

Power Systems & Controls for Test Stands



Nidec's global solutions and services



Our test stand solutions are found wherever accuracy, dynamism and maximum availability are required.

Nidec provides reliable, high quality test stand solutions for customers across the globe. Based on longstanding industrial expertise, our system integration teams can support you in designing, manufacturing, and installing the power automation and control system of your test bench to help ensure that your testing processes are always highly accurate and efficient. With several hundred testing facilities already using our solutions, we provide reliable, high quality products, systems and services to meet a wide range of testing applications across many industries including:

- Automotive
- Aircrafts
- Industrial equipment
- Military & advanced research

Nidec - adding value to your business

Through strong partnerships with end users and machine builders, we develop innovative new test stand equipment for use in industries where we can maximize functionality by engineering our core products to fit performance demands. We also offer tailored maintenance and service packages to support your business needs.

Scalable automation solutions



Projects can vary from small test stand motor-drive solutions to full high-dynamic electrical power control systems. Our global system integration teams offer single point of contact for our customers, building a long-term partnership and offering the right resources and expertise to get the job done.

Our strength in project management means that projects are delivered on time within budget.

The depth of our knowledge allows us to offer customers assistance in three key-areas:

Upgrades

Test stands always have to perform. For this reason the wear and tear on the electrical system can be important leading to pre-mature aging. Our systems are specifically designed for heavy duty performance over time but even the best of systems needs overhauling every once in awhile. Our local service teams are available to help and with tailored maintenance packages we work to ensure maximum up-time of your test room.

Modifications

Products can evolve over time and the test stands need to evolve with them. We can work with customers to help identify the changes that need to be made to adapt the test stand to new requirements in terms of functionalities and performance.

Innovation

We work closely with test stand manufacturers and end users to design and develop new test benches for emerging technologies. An excellent example of this is our new line of power solutions for electric vehicle (EV) testing.

Nidec is a one-stop shop for all your system and support requirements including specification, design, build and commissioning for new build and retrofits.

We also strive to offer our customers the flexibility they need to plan installation and commissioning compatible with their manufacturing schedule and customer commitments to minimize downtime for maximum availability and productivity.

Our project services include:

- Expert project management
- Functional design specifications
- Detailed engineering design that incorporates:
 - Drives, motors and automation equipment and integrated state-of-the-art safety controls
- Software application development, including:
 - Integration with PLC software
 - Customized HMI software
- Procurement of all system components
- Assembly of electrical control system, including:
 - Manufacturing of cubicles and control panels
 - Installation of engineered system and cabling on site
- Factory Acceptance Test
- Site commissioning, start up, optimization
- Detailed project documentation
- Training

Automotive testing

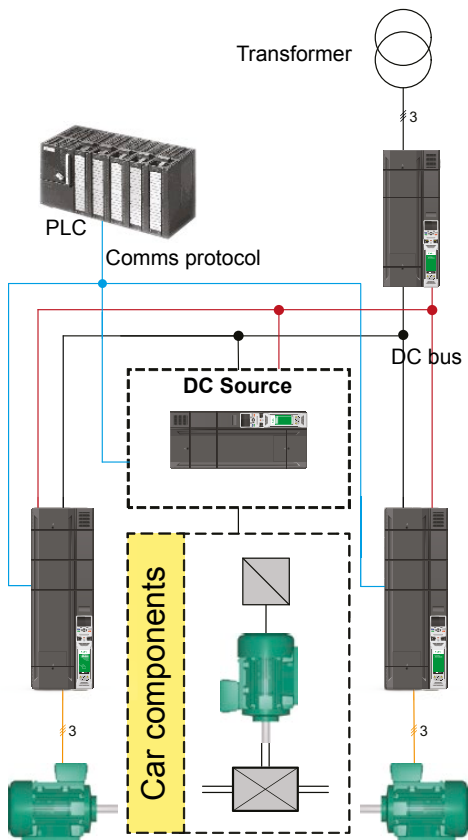


Accuracy, durability and safety

Typical test stand applications

- Electric vehicle test stands
- Brakes test stand
- Rolling road test stands
- Bending cycle test stands
- Torque converter test stands
- Engine test stands
- Transmission/gearbox test stands

Hybrid and electric vehicle test stand with DC power source

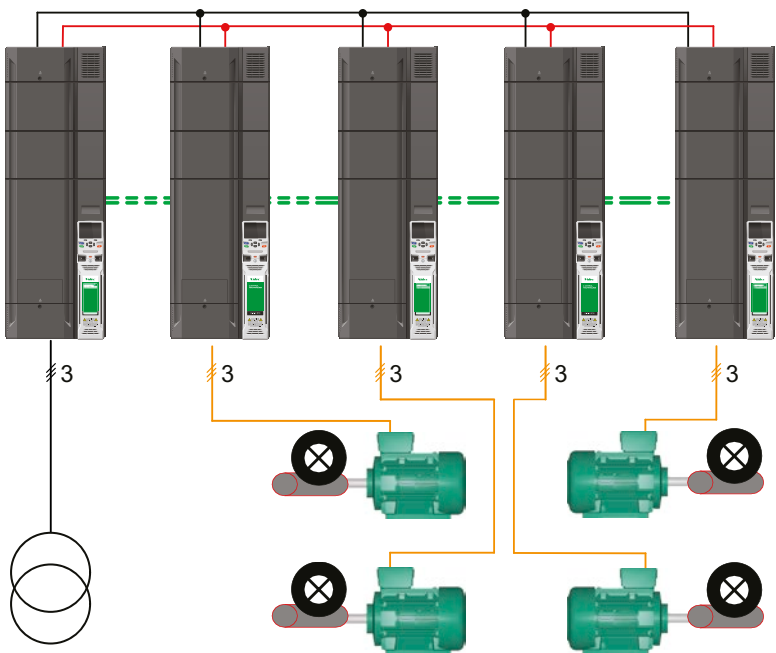


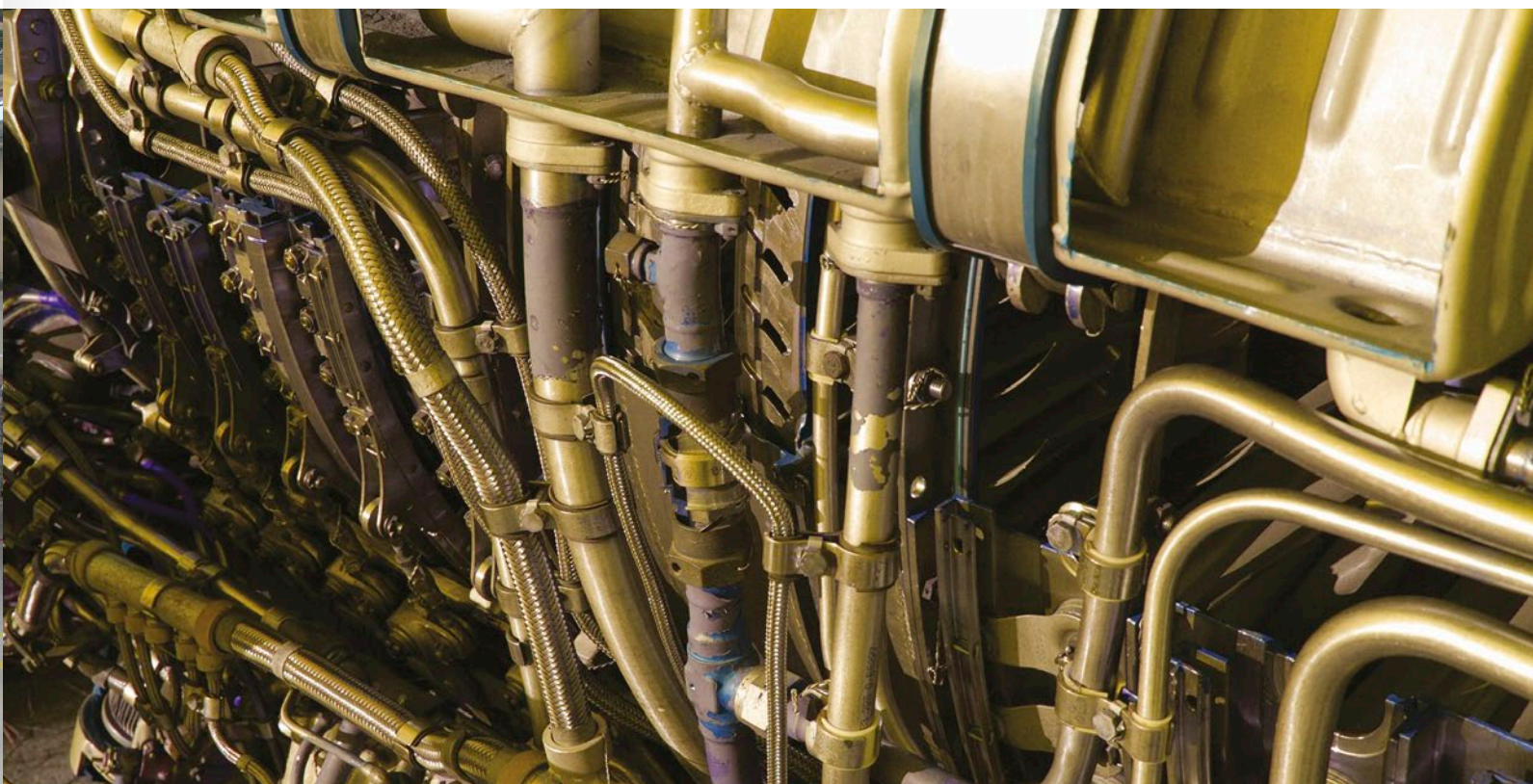
With over 800 test stands installed across the globe there isn't a single aspect of automotive testing we can't handle. Our systems are used to test road performance as well as internal and safety-related vehicle functions such as anti-lock braking (ABS) and electric power steering (EPS). Our systems offer highly accurate and

reproducible measurement recordings in real-time. Our control systems use our state-of-the-art drive units that allow advanced management and control algorithms which permit pre-program test sequences and driving profiles to be uploaded prior to testing so that the testing equipe can focus on analyzing the measurements.

Our systems are also designed to optimize energy consumption using common voltage DC buses to keep excess power within the inverter system. Only the losses from the test set-up are taken from the mains supply.

Final End roller test stand for motor vehicles





Typical test stand applications

- Endurance Auxiliary power unit
- Carburetor pump
- Variable Frequency/Starter Generator
- Electrical Taxiing system
- Helicopter gear boxes
- Helicopter Rotor blade testing
- Helicopter transmission
- Helicopter engine or turbine

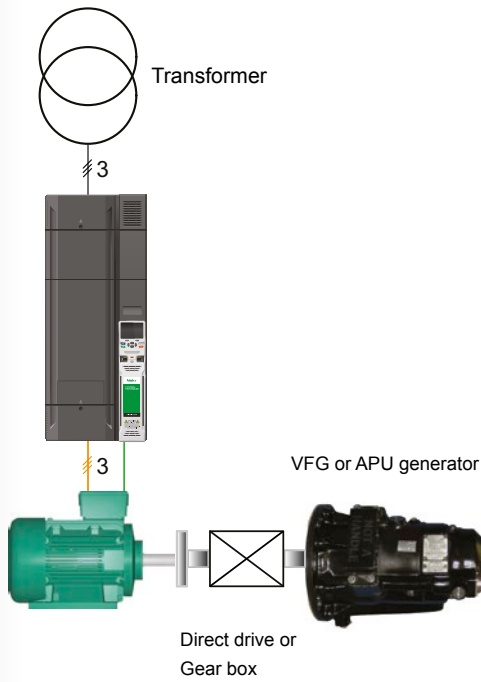
One of the most critical components to be tested for an aircraft is the engine, crucial for safety and performance. Electrical developments in aircraft have seen changes such as increased power onboard, reversible energy conversion to achieve electrical starting of turbines and greater use of batteries to reduce aircraft weight and energy consumption. Nidec works with manufacturers to develop test benches that can endure the rigors that testing requires.

Nidec provides electrical systems for the following engine testing applications:

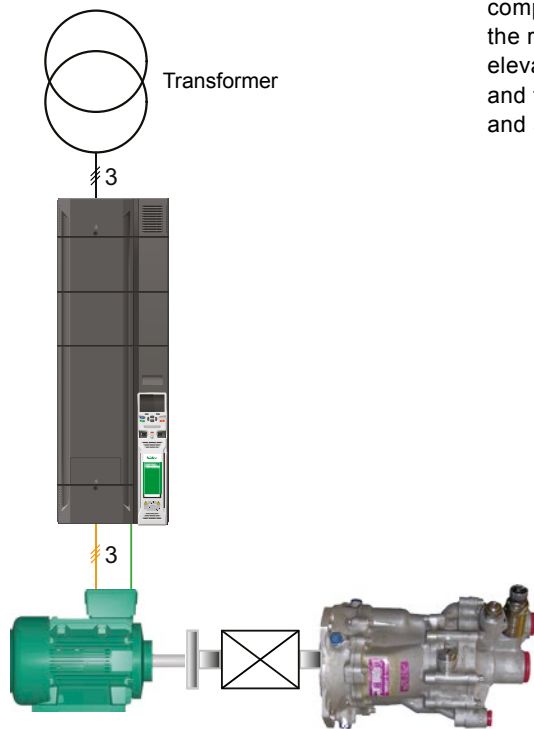
- Main electrical supply
- Auxiliary motor units (APU)
- Mobile ground generators
- Ram Air Turbines (RAT)



Generators test stands



Pump test stands



We also design and install test power systems for the testing of hydraulic components like the cylinders that control the rudder (ailerons, flaps, airbrakes, elevation control, direction, etc..) and fuel pumps where the accuracy and speed are essential.

Industrial equipment



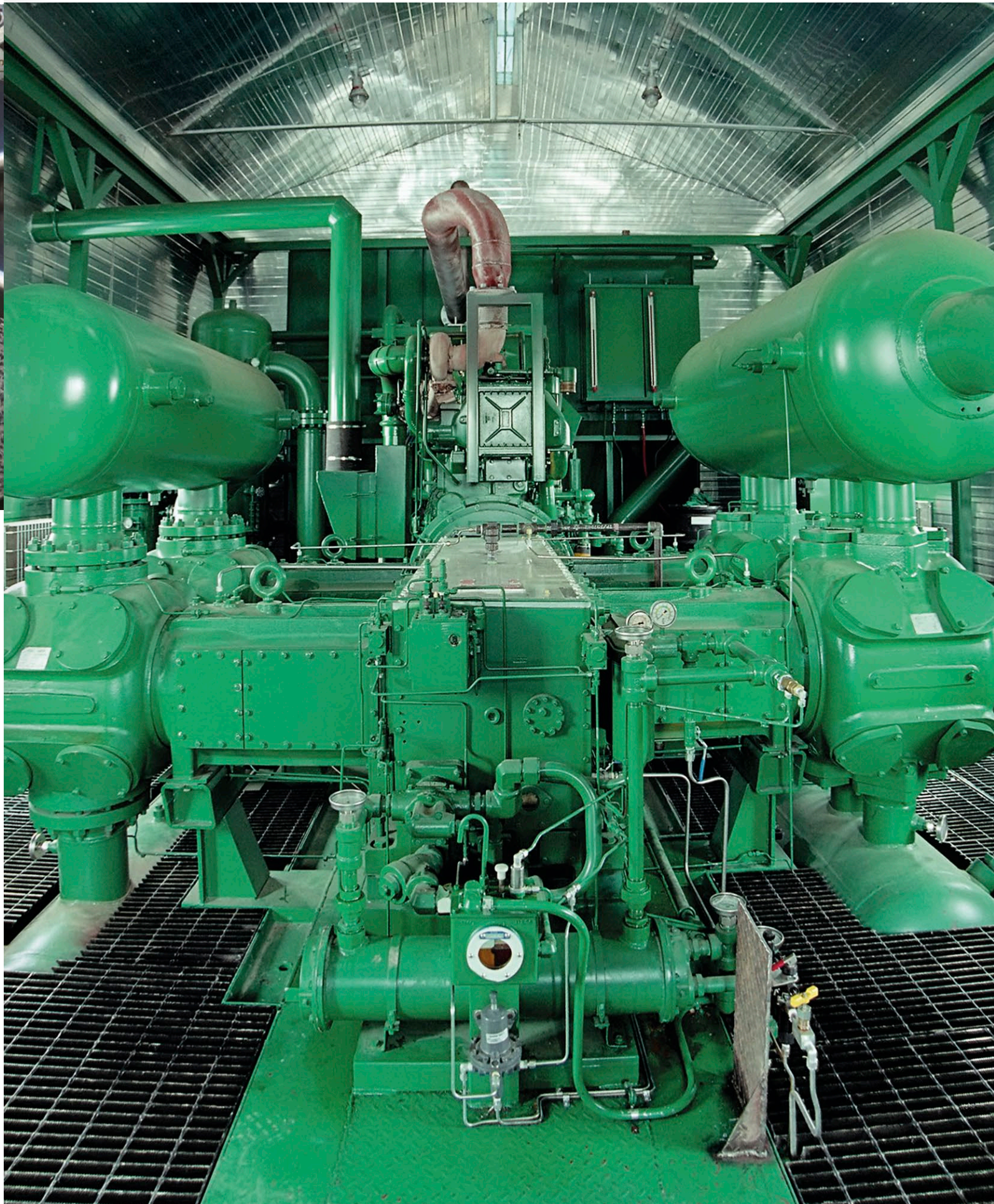
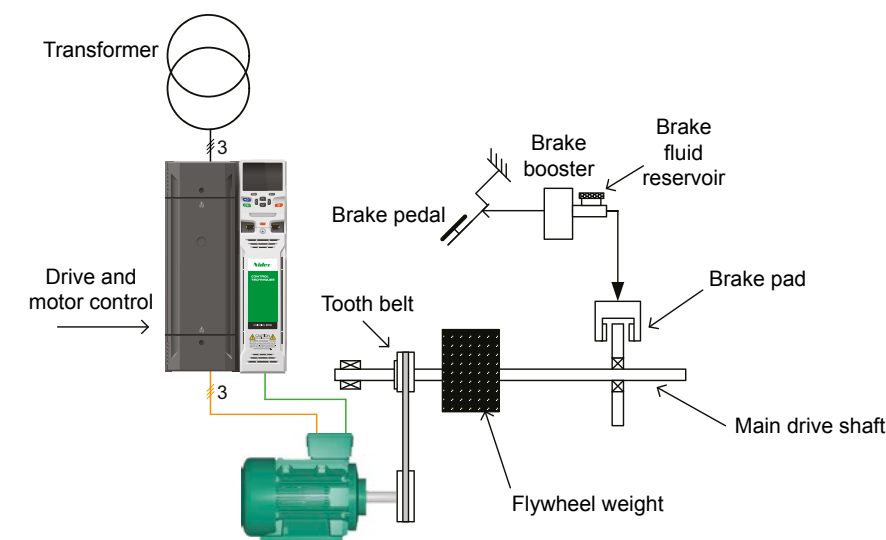
Typical test stand applications

- Industrial pumps
- Industrial compressors
- Gas Turbines
- High-power, high voltage electric motors
- Wind tunnels
- Railway

All industrial equipment requires testing to demonstrate the quality and performance of the product, increasingly these tests must demonstrate not only that the performance meets specifications but also that the equipment will operate reliably and safely over time. Testing components at full load has become the new norm. Nidec offers one of the widest ranges

of power systems covering powers up to 65MW and can offer solutions in both LV and MV according to needs. From simple motor-drive solutions to complete electrical systems, Nidec is the preferred brand for test stands thanks to the reliability and robustness of our products, not the mention the overall efficiency of our systems.

Component test stands - schematic representation of brake pad test



Our products



LV drives

Power range:
up to 4 MW

Voltage:
up to 690 V

AC & DC Drives



Automation & control systems

Extensive library of algorithms
and advanced application
software tools



MV drives

Power range:
up to 100 MVA in parallel configuration

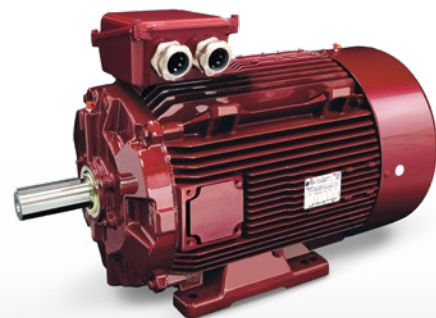
Voltage:
up to 13,8 kV

Active Front End, Direct Front End & LCI



Power Quality

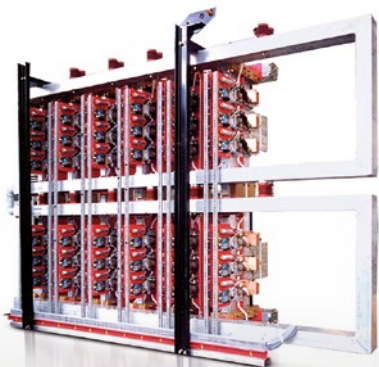
Turnkey solutions, from network study
to complete design of the system
SVCs, Statcoms and D-Statcoms



LV motors

Power rating:
up to 1,5 MW

AC & DC motors



Power Supply

High Current rectifiers
Current rating (six pulses):
up to 80 kA

Voltage:
up to 1200 V



MV motors

Power rating:
up to 60 MW

Voltage:
up to 15 kV

Induction & Synchronous motors



Generators

Power rating:
up to 60 kVA

Voltage:
up to 15 kV

Induction & Synchronous generators

Global service



Customized local services

We also provide a range of expert local services tailored to meet our customers' expanding test stand requirements, while guaranteeing an exceptional response to emergency situations with round the clock support. Customized policies are defined locally and can include:

- 24/7 remote support
- Rapid response, with agreed timescales, to requests for onsite issues by skilled local support teams
- Full application analysis to identify further areas for improvement

Nidec customized services and support to ensure optimized operation for the lifetime of your system

To back our innovative solutions, we can provide the following local services, to ensure the continued optimized operation of your application, including:

- Full field servicing capability
- Extensive after sales support
- Inventory audit solutions to ensure only minimal spares are kept in stock
- Localized and application specific content for support documentation including wiring diagrams, certification files (CE & UL) and integration manuals

Nidec Industrial Solutions key figures:

- 18 Service centers**
Providing excellent customer support for any product, automation solutions or service requirements
- 9 Manufacturing sites**
Producing a comprehensive range of high quality products, optimized for industry-specific customer requirements
- 12 Engineering and Design facilities**
Develops market leading products and feature-sets using the latest design technology

Training

Nidec Industrial Solutions offers customized training on your system at your facility or ours. Nidec is able to offer training for all levels of expertise covering product structure and software. Courses can be adapted to operational requirements of personnel with both theoretical learning and practical sessions being incorporated into each course.



INDUSTRIAL SOLUTIONS