PROCESS PUMPS AND SYSTEMS IN ACCORDANCE WITH API 610

- OIL & GAS PRODUCTION INCLUDING OFFSHORE PLATFORMS
- OIL & GAS PROCESSING AND PETROCHEMISTRY
- THERMAL ENERGY
HMS Group is a major diversified corporation affiliating large engineering and manufacturing companies in production of pumps, compressors, modular and skid-mounted process equipment as well as integrated solutions for oil & gas, nuclear & thermal energy, water & utilities.

**KEY FACTS AND FIGURES**

- Year of foundation: 1993
- One of the leaders in Russia and CIS in production of pumps, compressors, and skid-mounted equipment for oil & gas
- Manufacturing facilities in Russia, Ukraine, Belarus and Germany
- Over 16 500 employees

HMS Group has significant experience in engineering, manufacturing, and supplies of the integrated solutions based on the pumping equipment for production, transportation and refining of oil, petroleum products, and gas condensate.

The products are developed using contemporary engineering methods including CFD software for continuous hydraulic design: SolidWorks, ANSYS CFX and other 3D-CAD/CAM software platforms.

High quality and short lead time are ensured by the production facilities with the modern manufacturing equipment:

- Processing centers and NC machine tools by Schiess, Skoda, Doosan, Demag, and the other manufacturers
- Modern machining and assembly centers
- Four large foundries with up-to-date molding lines and induction furnaces made in Great Britain, Germany, and Turkey.

The images illustrate FEM analysis of the KRH type volute casing heavy duty process pump.
The pumping systems parameters are confirmed at the unique testing facilities providing the in-situ test conditions of up to 25 000 m³/h capacity range and up to 14 MW drive power.

One of the main tasks is a quality assurance at every stage of manufacturing. The Quality Management System at every manufacturing facility corresponds to ISO 9001 requirements.

HMS Group is able to supply its standard pumps and pumping systems as well as provide the integrated solutions developed under specific customer requirements.

The customer is provided with a full range of related services for the pump skids and systems including installation and commissioning, maintenance, repair, supply of original spare parts, integrated retrofit, and technical support.

The pumps and pumping systems presented in the catalogue are produced at the major pump manufacturing plant – APOLLO Goessnitz (Germany).

The pumps by APOLLO Goessnitz are successfully operated at many objects of energy complex including offshore oil and gas production platforms in Russia, Europe, Middle East, and Africa.

The equipment is predominantly characterized by its high reliability, productivity and manufacturability. Its design and construction materials correspond to the main international and industry standards: ISO, API, DIN, ANSI, NORSOK.
HORIZONTAL, SINGLE-STAGE, RADially SPLIT, HEAVy-DUTY PROCESS PUMPS

KRH, KRHA
API 610, Type OH2

RANGE OF APPLICATION
— Offshore
— Refineries
— Petrochemical plants
— High-temperature applications
— Power plant engineering

DESIGN FEATURES
— Pump meets all requirements of API 610
— Horizontal, single-stage, radially split, heavy-duty design
— Axial suction nozzle, radial discharge nozzle
— Center-supported
— Back pull-out version
— Design with inducer

MATERIALS
— Cast Steel
— Chrome Steel
— Austenitic Steel
— Duplex and Super Duplex Steel
— Titanium
— Special alloys according to NORSOK, NACE

OPERATING DATA

<table>
<thead>
<tr>
<th></th>
<th>KRH</th>
<th>KRHA</th>
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<tbody>
<tr>
<td>Capacity, m³/h</td>
<td>1000</td>
<td>5000</td>
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<tr>
<td>Head, m</td>
<td>320</td>
<td>220</td>
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<tr>
<td>Pressure, bar</td>
<td>55 / 90</td>
<td>55</td>
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<td>Temperature, °C</td>
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PERFORMANCE CURVES

H, m

Q, m³/h

H, m

Q, m³/h
HORIZONTAL, SINGLE-/TWO-STAGE PROCESS PUMPS
WITH SEMIOPEN IMPELLER

KRHL, KRPO, KGHL
API 610, Type OH2

RANGE OF APPLICATION
— Offshore
— Refineries
— Petrochemical plants
— High-temperature applications
— Power plant engineering

DESIGN FEATURES
— Pump meets all requirements of API 610
— Horizontal, single-stage, radially split, heavy-duty design
— One-flow, normal priming ring-section pump; two-stage KGHL version
— Semiopen impeller with straight vanes
— Optionally: replaceable wear plate and inducer
— Antifriction bearings with oil lubrication

MATERIALS
— Cast Steel
— Chrome Steel
— Austenitic Steel
— Duplex and Super Duplex Steel
— Titanium
— Special alloys according to NORSOK, NACE

OPERATING DATA

<table>
<thead>
<tr>
<th></th>
<th>KRHL</th>
<th>KRPO</th>
<th>KGHL</th>
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<tr>
<td>Capacity, m³/h</td>
<td>45</td>
<td>25</td>
<td>45</td>
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<tr>
<td>Head, m</td>
<td>270</td>
<td>210</td>
<td>350</td>
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<td>Pressure, bar</td>
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<td>Temperature, °C</td>
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<td>+450</td>
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PERFORMANCE CURVES

H, m

Q, m³/h

0 0,3 0,5 0,8 1 2 3 4 5 6 7 8 9 10 15 20 40 50 60 70 80 90 100
VERTICAL, SINGLE-STAGE, RADIALLY SPLIT PROCESS PUMP, IN-LINE VERSION

KRI, KRIL
API 610, Type OH3

RANGE OF APPLICATION
— Offshore
— Refineries
— Petrochemical plants
— Gas processing plants
— Power plants

DESIGN FEATURES
— Pump meets all requirements of API 610
— Vertical, normal priming, single-stage pump of process design
— Discharge and suction nozzles are in-line arranged
— KRIL is a low capacity version with grease or oil lubrication

MATERIALS
— Cast Steel
— Chrome Steel
— Austenitic Steel
— Duplex and Super Duplex Steel
— Titanium
— Special alloys according to NORSOK, NACE

OPERATING DATA

<table>
<thead>
<tr>
<th></th>
<th>KRI</th>
<th>KRIL</th>
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<tbody>
<tr>
<td>Capacity, m³/h</td>
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<tr>
<td>Head, m</td>
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<td>Pressure, bar</td>
<td>55</td>
<td>50</td>
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<tr>
<td>Temperature, °C</td>
<td>+385</td>
<td>+385</td>
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HEAVY-DUTY, AXIALLY SPLIT, SINGLE-STAGE PROCESS PUMP, BETWEEN-BEARINGS VERSION

ZMK, ZMKV
API 610, Type BB1

RANGE OF APPLICATION
— Oil and Gas industry
— Offshore
— Refineries
— Power plant engineering
— Water supply and sewage disposal

DESIGN FEATURES
— Pump meets all requirements of API 610
— Thrust load compensation by double suction impeller design
— Double-volute casing
— Replaceable wear and split rings ensure maximum maintainability and high operating safety

MATERIALS
— Cast Steel
— Chrome Steel
— Austenitic Steel
— Duplex and Super Duplex Steel
— Titanium
— Special alloys according to NORSOK, NACE

OPERATING DATA

<table>
<thead>
<tr>
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<th>ZMKV</th>
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<td>Capacity, m³/h</td>
<td>10000</td>
<td>5500</td>
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<td>Head, m</td>
<td>140</td>
<td>140</td>
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<td>Pressure, bar</td>
<td>25 / 40</td>
<td>25 / 40</td>
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<td>Temperature, °C</td>
<td>+150</td>
<td>+150</td>
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</table>
PERFORMANCE CURVES
HORIZONTAL, SINGLE-STAGE, DOUBLE SUCTION PROCESS PUMP, BETWEEN-BEARINGS VERSION

ZPR, ZPRA
API 610, Type BB2

RANGE OF APPLICATION
— Offshore
— Refineries
— Petrochemical plants
— Power plants

DESIGN FEATURES
— Pump meets all requirements of API 610
— Double suction impeller
— Bearings on both sides
— Radially split casing
— Center-supported
— Bearings design: antifriction or slide ones

MATERIALS
— Cast Steel
— Chrome Steel
— Austenitic Steel
— Duplex and Super Duplex Steel
— Titanium
— Special alloys according to NORSOK, NACE

OPERATING DATA

<table>
<thead>
<tr>
<th></th>
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<th>ZPRA</th>
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<tbody>
<tr>
<td>Capacity, m³/h</td>
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<td>4000</td>
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<tr>
<td>Head, m</td>
<td>400</td>
<td>300</td>
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<tr>
<td>Pressure, bar</td>
<td>160</td>
<td>55</td>
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<td>Temperature, °C</td>
<td>+450</td>
<td>+450</td>
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PERFORMANCE CURVES

H, m

Q, m³/h

H, m

Q, m³/h
HEAVY-DUTY, RADially SPLIT, TWO-STAGE PROCESS PUMP, BETWEEN-BEARINGS VERSION

KGR, KGRD
API 610, Type BB2

RANGE OF APPLICATION
- Offshore
- Refineries
- Petrochemical plants
- Power plants

DESIGN FEATURES
- Pump meets all requirements of API 610
- Axial thrust compensation by back-to-back arrangement of impellers
- Radially split center-supported casing
- First impeller in single-flow or double-flow version
- Bearings design: antifriction or slide ones

MATERIALS
- Cast Steel
- Chrome Steel
- Austenitic Steel
- Duplex and Super Duplex Steel
- Titanium
- Special alloys according to NORSOK, NACE

OPERATING DATA

<table>
<thead>
<tr>
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<th>KRG / KGRD</th>
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<td>Capacity, m³/h</td>
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<td>Head, m</td>
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<tr>
<td>Pressure, bar</td>
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<td>Temperature, °C</td>
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PERFORMANCE CURVES

\[ H, \text{ m} \]

\[ Q, \text{ m}^3/\text{h} \]
HORIZONTAL, MULTISTAGE, AXIALLY SPLIT HIGH-PRESSURE PUMP, BETWEEN-BEARINGS VERSION

AMG
API 610, Type BB3

RANGE OF APPLICATION
— Offshore
— Refineries
— Power plants

DESIGN FEATURES
— Pump meets all requirements of API 610
— Radially split center-supported casing
— Axial thrust compensation by back-to-back arrangement of impellers
— Special NPSH impeller at the first stage
— Bearings design: antifriction or slide ones

MATERIALS
— Cast Steel
— Chrome Steel
— Austenitic Steel
— Duplex and Super Duplex Steel
— Special alloys according to NORSOK, NACE

OPERATING DATA

<table>
<thead>
<tr>
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<th>AMG</th>
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<tbody>
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<td>Capacity, m³/h</td>
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<tr>
<td>Pressure, bar</td>
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<td>Temperature, °C</td>
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</table>

HORIZONTAL, MULTISTAGE HIGH-PRESSURE PUMP OF RING-SECTION DESIGN

HP
API 610, Type BB4

RANGE OF APPLICATION
- Refineries
- Power plants
- Pumping of feed water and condensate

DESIGN FEATURES
- Pump meets all requirements of API 610
- Designed with intermediate take-off and optimized pressure within the pump
- Version with NPSH impeller
- Axial thrust compensation by balance piston, double piston or balance disk
- Low vibration values
- Bearings design: antifriction or slide ones

MATERIALS
- Cast Steel
- Chrome Steel
- Ductile iron / ADI - material
- Austenitic Steel
- Duplex and Super Duplex Steel
- Special alloys according to NORSOK, NACE

OPERATING DATA

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Capacity, m³/h</td>
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<td>Head, m</td>
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<tr>
<td>Pressure, bar</td>
<td>300</td>
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<tr>
<td>Temperature, °C</td>
<td>+200</td>
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</table>
PERFORMANCE CURVES

H, m

Q, m³/h

19
HORIZONTAL, MULTISTAGE
HIGH-PRESSURE PUMP
WITH BACK-TO-BACK IMPELLERS

GP
API 610, Type BB4

RANGE OF APPLICATION
— Offshore
— Water injection
— Brine feed
— Refineries
— Industrial application

DESIGN FEATURES
— Pump meets all requirements of API 610
— Multistage radially split high-pressure pump
— First stage designed with NPSH impeller
— Center-supported
— Bearings design: antifriction or slide ones

MATERIALS
— Cast Steel
— Chrome Steel
— Austenitic Steel
— Duplex and Super Duplex Steel
— Special alloys according to NORSOK, NACE

OPERATING DATA

<table>
<thead>
<tr>
<th></th>
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<td>Capacity, m³/h</td>
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<td>Head, m</td>
<td>2800</td>
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<tr>
<td>Pressure, bar</td>
<td>250</td>
</tr>
<tr>
<td>Temperature, °C</td>
<td>+180</td>
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</tbody>
</table>
Process Pumps and Systems

HORIZONTAL, MULTISTAGE
HIGH-PRESSURE DOUBLE CASING PUMP
WITH IN-LINE IMPELLERS

TL
API 610, Type BB5

RANGE OF APPLICATION
- Water injection
- Refineries
- Hydrocarbons handling
- Brine feed
- Gas washing systems
- Boiler feed water application

DESIGN FEATURES
- Pump meets all requirements of API 610
- Design with a pull-out part
- In-line arrangement of impellers
- Axial thrust compensation by balance piston, double piston or balance disk
- First stage designed with NPSH impeller
- Center-supported
- Bearings design: antifriction or slide ones

MATERIALS
- Cast Steel
- Chrome Steel
- Austenitic Steel
- Duplex and Super Duplex Steel
- Special alloys according to NORSOK, NACE

OPERATING DATA

<table>
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<tr>
<th>TL</th>
<th>Capacity, m³/h</th>
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<td>TL</td>
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<tr>
<td>TL</td>
<td>Pressure, bar</td>
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<tr>
<td>TL</td>
<td>Temperature, °C</td>
<td>+400</td>
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</tbody>
</table>
PERFORMANCE CURVES

H, m

Q, m³/h

TGDX

TL/TG
HORIZONTAL, MULTISTAGE
HIGH-PRESSURE DOUBLE CASING PUMP
WITH BACK-TO-BACK IMPELLERS

TG, TGDX
API 610, Type BB5

RANGE OF APPLICATION
— Water injection
— Refineries
— Brine feed
— Hydrocarbons handling
— Gas washing systems
— Boiler feed water application

DESIGN FEATURES
— Pump meets all requirements of API 610
— Design with a pull-out part
— Back-to-back arrangement of impellers provides the smallest axial forces and very smooth running
— First stage designed with NPSH impeller
— Center-supported
— Bearings design: antifriction or slide ones

MATERIALS
— Cast Steel
— Chrome Steel
— Austenitic Steel
— Duplex and Super Duplex Steel
— Special alloys according to NORSOK, NACE

OPERATING DATA
<table>
<thead>
<tr>
<th></th>
<th>TG</th>
<th>TGDX</th>
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<tbody>
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<td>Capacity, m³/h</td>
<td>900</td>
<td>700</td>
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<td>Head, m</td>
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<td>450</td>
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<td>Temperature, °C</td>
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<td>+360</td>
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</table>
MULTISTAGE HIGH-PRESSURE PUMP
100-BAR-VERSION

RANGE OF APPLICATION
— Refineries
— Power plant
— Booster applications
— Sea water desalination

DESIGN FEATURES
— Variable arrangement of nozzles
— Compact design with short bearings span
— Ring-section type
— First stage designed with NPSH impeller
— Version with axial inlet
— Antifriction bearings on boths sides with oil sump lubrication

MATERIALS
— Cast Steel
— Chrome Steel
— Austenitic Steel
— Duplex and Super Duplex Steel
— Special alloys according to NORSOK, NACE

OPERATING DATA

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Capacity, m³/h</td>
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<td>Head, m</td>
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<td>Pressure, bar</td>
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<tr>
<td>Temperature, °C</td>
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</table>
PERFORMANCE CURVES

H, m

Q, m³/h

Process Pumps and Systems
HORIZONTAL, MULTISTAGE, HIGH-PRESSURE PUMP
WITH DOUBLE-FLOW NPSH IMPELLER

GMHD
API 610, Type BB4

RANGE OF APPLICATION
— Oil and gas industry
— Offshore
— Power plants
— Pumping of condensate

DESIGN FEATURES
— Pump meets all requirements of API 610
— First stage designed with NPSH impeller
— Axial thrust compensation by means of balance piston
— Center-supported
— Low vibration values
— Bearings design: antifriction or slide ones

MATERIALS
— Cast Steel
— Chrome Steel
— Austenitic Steel
— Duplex and Super Duplex Steel
— Special alloys according to NORSOK, NACE

OPERATING DATA

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Capacity, m³/h</td>
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<tr>
<td>Pressure, bar</td>
<td>63</td>
</tr>
<tr>
<td>Temperature, °C</td>
<td>+180</td>
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</tbody>
</table>
**VERTICAL, MULTISTAGE, HIGH-PRESSURE DOUBLE CASING PUMP**

**GSTV, GLKV**
API 610, Type VS6

**RANGE OF APPLICATION**
- Oil and gas industry
- Refineries
- Pumping of condensate at power stations
- Industrial applications

**DESIGN FEATURES**
- Pump meets all requirements of API 610
- Axial thrust compensation by means of balancing piston
- NPSH impeller in single-flow and double-flow version
- High capacity version with diagonal impellers
- Bearings design: antifriction bearings or combined axial-radial slide ones

**MATERIALS**
- Cast Steel
- Chrome Steel
- Austenitic Steel
- Duplex and Super Duplex Steel
- Special alloys according to NORSOK, NACE

**OPERATING DATA**

<table>
<thead>
<tr>
<th></th>
<th>GSTV</th>
<th>GLKV</th>
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<tbody>
<tr>
<td>Capacity, m³/h</td>
<td>3000</td>
<td>400</td>
</tr>
<tr>
<td>Head, m</td>
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<td>250</td>
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<tr>
<td>Pressure, bar</td>
<td>40 / 63</td>
<td>40</td>
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<tr>
<td>Temperature, °C</td>
<td>+160</td>
<td>+160</td>
</tr>
</tbody>
</table>
PERFORMANCE CURVES
VERTICAL, MULTISTAGE, HIGH-PRESSURE DOUBLE CASING PUMP

HPTV
API 610, Type VS6

RANGE OF APPLICATION

- Offshore
- Refineries
- Condensate removal
- Liquid gas / hydrocarbons handling
- Booster and transfer pumps

DESIGN FEATURES

- Pump meets all requirements of API 610
- Axial thrust compensation by means of balance piston
- NPSH impeller in single-flow and double-flow versions
- Version with suspended suction impeller
- Bearings design: antifriction bearings or combined axial-radial slide ones

MATERIALS

- Cast Steel
- Chrome Steel
- Austenitic Steel
- Duplex and Super Duplex Steel
- Special alloys according to NORSOK, NACE

OPERATING DATA

<table>
<thead>
<tr>
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<tbody>
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<td>Capacity, m³/h</td>
<td>550</td>
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<tr>
<td>Pressure, bar</td>
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<tr>
<td>Temperature, °C</td>
<td>-180 / +260</td>
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</table>
PERFORMANCE CURVES
VERTICAL, MULTISTAGE HIGH-PRESSURE SINGLE CASING PUMP

HPV, HPVX
API 610, Type VS1

RANGE OF APPLICATION
— Refineries
— Fuel handling
— Crude oil booster and transfer pumps
— High-temperature applications
— Tank installation

DESIGN FEATURES
— Pump meets all requirements of API 610
— ATEX version
— Radial centrifugal pump with suspended NPSH impeller (option)
— Axial thrust compensation by means of balance piston
— Liquid-lubricated slide bearings in submersible part of the pump
— Upper part bearings: antifriction bearings or combined axial-radial slide ones

MATERIALS
— Cast Steel
— Chrome Steel
— Austenitic Steel
— Duplex and Super Duplex Steel
— Special alloys according to NORSOK, NACE

OPERATING DATA

<table>
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<td>Pressure, bar</td>
<td>63</td>
</tr>
<tr>
<td>Temperature, °C</td>
<td>+180</td>
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</table>
PERFORMANCE CURVES

H, m

Q, m³/h

3 4 5 10 20 30 40 50 100 200 300 400 500 800
CUSTOMIZED SOLUTIONS

Pump type: TGD-80C/12-308/CN
Multistage high-pressure double casing process pump with gear box, motor and lube oil system

<table>
<thead>
<tr>
<th>Liquid</th>
<th>Paraffin products</th>
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<tbody>
<tr>
<td>Capacity</td>
<td>98.5 m³/h</td>
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<tr>
<td>Head</td>
<td>2 620 m</td>
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<tr>
<td>Rotation speed</td>
<td>4 400 rpm</td>
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<tr>
<td>Material</td>
<td>acc. to API 610, S-6</td>
</tr>
<tr>
<td>Skid weight</td>
<td>25 000 kg</td>
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Pump type: TGD-100/12-508/CN
12-stage BB5 process pump with a special heating jacket

<table>
<thead>
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<th>Carbamate</th>
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<td>Capacity</td>
<td>150 m³/h</td>
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<tr>
<td>Head</td>
<td>1 576 m</td>
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<tr>
<td>Suction pressure</td>
<td>5 bar up to 73 bar</td>
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<tr>
<td>Design pressure</td>
<td>242 bar at 130 °C</td>
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<tr>
<td>Rotation speed</td>
<td>2 980 rpm</td>
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<tr>
<td>Skid weight</td>
<td>19 200 kg</td>
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Pump type: KRGZ-150/450-399/CN
Double-stage process pump with axial inlet and open impellers

<table>
<thead>
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<th>Liquid</th>
<th>Shale oil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity</td>
<td>210 m³/h</td>
</tr>
<tr>
<td>Head</td>
<td>215 m</td>
</tr>
<tr>
<td>Design pressure</td>
<td>30 bar at 375 °C</td>
</tr>
<tr>
<td>Design temperature</td>
<td>375 °C</td>
</tr>
<tr>
<td>Solids content</td>
<td>up to 15% (rock ash)</td>
</tr>
<tr>
<td>Material</td>
<td>Special wear-resistant cast iron</td>
</tr>
</tbody>
</table>
PUMPING SYSTEMS

TRANSFER PUMP SKIDS
— Used for circulation and transfer of all kinds of liquids
— High operation safety is ensured by a special pump design series

HIGH-PRESSURE INJECTION SKID WITH HORIZONTAL MULTISTAGE PUMP

INJECTION PUMP SKIDS
— Designed especially for supply of liquid fuel to gas turbines
— Usually supplied as redundant pumps
— Ensure high operation safety

HIGH-PRESSURE PUMP SKID WITH VERTICAL DOUBLE CASING PUMP

LUBE OIL SKID OF TYPE ACS ACCORDING TO API 614
SYSTEM ENGINEERING PROJECTS

HEAVY FUEL OIL PUMPING STATION

Complete prefabricated stations for supply of burners with heavy fuel oil including auxiliary steam and condensate processes.

INJECTION PUMP MODULE

Complete prefabricated pump modules for high-pressure fuel supply to the gas turbines; applicable with various fuel types and operation pressure

CIRCULATION PUMP SYSTEMS

Complete prefabricated pumping systems for circulation of heat transfer liquids, for example air preheating of gas turbines.
## ADDITIONAL STANDARD PUMP SERIES

<table>
<thead>
<tr>
<th>Type, series</th>
<th>Pump designation</th>
<th>Design data</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Capacity, m³/h</td>
</tr>
<tr>
<td><strong>Single-stage centrifugal pumps</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KRC</td>
<td>Chemical process pumps series, includes additional sizes</td>
<td>1200</td>
</tr>
<tr>
<td>KRP / H</td>
<td>Average heavy-duty process pumps according to API 610</td>
<td>2800</td>
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<tr>
<td><strong>Multistage horizontal high-pressure pumps</strong></td>
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<td></td>
</tr>
<tr>
<td>GL / GLZ</td>
<td>Multistage centrifugal pumps with or w/o NPSH impeller (Optionally with axial inlet)</td>
<td>600</td>
</tr>
<tr>
<td>GM / GMZ</td>
<td></td>
<td>800</td>
</tr>
<tr>
<td><strong>Multistage vertical high-pressure pumps</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GLV / X</td>
<td>Vertical pumps for tank-installation</td>
<td>500</td>
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<tr>
<td>GLVB</td>
<td>Vertical multistage centrifugal pumps with or w/o NPSH impeller</td>
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</tr>
<tr>
<td><strong>Centrifugal double-suction split-casing pumps</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZMLK</td>
<td>Horizontal version</td>
<td>6000</td>
</tr>
<tr>
<td></td>
<td>Vertical version</td>
<td>5000</td>
</tr>
<tr>
<td><strong>Self-priming centrifugal pumps</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KSD / KCD</td>
<td>Self-priming pumps with a side-channel</td>
<td>30</td>
</tr>
<tr>
<td>KRE / S</td>
<td>Self-priming volute-casing pumps</td>
<td>100</td>
</tr>
</tbody>
</table>
The equipment manufacturer is APOLLO Goessnitz, Germany (HMS Group)

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