

NETZSCH

Proven Excellence.



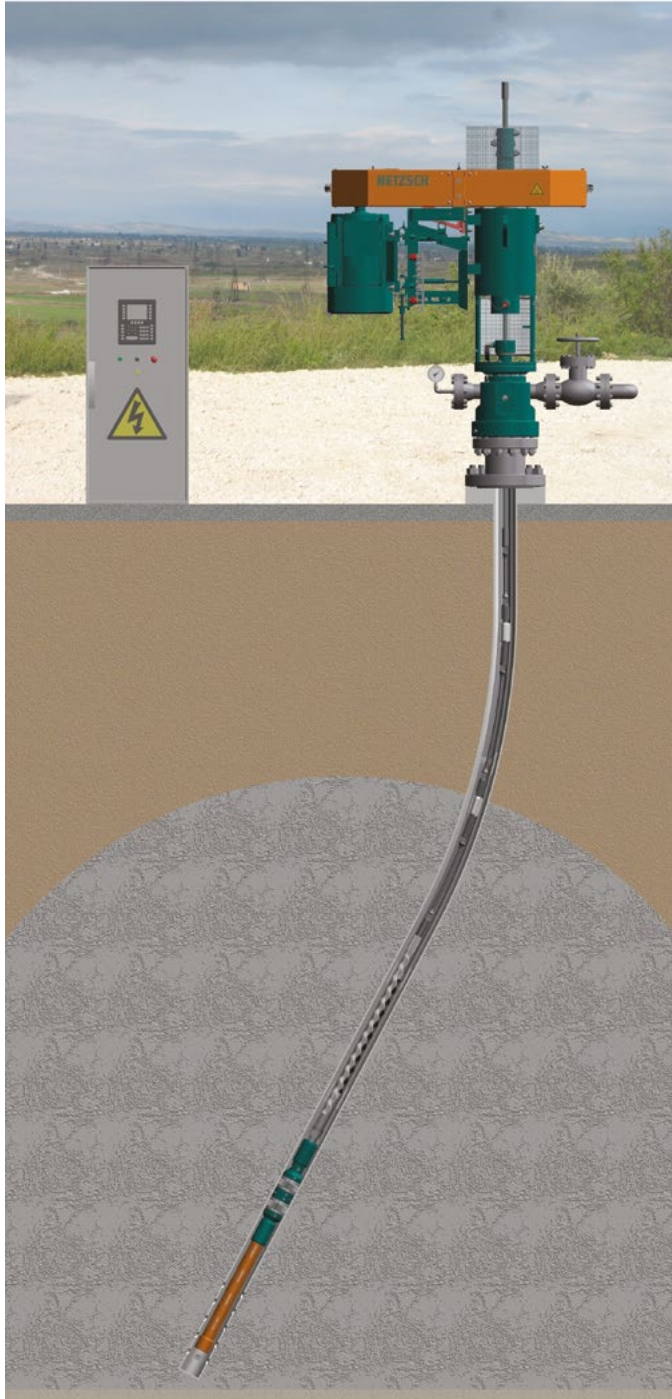
Product Catalog

NETZSCH Oil & Gas Upstream

Pumps & Systems

PCP – Pump System

The Progressing Cavity Pump System



NETZSCH Upstream conveys extremely difficult product to oil and gas fields

The primary success of this technology is to convey highly viscous fluids while maintaining stable pressure and flow. However, NETZSCH PCP Systems are suitable to handle all crude oils from light (> API grade 31), to medium crude oil (> API grade 22), heavy crude oil (> API grade 10) and extra (ultra) heavy crude oil (API grade < 10) including those with high sand, water and gas content.

What is more, it can do so with almost no pulsation or shear forces, thereby avoiding emulsion effects in oil/water, which would significantly hinder subsequent separation of the oil/water mixtures at the surface. The volumetric efficiency of a downhole progressing cavity pump is between 75% and 90% compared to only around 30% for pump jacks and 35% for ESPs (Electrical Submersible Pumps).

Key advantages of the NETZSCH pump system:

- Low operating cost
- Low investment cost
- Energy savings
- Easy installation
- Wide range of production rate

Efficient handling of the fluid:

- Maximum rate: 4,500 bpd / 715 m³/d
- Maximum total head: 4,350 psi / 300 bar
- Maximum temperature: 325°F / 163°C (Stator with elastomer)
- Maximum sand cut: 40 %

Optimum elastomer selection for different applications:

- **237 and 261:** high viscosity, high sand cut, max temperature 185°F / 85°C and 212°F / 100°C
- **286 and 299:** high water cut, medium to high °API, max temperature 194°F / 90°C and 248°F / 120°C
- **320 and 332:** high gas content, medium to high °API, max temperature 248°F / 120°C and 302°F / 150°C
- **459:** high °API, max temperature 325°F / 163°C

Different Pump Series:

- Standard pumps
- Insertable pumps
- NTU pumps
- Metal to Metal pumps

Additional Downhole Equipment:

- Gas separator
- Integrated blow out preventer
- Accessories

Torque Anchors

- Single torque anchor
- Double torque anchor
- RT Torque anchor

Optimum Drive Head Solutions:

- Standard Drive Heads (belt driven)
- Drive Head with Gear Reduction
- Drive Head with PMM drive
- All Drive Heads including special break systems with highest safety standard

Different Geometries:

Single lobe

- Optimum solution for high sand cut



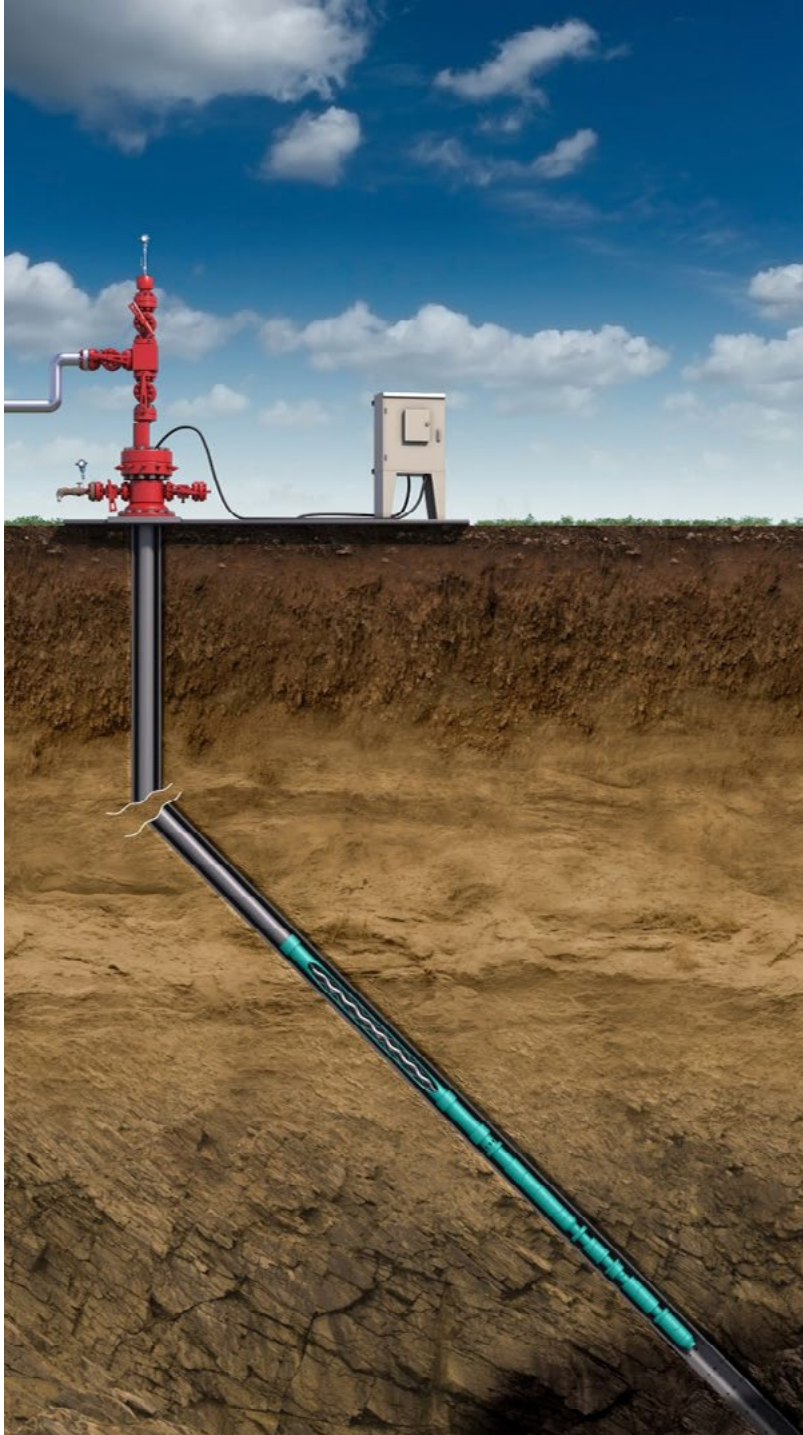
Multi lobe

- Optimum solution for slim hole application
- Insertable pumps
- High volume pumps for 5 1/2" and 5 3/4" casing / liner



ESPCP System

Efficient and reliable operation thanks to the progressing cavity pump with an underground drive



The ESPCP is a progressing cavity pump (PCP) system with a submersible permanent magnet motor (PMM). Even with difficult (deviated and horizontal) well and fluid conditions, it allows high flow rates and lowers operating costs thanks to its lower meantime between failure rate (MTBF rate). The ESPCP System consists of rotor, stator, PMM, seal section, sensor, bearing unit, flexible rod and the PMM controller.

Key Benefits of the system

- Designed for deviated and horizontal wells
- No risk for environmental impact (no dynamic seal at surface)
- Maximum safety (no risk of backspin of rods)
- Maximum pump condition information (integrated downhole sensoric)

Efficient handling

- Maximum rate: 3,775 bpd / 600 m³/d
- Maximum total head: 4,350 psi / 300 bar
- Maximum temperature: 325°F / 163°C
- Maximum sand cut: 40%

Main components of the special pump:

- Rotor: high strength material (no risk of bending); special spline for high torque
- Stator: elastomer materials equal to PCP system
- PMM Motor: 10 pole; 120 to 700 rpm; max temperature 360°F / 180°C
- Bearing unit: max torque = 2,000 N m; max axial load = 10 tons, max temperature = 360°F / 180°C; max speed = 500 rpm
- Sensor: pressure at the pump; temperature at the pump; vibration; motor temperature
- Power Cable: AWG 4 and AWG 6
- All necessary accessories: seal section, junction box, step-up transformer, and more

Multi Measurement System to optimize the oil production

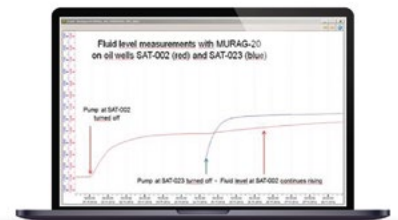
Reservoir Monitoring



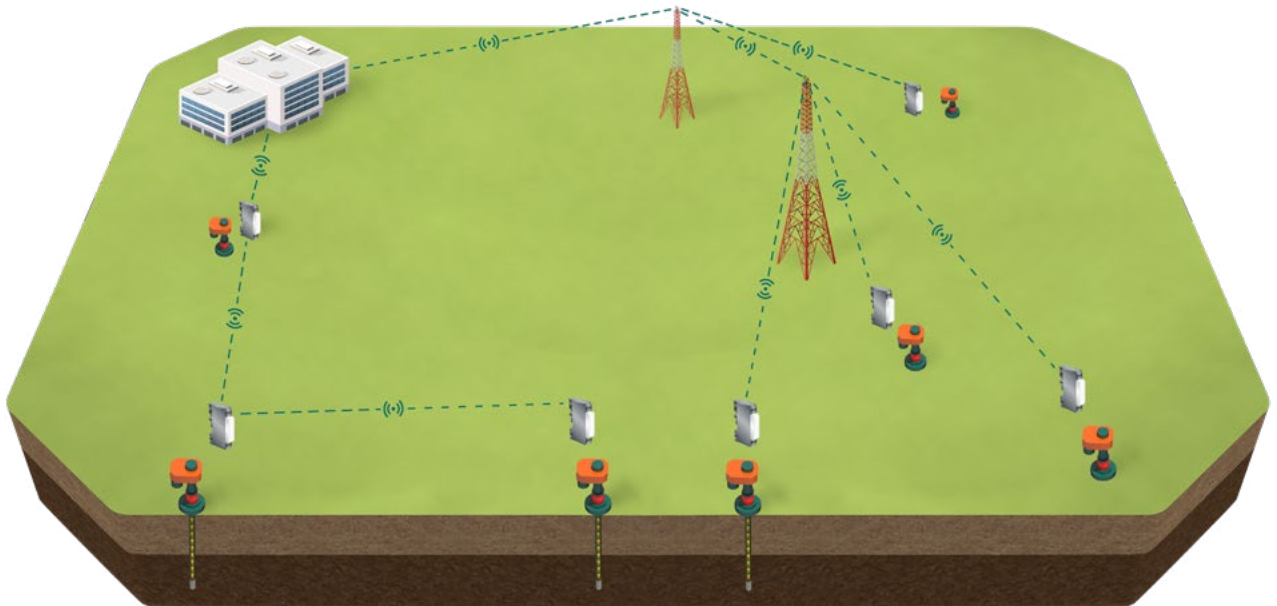
Pump Equipment Performance Monitoring



Pump Equipment Condition Monitoring



NETZSCH Pump and Well Controller with Data Transmission



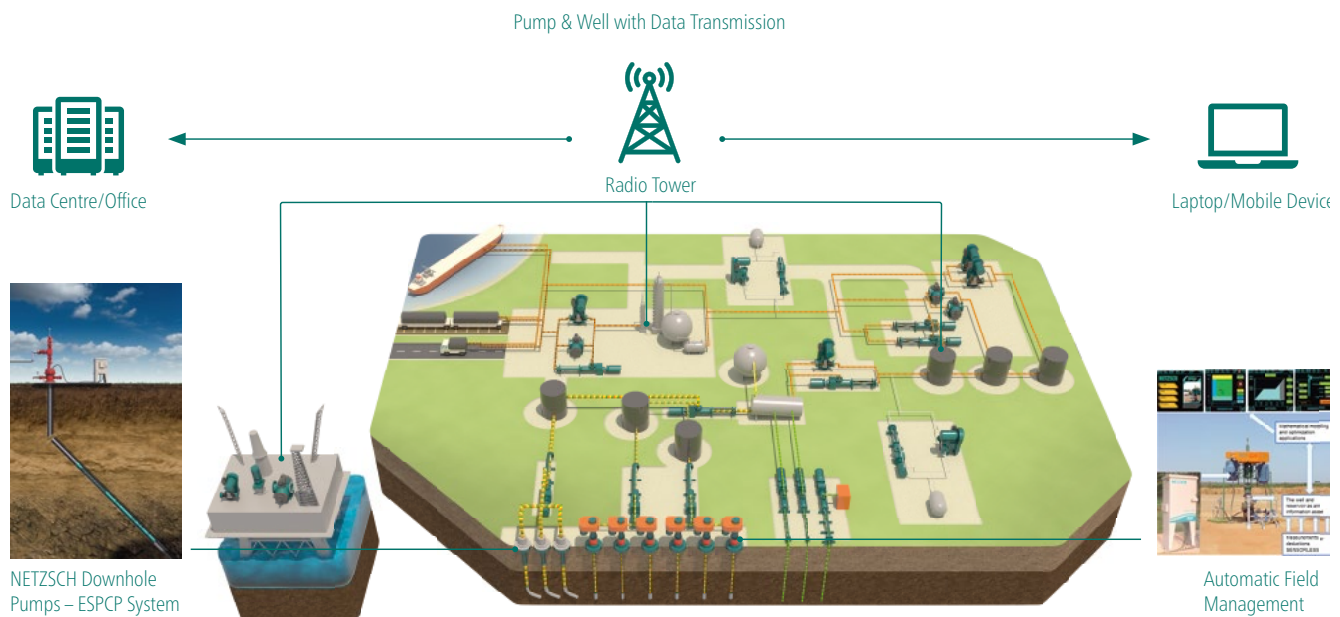
NETZSCH Pumps & Systems

The globally operating pump manufacturer that
is always there for you

For seven decades and at five sites all over the world, NETZSCH has been developing and producing high-quality, innovative pump systems with NEMO® progressing cavity pumps, TORNADO® rotary lobe pumps, PERIPRO® peristaltic pumps and NOTOS® multi screw pumps, supported by numerous patents.

Always focused on the benefit to the customer, NETZSCH has detailed knowledge of the application, that national and international standards are complied with, and that contact routes are short, delivery is fast and on-site service is competent.

NETZSCH Pumps in the Oil Field:



MULTIPHASE APPLICATIONS

PUMP & WELL CONTROL

DEWATERING of GAS WELLS

TANK STORAGE

HEAVY OIL PRODUCTION

CONVENTIONAL OIL PRODUCTION

OFFSHORE OIL PRODUCTION

COAL BED METHANE / COAL SEAM GAS

The NETZSCH Group is an owner-managed, international technology company with headquarters in Germany. The Business Units Analyzing & Testing, Grinding & Dispersing and Pumps & Systems represent customized solutions at the highest level. A worldwide sales and service network ensure customer proximity and competent service.

Our performance standards are high. We promise our customers Proven Excellence – exceptional performance in everything we do, proven time and again since 1873.

The NETZSCH Business Unit Pumps & Systems offers NEMO® progressing cavity pumps, TORNADO® rotary lobe pumps, NOTOS® multi screw pumps, PERIPRO® peristaltic pumps, macerators/grinders, dosing technology and equipment that are custom built for challenging solutions for different applications globally.

Proven Excellence.■

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