



NIETZ

Advanced Oil &
Gas Solution

VFD designed to Control & Protect
Submersible Electric Pump

NIETZ ELECTRIC CO.,LTD

01

Company Introduction

Company Profile | Main Products

Company Introduction

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NIETZ



The NIETZ has won the titles of Shanghai High-tech Enterprise, Shanghai Software Enterprise, Shanghai "Science and Technology Little Giant" Enterprise, and "Shanghai Enterprise Technology Center".

The company focuses on the research and development, production and technical services of electric drive products.

Products are widely used in compressors, textiles, printing, CNC machine tools, fans, water pumps, chemical industry, plastic machinery, woodworking machinery, centrifuges, logistics, mining and other industries.



01

**Electric pump medium voltage
frequency conversion products**

- A, Voltage range: 690V/1300V/2600V**
- B. Current range: 65-105A**
- C, Rectifier structure: 6/12 pulse optional**
- D. Output filtering: sinusoidal filtering**
- E, Scope of application: low cost, energy saving, small footprint**

02

**Electric pump low voltage
frequency conversion products**

- A, Voltage range: 380-480V**
- B. Current range: 160-1600A**
- C, Rectifier structure: 6/12 pulse optional**
- D. Output filtering: integrated sinusoidal filtering**
- E, Application scope: High power, outdoor harsh environment**

03

**Electric pump multilevel
frequency conversion products**

- A, Voltage range: 690-5000V**
- B. Current range: 100-250A**
- C. Rectification structure: 18/24/32 pulse**
- D. Output waveform: sine wave**
- E, scope of application: low harmonic, large displacement pump**

Low voltage frequency converter for electric pumps

Specifications | Features & Advantages | Applications



02

Low Voltage VFD

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Series

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Application
Environment

Product Series	Description	Definitions
HP	IP56(NEMA4X), -20°C... + 60 °C; 6/12/18/24 pulse rectification; Suitable for outdoor tropical desert	High Protection
PS	IP56(NEMA4X), -20°C... + 60 °C; Phase shifting transformer; Suitable for outdoor land integral skid structure	PST (Phase-shifting transformer)
LH	IP56(NEMA4X), Stainless steel cabinet, - 20 °C... + 60 °C; 6-pulse rectifier + input filter; Suitable for offshore platforms	Low Harmonic
RS	IP20(NEMA3R), -20°C.....+50°C,6/12 pulse rectifier, input harmonic filter optional; Suitable for indoor use	Regular Series

Low Voltage VFD Introduction

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Main Parameters of HP Series Products

Rated output current (A)	Rated capacity (kVA)	Full load output capacity with output filter (kVA)	Dimension series	W (mm)	D (mm)	H (mm)	Weight (kg)
160	133	120	No.1	1613	1200	2100	1000
250	207	187					1100
400	332	299					1300
630	523	471	No.2	2663	1200	2100	1500
800	665	599					2300
1000	831	747					2400
1200	998	898	No.3	3713	1200	2100	2500
1400	1164	1048					3400
1600	1330	1197					3600



Note: At 380V input power supply, the VFD output capacity decreases by approx. 21%.

Main Technical Specifications

Input voltage: three-phase 380VAC (+ 15%-15%), 480VAC (+ 15%-15%)

Output overload capacity: (120% x rated current), 1 minute, (interval of 5 minutes)

Output frequency: 1.5-90Hz (asynchronous motor control mode)

Control mode: programmable V/f

Starting mode: smooth starting, synchronous starting, torque lifting, swing starting, impact starting

Frequency setting: manual setting, constant current, pump inlet pressure, gas lock release

Mode selection: Manual/automatic switch

Fault record: Records and stores fault types and related information in the last one year

Protection level: NEMA3R, NEMA4

Cooling method: forced air cooling



Low Voltage VFD

Introduction

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Major Component Brands and Manufacturers

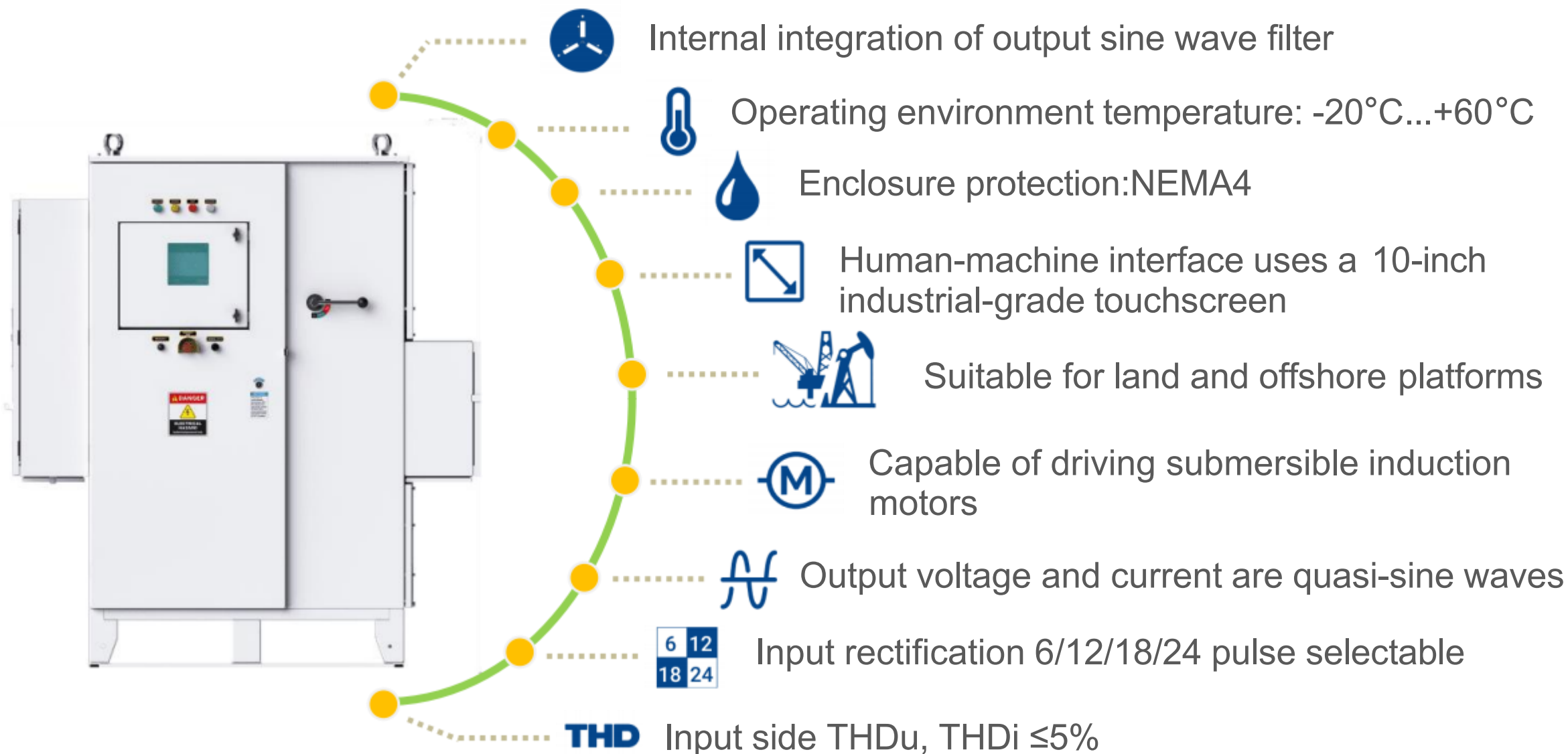
Name	Brand	Country
IGBT	INFINEON MITSUBISHI	Germany Japan
Rectifier diode	SEMIKRON TECHSEM	Germany Taiwan, China
BUS Capacitors	EPCOS	Germany
DSP& FPGA	Texas Instruments (Texas Instruments) STMicroelectronics	USA Switzerland
Fan	EBM-PAPST	Germany
Optical fiber and Interface	AVAGO	USA
Breaker	Schneider Electric, CHNT	France China



New Generation Inverter Unit

Product Specifications | [Product Features](#) | Applications

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With build-in sinewave output filter



The built-in sinewave filter is specially designed for the application of electric submerged pump. The filter is integrated at the bottom of the converter. The hot air generated by the heat dissipation of the main circuit is forced by the fan to blow through the reactor, and the hot air is forced out through the middle hollow while cooling the reactor. Make the voltage and current waveform applied to the pump load close to the standard sine wave:

- Eliminate the overvoltage phenomenon on the long cable of the output side of the converter.
- Effectively reduce the deterioration of insulation of boost transformer, submersible cable and submersible motor on the output side of converter
- Reduce the noise of booster transformer and suppress the bearing current of submersible motor

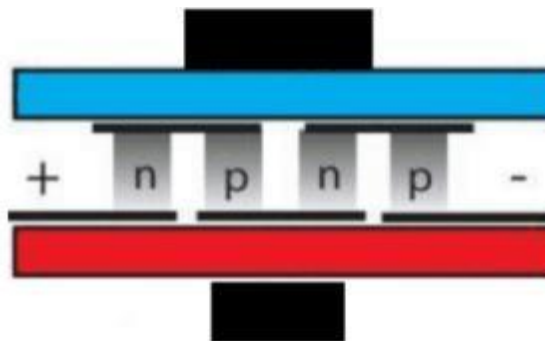
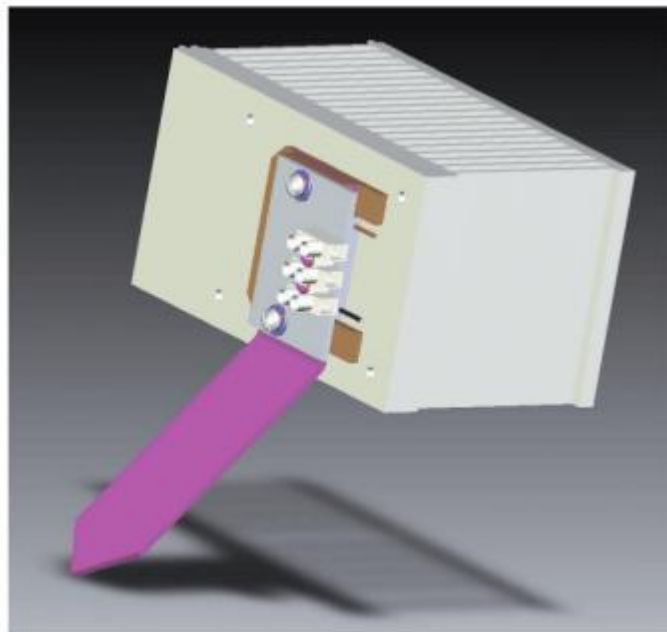
Low Voltage VFD

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Cabinet humidity control unit



A humidity control unit is installed on both sides of the bottom plate of the cabinet. The unit is composed of P-type and N-type semiconductors in series. The principle is based on the thermoelectric effect, in which the metal contact points appear to absorb heat on one side and release heat on the other. This effect can be amplified by using semiconductor materials.

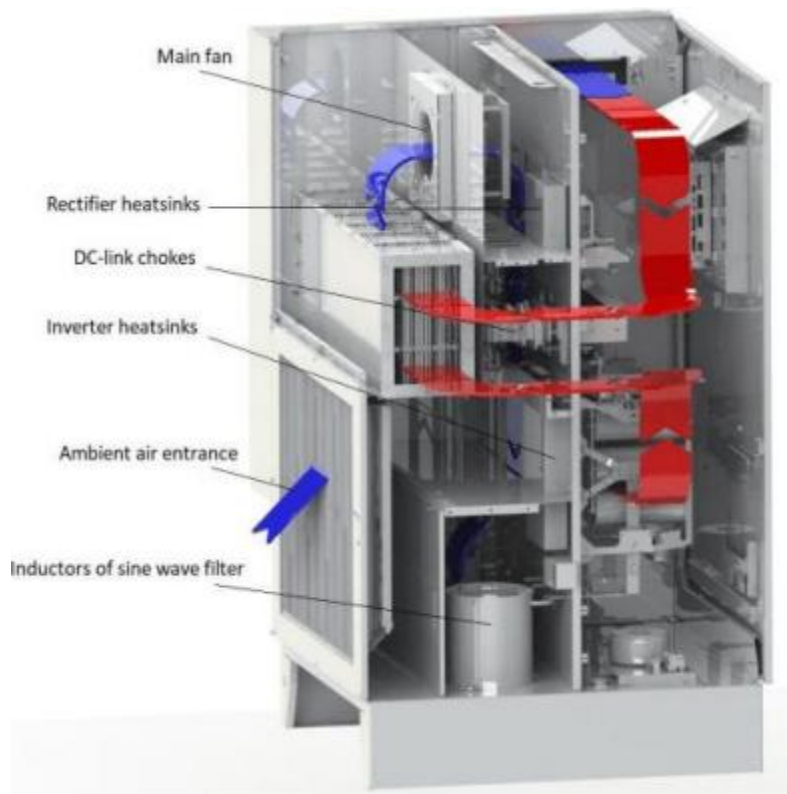
The hot and humid moisture existing in the internal space of the frequency converter cabinet accumulates when it meets the cooling part of the control unit and flows to the lower part of the frequency converter. At the same time, the heat generated by the control unit is taken away by the cooling fan of the cabinet. Humidity control unit can be very effective to prevent moisture accumulation on the surface of electrical parts, prevent parts insulation decline, especially in the morning and evening temperature difference is large environment.

Low Voltage VFD Introduction

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Unique Heat Dissipation Structure (patented)



The heat dissipation of power devices and control parts in the cabinet adopts channel isolation design. It is more conducive to the stable operation of VSD control system. The blue arrow on the left represents the external cooling air duct, and the red arrow represents the hot air duct in the control area. The hot air is forced by the cooling fan into the aluminum tube radiator at the rear of the converter for cooling, and then recirculated into the control area.

The heat dissipation structure has been applied for invention patent.

Low Voltage VFD Introduction

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Typical Application Cases of Overseas Market



Halfaya oil field of Iraq

Six sets of IP56 outdoor products are used in Iraq desert environment. The converter is integrated with other equipment in the outdoor pry body without special air conditioning room. It adopts 12-pulse structure and the rated current is up to 1600A.



Misan oil field of Iraq

Eighteen sets of VFD have been applied in the Iraq desert environment, according to user requirements, RS conventional series products designed with protection grade IP20 and input filter installed in the air conditioning room and the rated current up to 1000A.



Offshore platform of Indonesia

A total of 24 sets VFD have been put into use in the electric submersible pump offshore in Indonesia. In order to prevent salt spray corrosion from affecting the use of frequency converter, it adopts high protection grade with outdoor stainless steel structure, the maximum rated current up to 1000A.

New Generation Inverter Unit

Product Specifications | Product Features | [Applications](#)

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Typical Application Cases of Overseas Market



Oasis Oilfield, Iraq

Applied in the desert environment of Iraq, Middle East. HP series high-protection IP56 outdoor type products are adopted. The VFD and input filter are fully integrated and installed in an outdoor skid. The VFD rated current covers 630A & 1000A with 12-pulse topology. A total of 50 sets have been deployed in this oilfield.



South Sudan Oilfield

Applied in oilfields of South Sudan. HP series high-protection IP56 outdoor units are utilized. The input passive filter cabinet and output filter are integrated inside an outdoor skid. The VFD features a rated current of 630A with 12-pulse topology. A total of 6 sets have been deployed in this oilfield.



Oilfield in Libya

Applied in the desert environment of Libya. HP series high-protection IP56 outdoor products are adopted. The VFD and other equipment are integrated inside an outdoor skid. The VFD adopts air-conditioning cooling, with rated current of 510A and 12-pulse topology. A total of 4 sets have been deployed in this oilfield.



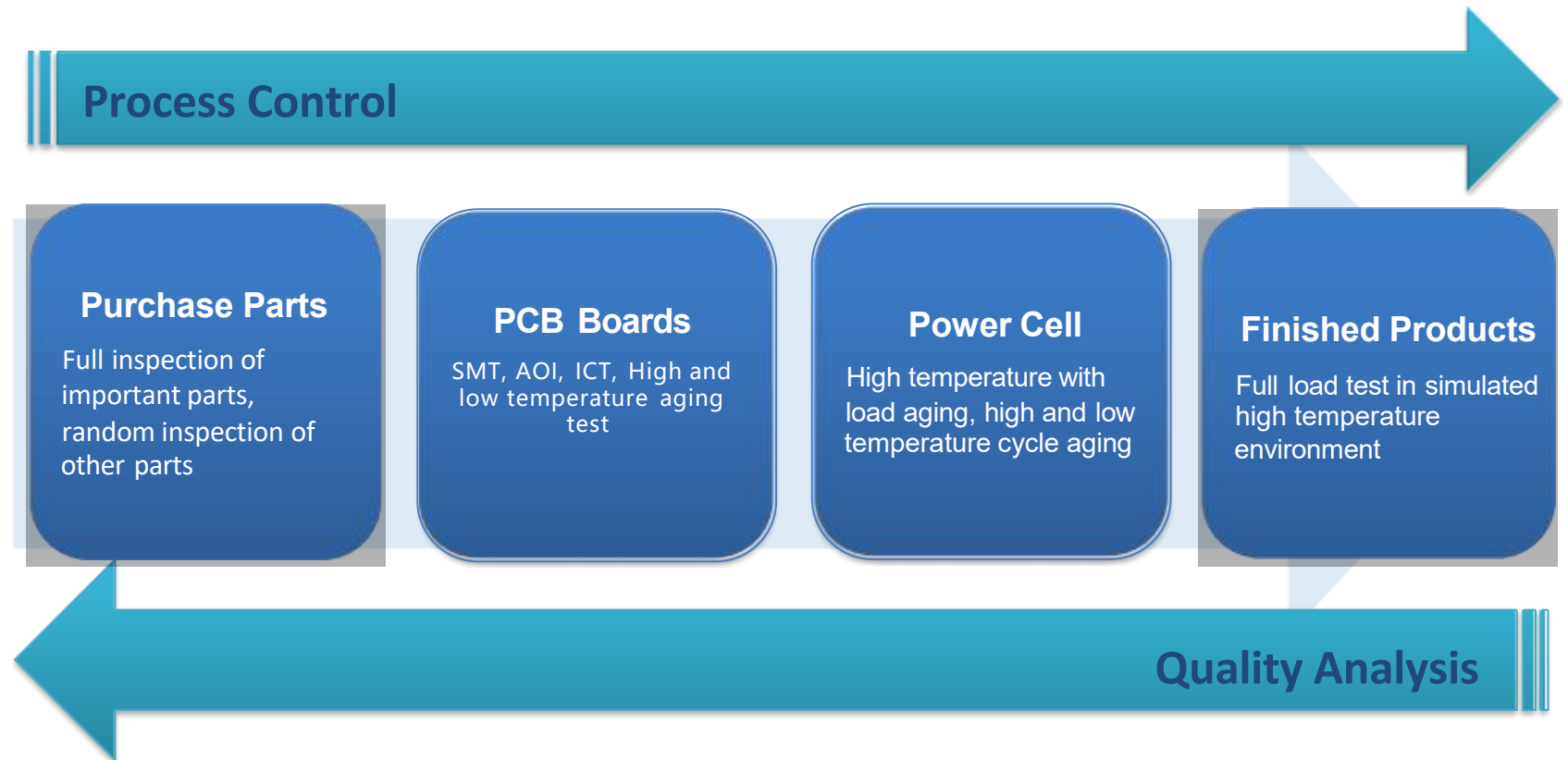
03

Quality control and service

| Quality control | Service |

A

Strict Process Control



B Complete Testing Means

Component Testing

- IGBT module tester, capacitance tester, capacitance leakage test device

Process Inspection

- Aging, EMI testing, integrated process detection platform

Inspection of Finished Product

- Multifunctional simulation test system, power quality analyzer, simulation load test device



PCB Test



Power cell
Assembling



PCB Board
Burning



Final test

Quality Control and Service

Quality control |

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Reliable Parts Supply Chain

NIETZ has been committed to optimizing the production process while strictly implementing product quality control. In the production process, we adhere to 5S management, and implement PDCA to continuously optimize product quality and service quality.



Fully automatic SMT production line



Product assembly line



THT Production Line

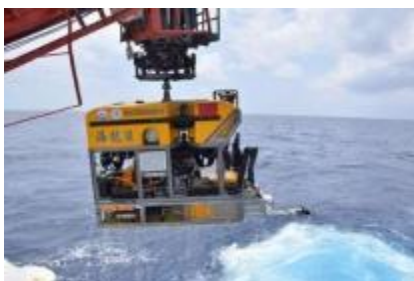


QCC Team

Quality Control and Service

Quality control |

A Think what customers think, worry what customers want.



Participate in the construction of electric submersible pump on offshore platform



Xinjiang oilfield after-sales service team



Conduct technical training for customers

Pre-Sale

- Field evaluation
- User communication
- Scheme customization

Middle-sale

- Installation guide
- Field debugging
- User training

After-sale

- Periodic maintenance
- On-site inspection
- User training

Company Culture



For the oilfield electric submersible pump to provide cost-effective, reliable surface equipment, and extend to the field of industrial control.

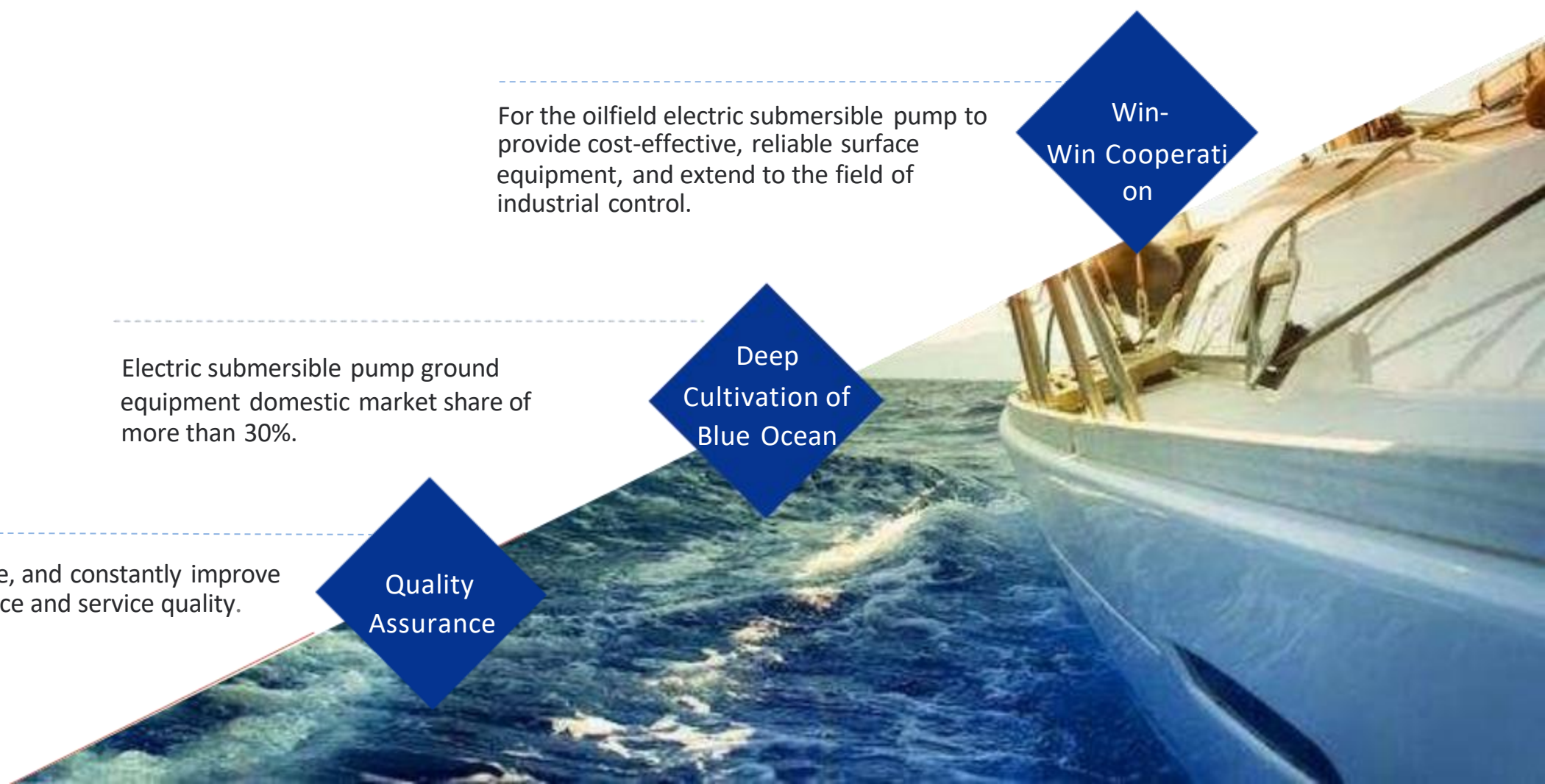
Win-Win Cooperation

Electric submersible pump ground equipment domestic market share of more than 30%.

Deep Cultivation of Blue Ocean

Expand product line, and constantly improve product performance and service quality.

Quality Assurance



**Thanks for
your attention**