

Nidec

Conversion

MEDIUM & HIGH VOLTAGE DRIVES





APPLICATIONS



OIL & GAS



MARINE



METAL



GREEN HYDROGEN

DISCOVER OUR PORTFOLIO OF MEDIUM & HIGH VOLTAGE DRIVES

With a history of more than 170 years we have developed, manufactured and supplied electric drives and power control systems for numerous applications worldwide. Our development and applications engineers have the expertise in power control design to tailor solutions that exceed customer expectations. Our Medium & High Voltage drives are designed to improve the overall flexibility and efficiency of the plant, achieving significant, long-term cost savings by reducing energy consumption.

DRIVING DECARBONIZATION WITH NIDEC MV DRIVE SOLUTIONS

ELECTRIFYING INDUSTRY FOR A GREENER FUTURE

Nidec's Medium Voltage Drive systems are at the forefront of industrial decarbonization, enabling the transition from fossil-fueled processes to clean, efficient electric solutions.

By replacing traditional mechanical systems with high-performance electric drives, Nidec helps industries reduce CO₂ emissions, optimize energy consumption, and enhance process efficiency without compromising reliability.

SUSTAINABLE BY DESIGN:

- **High-efficiency drives** reduce energy waste and operating costs.
- **Electrification of critical processes** supports carbon-neutral goals.
- **Smart control and redundancy** ensure uptime and long-term availability.
- **Ideal for drive Availability & Uptime** demands of eLNG, refining and gas transportation pipelines



SILCOVERT TH

APPLICATIONS: High speed applications

Silcovert TH is a series of medium-voltage PWM Voltage Source Inverters for the most demanding applications where reliability and performance are fundamental requirements. Built around the most up-to-date IGBT technology, its multi-level structure makes it suitable for driving any motor at variable speed in the power range from 400 kVA to 104 MVA (4 VFD in parallel), up to 13,8 kV.

We offer a modular and flexible solution, suitable for cabinet and container installation for a wide variety of applications.

Series 7000

Power Range:

Air cooling: up to 8.900 kVA
Water cooling: up to 21.200 kVA

Voltage:

2.400 to 7.200 V

Output Frequency:

up to 250 Hz - up to 330 Hz with derating

Drive Topology:

Cascade H Bridge

Series 14000

Power Range:

Air cooling: up to 7.600 kVA
(up to 15 MVA in parallel configuration)
Water cooling: up to 30.000 kVA
(up to 104 MVA in parallel configuration)

Voltage:

6.600 to 13.800 V

Output Frequency:

up to 100 Hz - Higher frequency with derating

Drive Topology:

Cascade H Bridge



SILCOVERT N

APPLICATIONS:

- Ship propulsion, Thrusters, Pumps, Compressors and Wenchers
- Finishing block for rod mill
- High reversing cold mill
- Roll mill
- Mill stand & coilers
- Tube mill
- Conveyor starter

The Silcovert N Series is a high performance neutral point clamped voltage source drive for induction and synchronous motors. Both field oriented and V/Hz controls are available for different applications.

Silcovert TN

Power Range:

Air cooling: up to 10.400 kVA
Water cooling: up to 21.600 kVA

Voltage:

Up to 3.300 V

Output Frequency:

Normal 5 - 70 Hz
Extended 5 - 140 Hz

Drive Topology:

Neutral Point Clamped (NPC)
Diode Front End (DFE) & Active Front End (AFE)

Silcovert GN

Power Range:

Water cooling: 9.000 - 24.000 kVA
(higher power on request)

Voltage:

Up to 3.300 V

Output Frequency:

Normal 10 - 65 Hz
Extended 10 - 100 Hz

Drive Topology:

Neutral Point Clamped (NPC)
Diode Front End (DFE) & Active Front End (AFE)





SILCOVERT S

APPLICATIONS:

- Starting of synchronous compensators, large gas turbine alternators or motor/generators
- Ship propulsion
- Pumps and fans
- Extruders and mixers
- High power ratings

The Silcovert S is a load-commutated current source inverter (LCI) for synchronous motors and provides speed regulation, motoring and braking torque regulation, and programmable V/Hz profiles. The Silcovert S has a rugged, compact design and is highly efficient and reliable.

Silcovert S

Power Range:

Air cooling: up to 20.000 kVA
Water cooling: up to 75.000 kVA

Voltage:

Air cooling: up to 6.600 V
Water cooling: up to 15.000 V

Output Frequency:

up to 95 Hz

Drive Topology:

LCI



Container solutions available

Features:

- High accuracy
- Four-quadrant operation
- High immunity to any line transient and “flying restart” after a supply voltage loss or dip
- High starting torque and wide constant torque operation range
- Air and water cooled
- 98% efficiency

EXCITATION SYSTEMS

APPLICATIONS:

- Voltage regulations of synchronous generators
- Power control of synchronous motors

The STHP is an AC/DC thyristor power converter that supplies excitation current to the motor/generator windings.



STHP

Power Range:

Natural air: up to 200 A
Forced air: up to 2.000 A
Forced water: up to 6.000 A

Voltage:

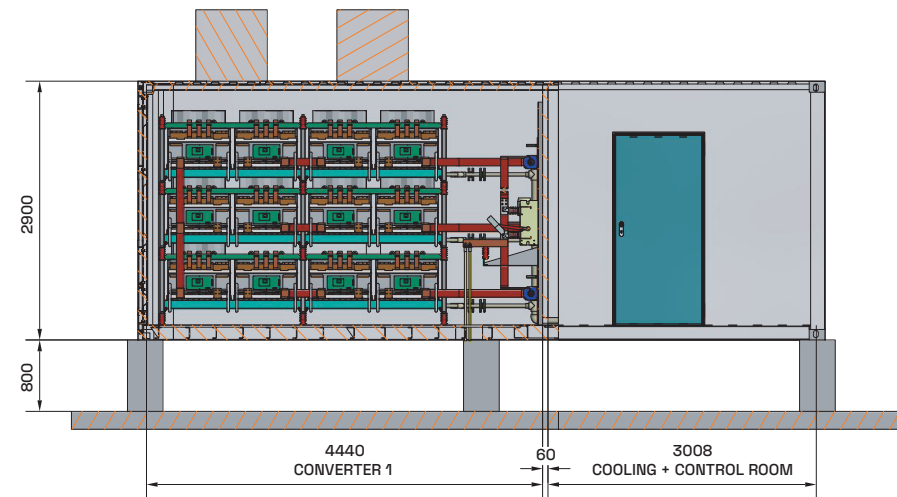
< 1.000 Vac

Output Frequency:

DC

Drive Topology:

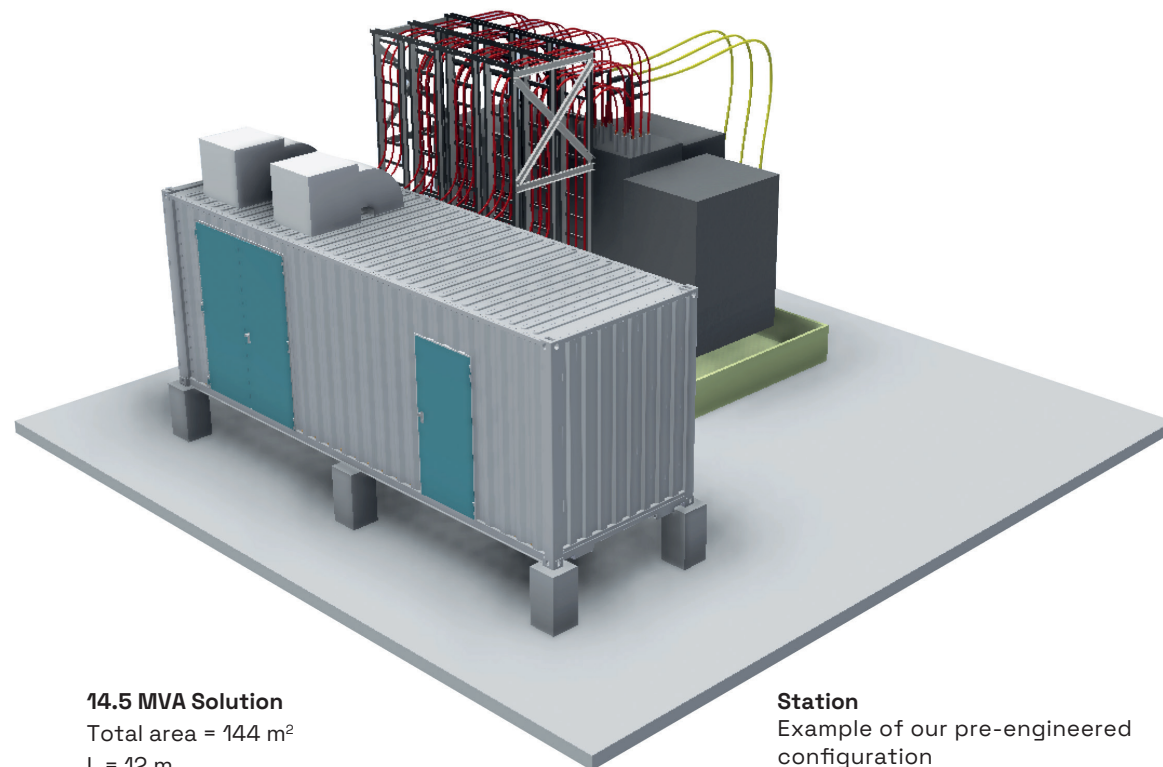
Total controlled Graetz Bridge



CONTAINERIZED SOLUTION

Our containerized solutions are the ideal choice when space is limited and costly. Our containers, in pre-engineered configurations for outdoor installation, are designed to minimize footprint and simplify system integration. If you are extending an existing electrical room or installing new equipment in a congested area, you can benefit from these modular configurations that require minimum civil works. Control wiring and power cables have been studied for simple plug & play solutions.

Extensive factory testing prior to shipment shortens installation and commissioning time so that your plant is on-line in the shortest possible time.



14.5 MVA Solution

Total area = 144 m²
L = 12 m
W = 12 m

Station

Example of our pre-engineered configuration

Data about other configurations are available upon request.
Higher power ratings available upon request.

NIDEC HOT STAND BY SOLUTIONS

Uninterrupted Operation. Maximum System Availability.

Nidec's **Hot Stand By Solutions** for medium voltage drives (MV Drives) are engineered to ensure continuous operation and enhanced system reliability, even in the most demanding industrial environments assuring bumpless switchover in less than 250 ms

With a redundant configuration, the system can automatically switch to a backup drive in the event of a fault, preventing downtime and safeguarding productivity, allowing to provide safe maintenance to the fault units with system in operation.

Key Benefits:

Seamless operation: instant switchover to the standby drive with no interruption.

Higher system availability: significantly reduced downtime and increased efficiency.

Investment protection: reliable performance under critical conditions.

Easy integration: compatible with existing system architectures.

NIDEC REDUNDANT MV DRIVE SYSTEM (FAULT TOLERANT) FOR LARGE POWER APPLICATIONS (eLNG)

No Shutdown. No Compromise Engineered for Maximum Reliability and Uptime

Nidec's MV Drive system is designed with multi-level redundancy to ensure continuous operation, even in the most demanding industrial environments. Our architecture guarantees performance and availability through the following innovations:

Power Module (PM) Redundancy

Each converter phase includes an additional power module, enabling the system to maintain nominal power output even in (N-1) conditions. This ensures uninterrupted operation without performance degradation.

Converter Redundancy

The converter system is rated up to 104 MVA (4 x 26 MVA), while the motor requires only 75 MW. This configuration allows the system to deliver full motor power even if one converter fails, that there are no process interruptions or reduced operation.

Control Redundancy

A dual-redundant control system manages the converters:

- One redundant controller for every two power converters.
- Two redundant controls in total, providing intelligent failover and continuous system supervision.

This fault-tolerant architecture is ideal for critical applications such as eLNG, where uptime, safety, and efficiency are non-negotiable.

Reliability for hot
redundant converters

MTBF up to 1.200.000 hours
MTTR (cell replacement) < 30minutes
Highest availability
Scheduled maintenance Cycle 6 years

TECHNICAL SPECIFICATIONS

	Silcovert TH	Silcovert TN	Silcovert GN	Silcovert FH	Silcovert S
Type Of Converter	VSI	VSI	VSI	VSI	LCI
Converter Cooling	Air cooled and water cooled	Air cooled and water cooled	Water cooled	Air cooled	Air cooled and water cooled
Power Range	Up to 104 MVA* More for specific application	Up to 21 MVA	Up to 24 MVA	Up to 2,5 MVA	Up to 75 MVA
Transformer	Integrated and separated	Separated	Separated	Transformerless	Separated
Input Section	DFE	DFE and AFE	DFE and AFE	AFE - transformer	Thyristor (4Q)
Type of Motor	Induction and Synchronous	Induction	Induction and Synchronous	Induction	Synchronous
Output Voltage	Up to 13.800 V	3.300 V	3.300 V	6.600 V	Up to 15.000 V
Degree of Protection	IP42	IP42	IP42	IP42	IP42 and outdoor (containerized solution)
Standards	IEC and UL listed	IEC	IEC	IEC	IEC
Efficiency (Transformer if Required Included)	>96,5%	>96,5%	>96,5%	>98%	>96,5%
Internal Arc Classification according (IAC) according IEC Stds **	Water cooled version IAC certified	IAC certified	Arc-Flash	IAC certified	Arc-Flash
Long Cable Capabilities	600 m More than 40 km with Sine filter	Up to 1000 m longer on request	Up to 200 m longer on request	Up to 1000 m longer on request	Up to 1000 m longer on request
Semiconductor Devide	IGBT	IGBT	IGCT	IGBT	Thyristor (4Q)
Hotstandby Configuration Switching Time	Less than 250 ms	-	-	-	Less than 1000 ms
Control Redundancy	Available	-	-	-	Available
Multiwinding Motor Configuraiton	Yes	-	Yes	-	Yes
Topology	Cascade H bridge	NPC and ANPC	NPC	Nidec Patented	Parallel and crosslink
UI Listed Design	Up to 4,16 kV other with project certification	Project certification	Project certification	Project certification	Project certification

* multi tread configuration

** Arc-Flash Calculation and labelling available on request”

APPLICATION COMPATIBILITY

	Silcovert TH	Silcovert TN	Silcovert GN	Silcovert FH	Silcovert S
Pumps	•	•		•	•
Fans	•	•		•	•
Conveyors	•	•		•	
PDH process	•	•			•
Crushers	•	•			
Extruders	•	•			•
Mixers	•	•	•		
Compressors	•	•		•	•
Excavators			•		
Turbine Replacement	•	•			
High Speed Application	•	•			
Critical hotstandby application	•	•			
High-pressure grinders	•	•			
Vertical mills			•		•
Horizontal mills (geared)			•		
Horizontal mills (gearless)			•		
Existing line motors	•	•		•	
Blast furnace blowers	•	•			•
Pump storage	•	•			•
Rolling mills			•		
Propulsion	•	•	•		•
Thrusters	•	•	•		
Mine winders			•		
Boiler feed pumps	•	•			•
Starting generators	•	•			•
Starting blast furnace blowers	•	•			•
Onshore power supply	•	•			
Test stands	•	•		•	
Shaft generators	•	•			•
Shaft generator / booster	•	•			•
LNG start / helper (all-electric)	•	•			•

