APOLLO

Pumps | Pumping Systems

ORGANIC RANKINE CYCLE
ORC-PROCESS

The Organic Rankine Cycle (ORC) is a method of generating energy that uses organic working fluids with a low boiling point instead of water. These media have special evaporation pressures and are potentially flammable, so they place high demands on sealing systems, material selection and the hydraulic design of pump systems.

ORC technology enables the efficient use of waste heat for power generation, even at low temperatures, thus contributing to a sustainable reduction in CO_2 emissions. Compared to conventional steam turbine systems, ORC technology can achieve high efficiencies even within lower temperature ranges (e.g. 80–150 °C).

ORC systems can be operated using various heat sources, including waste heat from industrial processes, geothermal energy, process heat from various industries and solar thermal energy. Using waste heat from industrial processes, which is often difficult to utilise efficiently in other systems, is a major advantage of ORC technology. This flexibility enables a wide range of energy sources to be used for power generation, making the technology highly versatile and promising for the future.

CUSTOMIZED SOLUTIONS
FOR THE HIGHEST DEMANDS

Expertise

Decades of experience and quick quotation preparation.
Thanks to our modularised ORC pump portfolio and expert support throughout the entire project.

Flexibility

Close customer cooperation ensures that tailor-made, flexible solutions optimally fulfil individual performance and integration requirements.

Supply Chain

A European supply chain ensures consistent quality standards, short response times and a minimised carbon footprint.




PUMP TECHNOLOGY
FOR CLEAN AND AFFORDABLE ELECTRICITY

Range

Flow rates up to 3 000 m²/h Delivery heads up to 550 m

Our ORC hydraulics are designed for maximum efficiency and have a low NPSHr. This optimisation ensures reliable operation and improves the overall performance of the ORC system.

Typical ORC media

Organic Rankine cycle (ORC) applications often use isobutane, n-butane, pentane, cyclopentane or other hydrocarbons, as well as siloxanes such as MM and MDM, or ammonia. Our pump portfolio offers suitable solutions for all of these substances.

Design and Equipment Features

- standardized, ORC-tested components for proven reliability
- modular design for flexible adaptation to project-specific process conditions
- sealing systems:
  - single or double mechanical seals
  - magnetic couplings for hermetic design
- bearings: oil or grease lubricated, with or without cooling/heating
- design according to API 610, ISO, NACE, or NORSOK possible

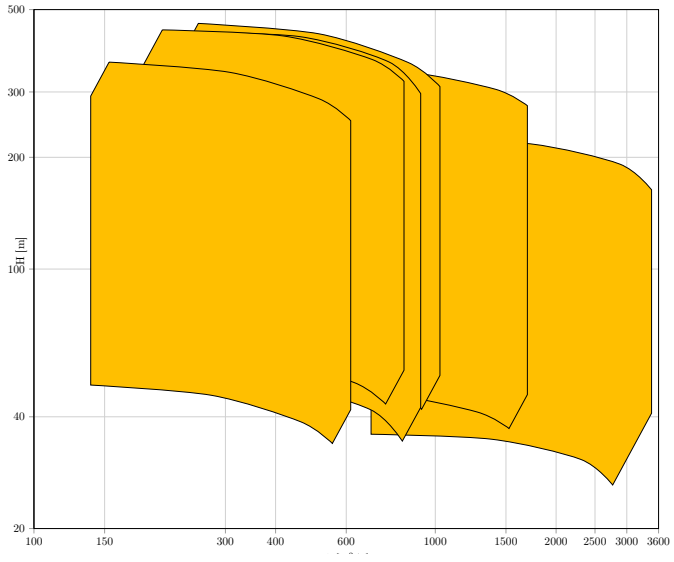
Materials

- durable, cost-effective materials for selected ORC media: 12% chromium steels and spheroidal graphite
- for maximum corrosion resistance, alternative materials such as duplex, super duplex or titanium can be used
- quality assurance is carried out in accordance with a variety of test procedures, standards and customer requirements

GSTV Series

Vertical, multistage, high pressure process pump of can-type design with excellent hydraulic properties, an optimally matched performance range, and low NPSH values.

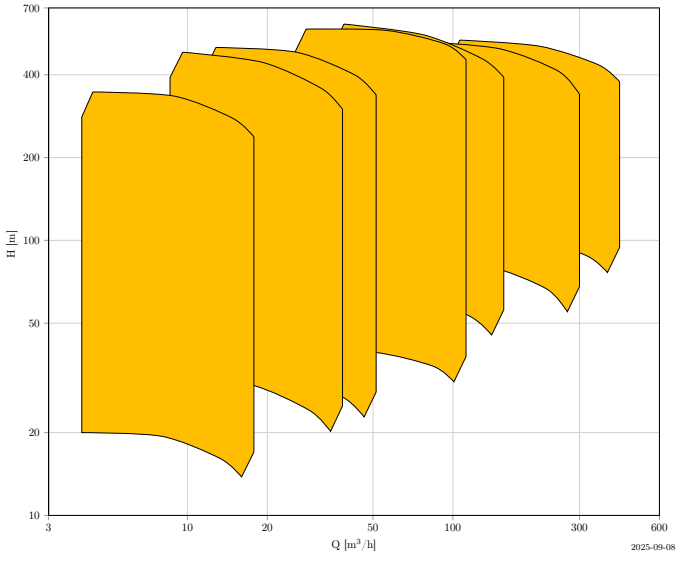
- optimised single-stage suction impeller has been developed to reduce suspension/foundation depth and installation effort
- bearing versions: liquid-lubricated radial plain bearings within the pump
- upper bearing at GSTV: combined radial-axial plain bearings with oil bath lubrication and antifriction bearings for radial and axial load
- nozzle position: in line with inlet and outlet casings or optionally suction nozzle at the can possible



GM Series

The GM is a horizontal, multi-stage, high-pressure centrifugal pump with an NPSH-optimised impeller. The connection position can be selected according to requirements to optimally integrate the pump into various system designs.

- NPSH-optimised impeller with an axial inlet is ideal for difficult suction conditions
- variable connection positions can be adjusted in 90° increments for flexible integration into various system designs
- various versions available:
  - GM: horizontal pump with foot mounting
  - GMM: version with hermetic sealing by magnetic coupling
  - GMZ: version with NPSH impeller and axial inlet for reliable operation under demanding suction conditions



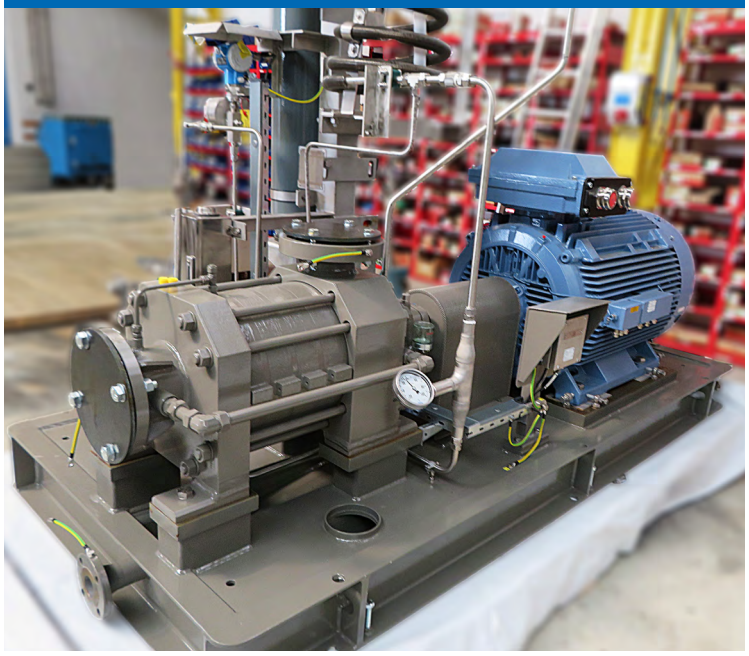
INSTALLATIONS
FOR DEMANDING APPLICATIONS

ORC POWER UNIT CIRCULATION PUMPS
at geothermal power plant

- APOLLO pump type: **GSTV-300I/1+4** a vertical, multistage, high-pressure pump of can-type design
- pumping 1 100 m³/h n-butane of 420 m with 1 MW motor power

FEED PUMPS
at geothermal power plant

- APOLLO pump type: **GMZ-100N/5** a multistage, horizontal, high-pressure pump with axial inlet
- pumping 110 m³/h cyclopentane of 340 m with 100 kW power



Apollo Gößnitz GmbH
Walter-Rabold-Strasse 26
04639 Gößnitz / Germany
Phone: +49 34493 77 0
Fax: +49 34493 77 210
E-Mail: sales@apollo-goessnitz.de

www.apollo-goessnitz.de

APOLLO-HO01E_2025-09