



EMERSON[™]
Industrial Automation



**High-power variable speed solutions
up to 2800 kW**

POWERDRIVE MD2



The Operational pack



Quick set-up using the standard color touch screen HMI or PC tools.

- POWERDRIVE MD2 parameter setting via "Quick setup" menu
- Auto-tuning of motor parameters for optimized performance in open loop
- Settings backup

"MDX-Powerscreen" HMI ●●●●●●●●●●



Main menus

- **Information:** drive characteristics and running time, language selection
- **Reading mode:** drive status (run, accelerating, decelerating, stop) and the main physical values: mains and motor voltages, current, speed, etc
- **Setting:** quick setup with 5 intuitive submenus including the most currently used data, advanced settings allowing reading and modification of all the parameters, configuration of the drive control mode and parameter saving
- **Keypad control:** local/remote
- **Trip history:** last 10 trips saved with time and operating conditions

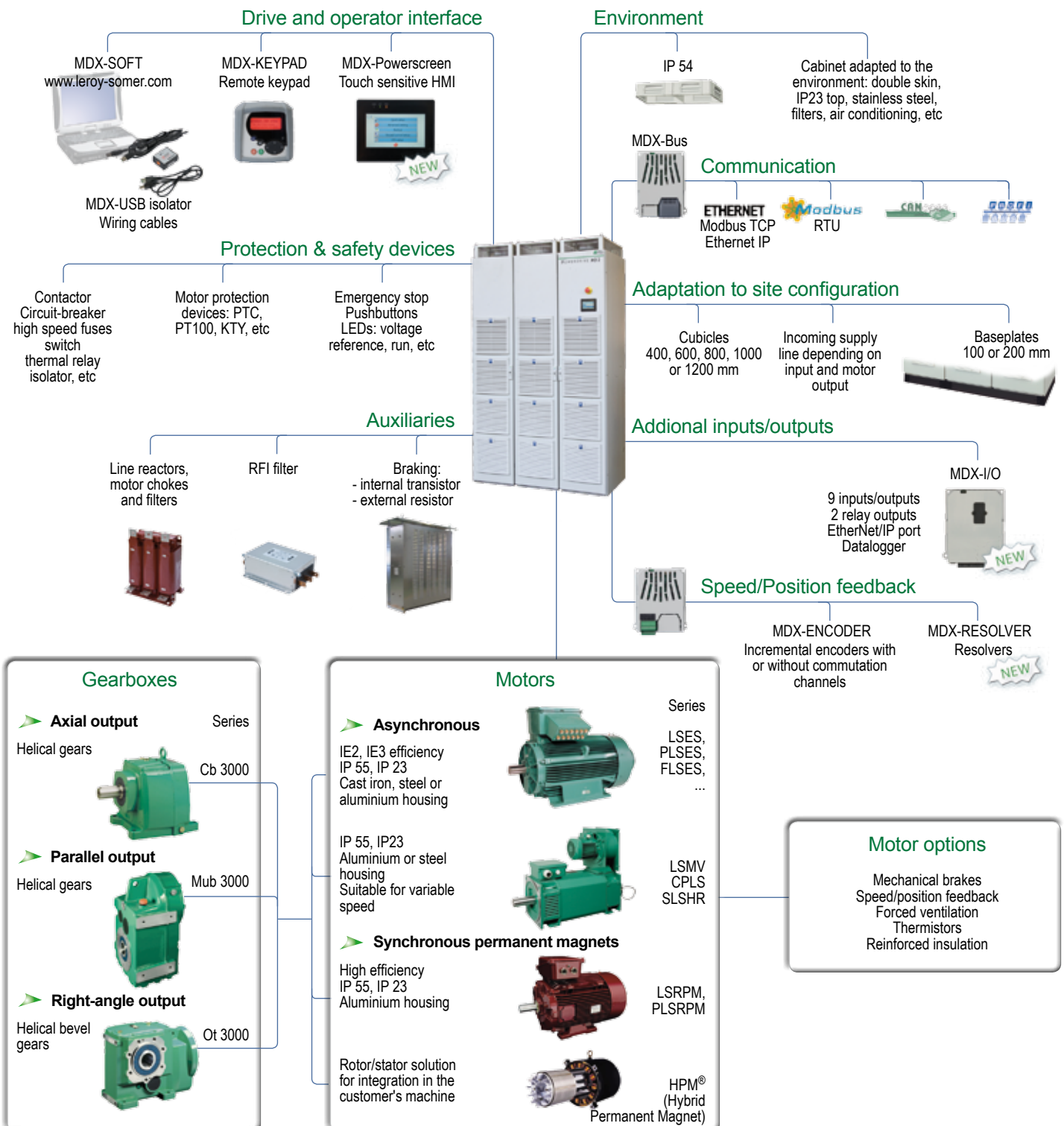
Multilingual: English, French, German, etc

"MDX-SOFT" PC tools ●●●●●●●●●●

- Comparison of files or with the factory settings
- Parameter display with list of chart
- Parameter export
- Scope function

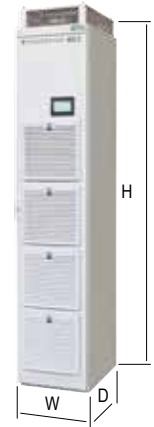


The POWERDRIVE MD2 offer



Dimensions

NEW 250kW 6 pulses
in a 400 wide cabinet



Examples for standard drive with or without option(s).

Customised configurations are made on customer specification.

MD2R - MD2RL

Max. power ³		Output current			Rating	Weight ¹	
		continuous		maximum			
heavy	normal	heavy	normal	for 60 s		Type of cooling	
						air	liquid
kW	kW	A	A	A		kg	kg

3-phase mains supply 400 V

45	55	90	110	120	60T	400	405
55	75	110	145	165	75T	400	405
75	90	145	175	200	100T	400	405
90	110	175	215	240	120T	450	455
110	132	220	260	308	150T	450	455
132	160	260	305	360	180T	1200	1210
160	200	305	380	450	220T	1200	1210
200	250	380	470	530	270T	1300	1320
250	315	470	580	660	340T	1300	1320
315	355	570	630	760	400T	1400	1415
355	450	680	800	940	470T	1500	1500
450	550	820	990	1140	600T	2100	2100
550	675	990	1220	1400	750T	2200	2200
675	750	1220	1430	1725	900T	2400	2400

3-phase mains supply 525 V to 690 V²

200	250	225	280	308	270TH	1300	1320
250	315	280	340	378	340TH	1300	1320
315	400	340	415	465	400TH	1500	1520
400	450	415	500	545	500TH	1500	1520
450	550	500	580	638	600TH	2100	2150
550	700	580	730	800	750TH	2100	2240
700	850	730	900	1000	900TH ⁴	2200	2240

1- Weight not including options

2- Power stated for a voltage of 690 V

3- Maximum permissible power for $\cos \phi = 1$ supply end

4- Higher ratings defined according to the installation constraints

Note

The MD2T, MD2E & MD2W versions are designed to customer specification. The characteristics given in the tables are applicable for an ambient temperature of 40°C and a switching frequency of 3 kHz. Maximum current available for 60 s every 600 s, at maximum drive temperature.

For more information, please contact
Leroy-Somer

Rating		H ¹	Dimensions (mm)		
T	TH		W		D
			standard	options ²	
MD2S (IP 21 air-cooled POWERDRIVE version)					
100 à 150	-	2160	400	400	600
180 à 270	-	2160	400	600	600
340 à 470	-	2160	600	600 ou 1000 ³	600
-	270 à 500	2160	600	1000	600
600 à 900	-	2160	1200	1200 ou 1600 ³	600
-	600 à 900	2160	1200	1600	600
1100 - 1400	1200 - 1500	2160	1800	2400	600
-	1800	2160	2400	3000	600
-	2000	2160	3000	3600	600
-	2500	2160	3600	4200	600

MD2SL (IP 21 liquid-cooled POWERDRIVE version)

60 à 150	-	2086	600	600	600
180 à 600	270 à 600	2086	600	1000	600
750 à 1100	750 à 1200	2086	1200	1800	600
1400	1500 - 1800	2086	1800	2400	600
-	2000	2086	2400	3000	600
-	2500	2086	3000	3600	600
-	3000	2086	3600	4200	600

MD2R (IP 21 air-cooled POWERDRIVE version)⁴

60 à 150	-	2160	600	600	600
180 à 270	-	2160	1200	1200	600
340 à 470	270 à 500	2160	1800	1800	600
600	-	2160	2400	2400	600
750 - 900	600 à 900	2160	3600	3600	600

1- MD2S IP 54: height = 2260 mm; MD2SL IP 54: as per customer request

2- Standard options: RFI filter, electrical protection devices (emergency stop, contactor, circuit-breaker, thermal relay, isolator, fused isolator), line reactor, braking transistor

3- Dimension depending on configuration (see details in installation manual)

4- MD2RL version: as per customer request



Energy savings

In pumping, ventilation, compression, industrial refrigeration and air conditioning applications, reducing energy bills while protecting the environment has become a major concern. POWERDRIVE is the Solution.

Protecting the environment ●●●●●●●●●●

Providing air conditioning for an area 24 hours/day, 365 days/year, while making up to 40% energy savings

- Consumption of pumps and cooling towers optimised by on-demand flow control via the POWERDRIVE program
- IP54 solution for harsh environment
- EMC compliance for urban environment. Total harmonic distortion THDI $\leq 5\%$
- Resolution of space constraint issues by POWERDRIVE's modular system
- Supervision by Ethernet Modbus
- Easy, user-friendly commissioning thanks to the customised HMI touch screen
- Low noise motor solution
- Single manufacturer warranty for motor and drive, guaranteeing system performance and safety



Modernising at minimal cost ●●●●●●●●●●

Reducing the energy consumption of fans in a dust collector

- Without modifying the existing installation, integration of two POWERDRIVE 120T 6 pulses that are ready to connect and easy to setup
- Communication with supervision via the fieldbus
- Flexible management by selection of preset speeds and flow regulation
- Energy savings allowing a return on investment in less than a year
- Associated saving: the filtering tubes last three times longer



Increasing productivity through technological innovation ●●●●●●

Permanent Magnet
Sensorless
solution



Improving the grinding process in the food industry, while saving energy

- Leroy-Somer provides the answer with the Dyneo® solution (sensorless permanent magnet motor) controlled by POWERDRIVE
- Productivity increased by more than 20% thanks to the low rotor inertia and a reduction in downtime when changing products
- Installation in confined spaces made easier by reduced dimensions and weight (LSRPM motor with high specific output power)
- Saving of 12 to 20% (280,000 kWh/year) on energy bills thanks to high efficiency
- A "green" solution which has resulted in annual savings of 28 T of CO₂ and has allowed a new generation of grinders to be designed



Flexible power

Leroy-Somer has had long experience in a range of environments such as those found in seaside applications, foundries, milling industry, sewage treatment plants or dairies requiring special protection devices. With its modular design, POWERDRIVE offers optimised solutions perfectly adapted to the constraints of the application and the operating conditions.

Responding to environmental constraints ●●●●●●●●●●

New innovation, a completely autonomous drive system optimized for a straddle carrier whilst generating energy savings during operation

- Resolution of corrosion problems linked to the seaside environment and changing weather conditions thanks to a stainless steel cabinet
- Integration into the space available, without modifying the gantry structure, made possible by the adaptability and compact size of the liquid-cooled POWERDRIVE solution
- Fuel consumption savings generated by the Dyneo® solution, HPM® motors with high efficiency technology combined with POWERDRIVE, and adjustment of the generator speed on request
- Compact, low-cost solution:
 - size reduction thanks to the common DC bus architecture
 - cost saving by optimising the structure due to more compact solution (electronics and motors)
 - simultaneous control of six hoisting gear and wheel drives
 - integration of motors in wheels thanks to their compact size and their high power ratio



Generator

HPM® synchronous permanent magnet generator



Hoisting

HPM® synchronous permanent magnet motors



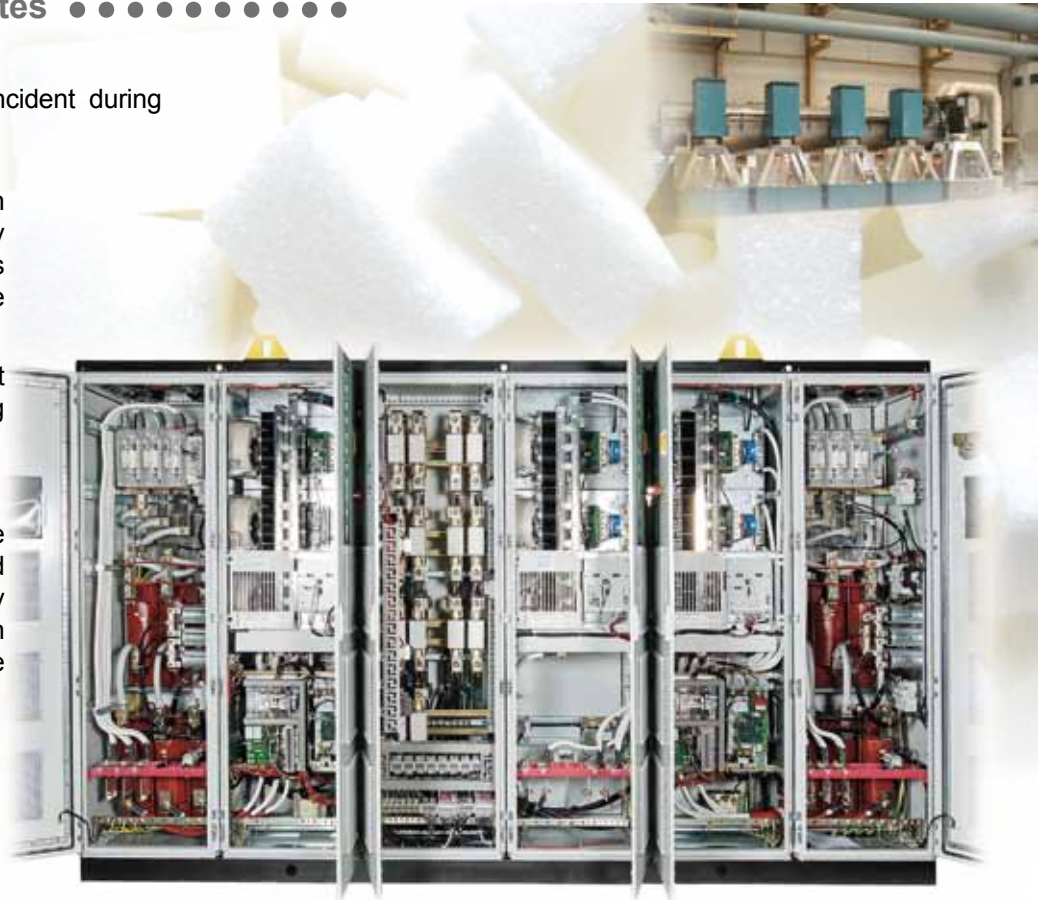
Translation



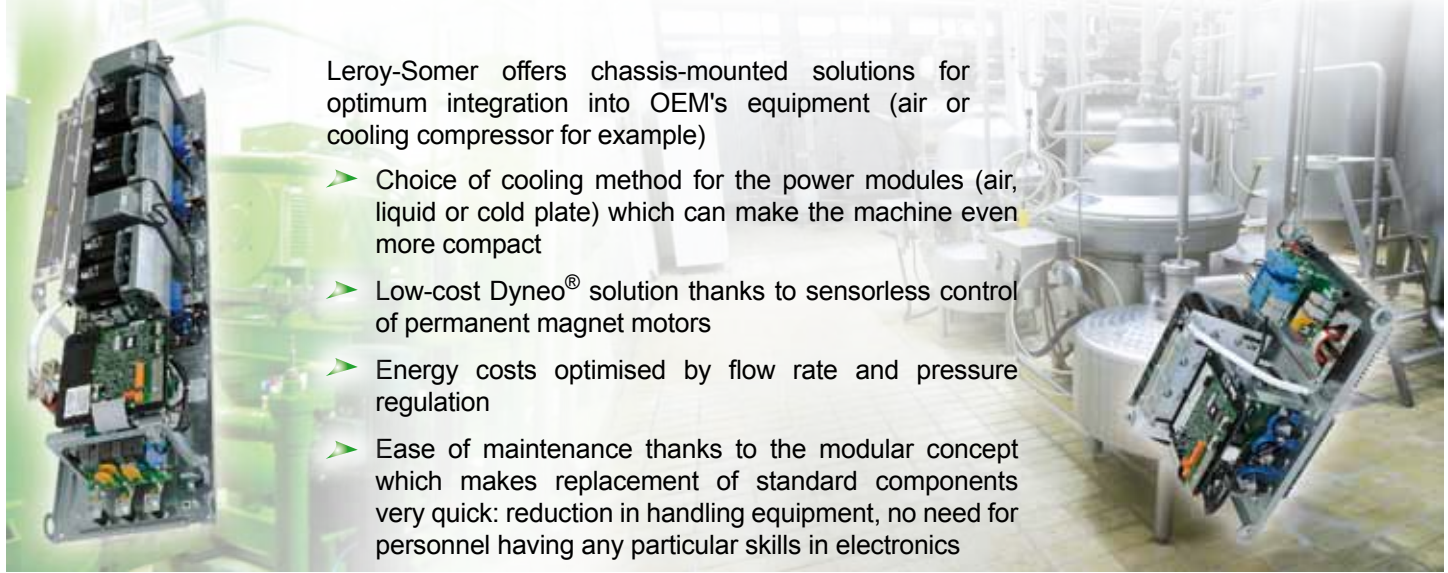
Improving availability rates ●●●●●●●●●●

Continuing to work despite an incident during sugar production

- POWERDRIVE solution provides active redundancy with its common DC bus structure and dual regenerative rectifier (Active Front End)
- In the event of a trip or incident on a centrifuge, quick restarting at partial load
- Energy savings
- Reduction in the size of the drive rectifier modules and upstream components by distributing energy between centrifuges according to the cycle



Installation at the heart of the machine ●●●●●●●●●●



Leroy-Somer offers chassis-mounted solutions for optimum integration into OEM's equipment (air or cooling compressor for example)

- Choice of cooling method for the power modules (air, liquid or cold plate) which can make the machine even more compact
- Low-cost Dyneo® solution thanks to sensorless control of permanent magnet motors
- Energy costs optimised by flow rate and pressure regulation
- Ease of maintenance thanks to the modular concept which makes replacement of standard components very quick: reduction in handling equipment, no need for personnel having any particular skills in electronics

Power wherever you need it, on land ...

Controlling an ESP (Electrical Submersible Pump) located 4000 m underground to convey oil, or managing civil or military onboard auxiliary equipment, primarily involves designing products to meet high level of specifications. Leroy-Somer has more than forty years' experience in oil and gas or marine applications. Based on robust proven industrial modules, POWERDRIVE offers customised solutions, delivered as a turnkey solution, ready to connect and simple to install.

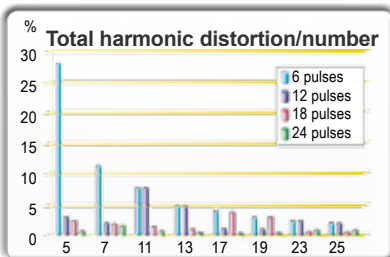
Working all over the world ●●●●●●●●●●●●●●●●

The latest technological innovations, combined with their long experience in the crude oil extraction sector have enabled Leroy-Somer to develop a flexible, innovative range.

900T Regen
Control of ESPs (Electrical
Submersible Pumps)



- Withstanding a variety of outdoor environments without extra protection thanks to a customised cabinet
- Product adapted for integration in the customer process
 - HMI and program dedicated to oil applications
 - ATEX-certified relays and probes
 - Current recorder and remote control on the front panel protected by an inspection window
 - Timer switch etc
- Built-in protection: well, pump, mains supply, lightning arrester on the power supplies ... and management of customer safety devices
- Trips saved
- Global offer with ATEX motors for surface pumps
- Excellent system reliability ensures a high level of availability. Modularity reduces the amount of maintenance
 - Remote communication
 - No special human and material resources
 - Modules which can be installed quickly in their location
 - Maintenance contract, etc



600T 6 pulses
Automatic control of PCPs (Progressive Cavity Pumps)



... and sea

Integration in any type of ship ●●●●●●●●●●



400T 6 pulses liquid cooled naval type
Pump control

With its compact standard modules and flexibility, POWERDRIVE makes it possible to design solutions that fit perfectly in the most confined spaces, while meeting the stringent requirements of marine applications.

- Shock and vibration resistance
- EMC compatibility
- Air or liquid cooling
- IP 55 protection
- AC or DC mains power supply
- Cabinet or rack design
- Technical documentation supplied
- Certification by notified bodies: ABS, BV, DNV, GL, LRS etc



60T 6 pulses liquid cooled naval type
Ventilation control

When combined with specific drive mechanisms, POWERDRIVE solutions offer global responses for motorisation applications: propulsion, compression, ventilation, pumping, materials handling, etc.



900T Active Front End
Automatic control of bow thruster unit





Renewable energies

By developing variable speed solutions using the new Dyneo® technologies, high-efficiency motors and geared motors, Leroy-Somer has made a significant contribution to reducing energy consumption. In addition, POWERDRIVE solutions open up new horizons in renewable energy: wind, water and geothermal energy.

Power generation ●●●●●●●●●●●●●●●●

- ▶ Tidal turbines, hydroelectricity, wind turbines, cogeneration, etc
 - Long-term solution lasting more than 15 years and ease of maintenance thanks to its modular design
 - Complies with current and planned legislation
 - Reactive power control
 - Mains loss mode
 - Instantaneous restarting guaranteed
 - Installation protected against overspeed by braking module
 - Integrated remote monitoring
- ▶ Hydroelectricity
 - Connection and disconnection without mechanical or electric shock by elimination of the synchronous coupler
 - Annual production maximised by adjusting the speed
 - Maintenance minimised by elimination of the Kaplan turbine gearbox where applicable



Geothermal energy ●●●●●●●●●●●●●●●●

POWERDRIVE solutions derived directly from experience of deep pumping applications in the oil industry, ideal for geothermal energy

Compact back to back architecture with front and rear access...



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The information contained in this document may therefore be changed without prior notice.