of gearbox | | Spur | | | | | |
| Family | | Ovoid | Double ovoid | 3 Nm | RC65 | | |
| Direct drive motors | | | | | | | |
| Dimensions (mm) | Part number | Usable power (W) | Nominal torque (mNm) | Nominal speed (rpm) | Supply voltage (V/Hz) | Ø 47 | |
| Non-reversible | | | | | | | |
| | 823400 | 0.16 | 2.5 | 600 | 230/50 | | |
| | 823305 | 0.42 | 8 | 600 | 230/50 | | |
| Reversible = 2 directions of rotation | | | | | | | |
| Ø 36/50 | | | | | | | |
| | 825100 | 0.31 | 12 | 250 | 230/50 | | |
| | 825105 | 0.52 | 10 | 500 | 230/50 | | |
| Ø 51/75 | | | | | | | |
| | 825200 | 0.98 | 37.5 | 250 | 230/50 | | |
| | 825204 | 1.12 | 30 | 375 | 230/50 | | |
| Ø 58/79 | | | | | | | |
| | 825300 | 1.37 | 55 | 250 | 230/50 | | |
| Ø 65/65 | | | | | | | |
| | 825400 | 2.65 | 106 | 250 | 230/50 | | |

Synchronous linear motors

| Dim. (mm) | Part number | Voltage/Frequency (V/Hz) | Avg. thrust force (N) | Nominal stroke (mm) | Speed (mm/s) |
|-----------|-------------|--------------------------|-----------------------|---------------------|--------------|
| Ø 35/50 | | | | | |
| | 805100 | 230/50 | 45 max. | 10 | 3.33 |
| | 805105 | 230/50 | 38 max. | 10 | 6.67 |

- › Special output shaft.
- › Special cable length.
- › Customised electronics.
- › Special supply voltage.
- › Special mounting plate.
- › Special connectors.

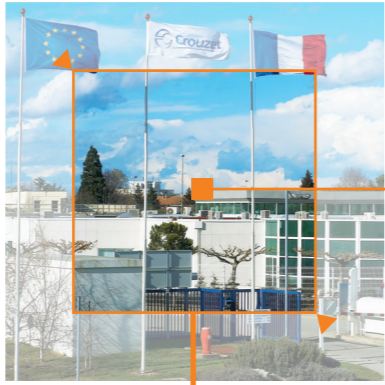
PROCESS SOLUTION: A DYNAMIC PROCESS IN MOTION

A customer-oriented process

CHOOSING THE RIGHT SOLUTION AND PROCESS

Taking account of your project and goals, we can:

- › Process your order within 24 hours for standard products in stock.
- › Adapt a standard product (Customer Adaptation Centre).
- › Develop an innovative solution just for you (Project team).



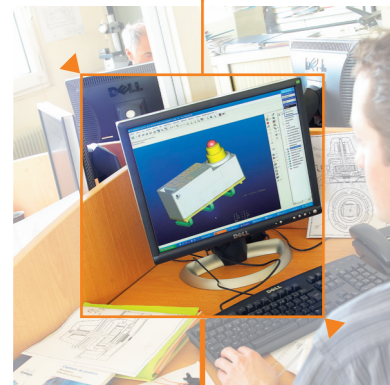
PROJECT ANALYSIS

- › Technical sales experts at your side.
- › Analysis of your objectives, constraints and key success factors to draw up the project specifications.
- › Advisory and recommendations meeting.
- › Action plan for seamless project execution.

DEVELOPMENT, VALIDATION AND APPROVAL

Crouzet Motors has effective processes in place for developing, validating and approving all product offers:

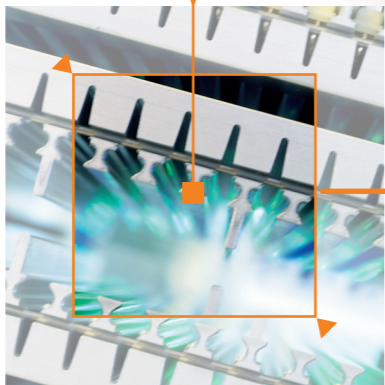
- › Simulation tools
- › Test bench (servocontrol/motor performance, service life, etc.)
- › Laboratories, etc.



INNOVATION

Based on their experience in a wide range of sectors, Crouzet Motors design offices share common objectives:

- › Basing innovation on market standards and the best technological options.
- › Combining a number of technologies to create innovative concepts.



LONG-TERM PARTNERSHIP

Our specialists work closely with customers in managing the various project phases, ensuring they are on hand as the project progresses to offer support in tackling any new developments or challenges.



SIX SIGMA PROCESS MANAGEMENT

For product offers that comply with the highest quality standards and ensure fast and efficient deliveries.



LOGISTICS

Logistics teams are involved in all new projects from the outset and share a set of common goals:

- › Weekly and daily planning (forecasts).
- › A close relationship with your departments.
- › Just-in-time processes.
- › Network of partnerships with our suppliers.

The Crouzet Motors logistics platform ensures optimum logistics flows as well as the reliability of your supplies.

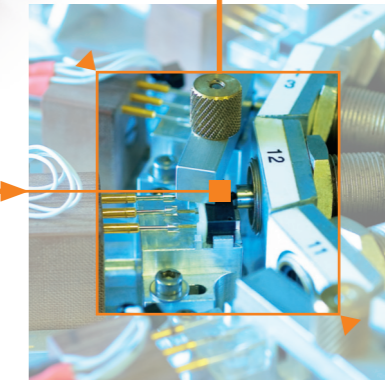
INDUSTRIALISATION AND PRODUCTION: LEAN MANUFACTURING

From standard to special products, and small-scale to mass production, our production facilities offer all the industrial flexibility and expertise required to ensure that our products meet your needs in terms of logistics, quality and competitiveness.



TEST LABORATORY

Our laboratories have facilities for testing all our products from design through to production. Whether this is done using simulation or in real tests (electrical, mechanical or environmental endurance), our products are validated, approved and monitored throughout the project development process.



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