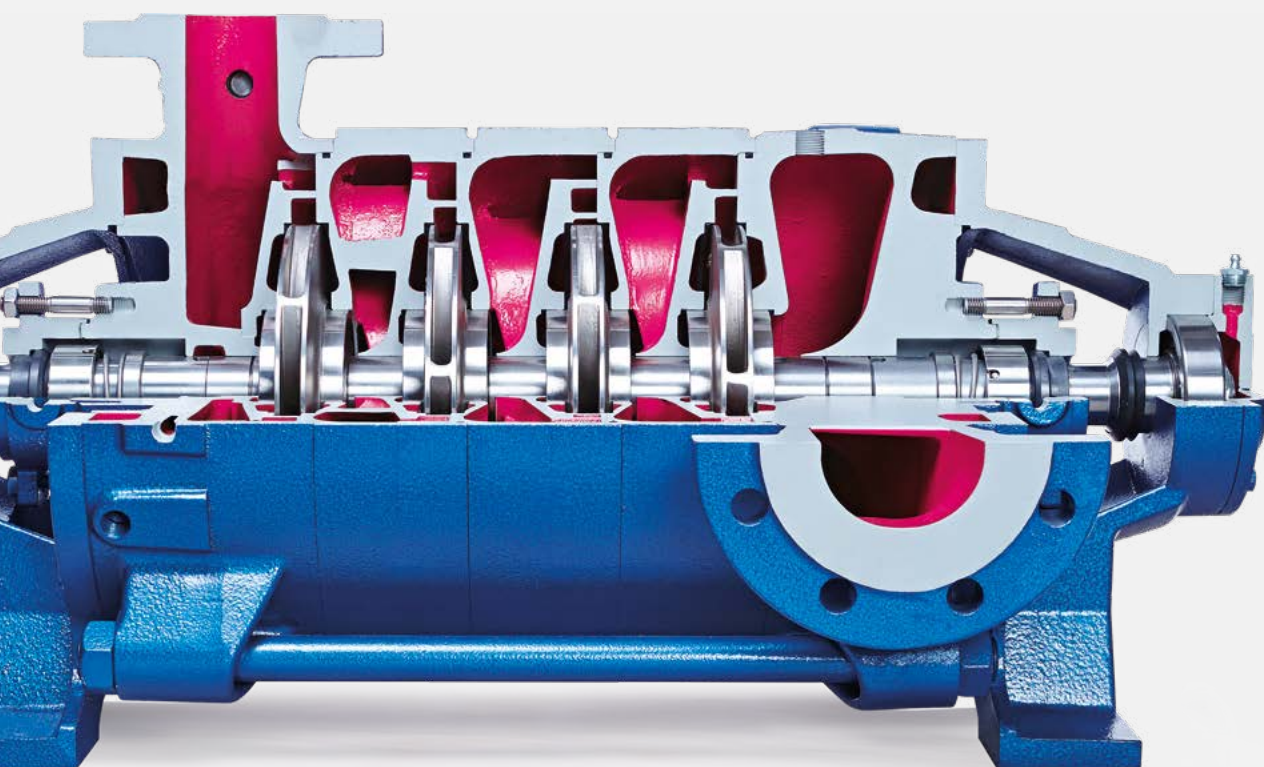


# **CENTRIFUGAL PUMPS**

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## **COMPLETE RANGE**



**OSNA**  
PUMPENTECHNOLOGIE  
SINCE 1890



Owner Dipl.-Kfm. Klaus Wessel

## FUTURE BASED ON TRADITION

When Mr. Johann Hartlage got self-employed on 1st May 1890, he could not even have guessed about his enterprise becoming a true success story. Until the end of the 1930's, and bearing the founder's name, the company grew from a small handicraft business to a machine and pump factory of a considerable size. Named OSNA-Pumpen by now, the enterprise celebrated its 125th anniversary in 2015.

The family-owned company earned its good reputation by fabricating reliable OSNA piston pumps. Many of these pumps are still in operation today, some of them having been in continuous service for more than 80 years. Whoever comes across the name OSNA will certainly think of piston pumps immediately.

Representing the fourth generation of this entrepreneurial family, Mr. Klaus Wessel takes a contented look back at the history of his company.

Having gone through some highs and lows during the past decades, the company has always been undergoing a constant process of development. Nowadays, it offers a wide selection of pump systems to suit many types of application. This choice comprises of piston pumps and centrifugal pumps, as well as submersible pumps, pressure boosting systems, equipment for water purification and filtering and the corresponding accessories. Apart from a typical standard product range, OSNA offers many individual solutions which will be tailor-made according to the customers' requirements.

The strong points of OSNA are the close contact to the customers and the dedicated analysis of their requirements. With the knowledge of the mostly long-time employees about their customers' demands, OSNA is always able to present an individual and custom-made solution. Such solutions sometimes lead to a higher initial investment which will pay off during the total service life.

Many long-term relations – the beginnings of some dating back to the times of Mr. Klaus Wessel's father Heinz Wessel – prove that this attitude works. Another reason for the success is the fact that OSNA is still under family ownership and management and that the company can base its successful work on short and efficient decision paths; the 'old hands' with their long-term experience are cooperating closely with the ambitious 'new blood' in order to work on new ideas for the future.

Optimized energy consumption in pump systems will remain a core subject in future, which includes an inevitable and constant demand to upgrade hydraulics, drives, motors and controlling equipment. On top of that, customers will increasingly ask OSNA to put in much more consultation effort when it comes to upgrading the energy efficiency of existing and new pump systems. Apart from being a statutory duty anyway, these efforts can lead to substantial energy savings.



6 steps to effective  
energy saving  
**SEE PAGE 19**

## ECODESIGN DIRECTIVE OF THE EU

The Ecodesign Directive 2009/125/EC creates a legal framework for the stipulation of environmentally appropriate design of “Energy Related Products” (ErP). It replaces directive 2005/32/EC dated 6 July 2005, the so-called “Ecodesign Directive For Energy Using Products”.

Numerous energy-related products were examined in order to stipulate minimum requirements. In this context, design criteria for environmentally appropriate design of centrifugal pumps for clean water have been determined in directive No. 2012/547/EU. As a consequence, manufacturers as well as distributors may only place products on the market which fulfil these requirements.

All OSNA products covered by this directive fulfil the requirements of Minimum Efficiency Index  $\geq 0,40$  and will be marked ErP 2015.

### ENERGY AUDIT

Apart from makers only, all Non-SMEs\* will be obliged to implement measures to improve their energy efficiency. To detect potential energy savings and to initialize the corresponding measures, all Non-SMEs must carry out Energy Audits (acc. to DIN EN 16247) in accordance with directive 2012/27/EU, starting from 5 December 2015. OSNA will offer to support these enterprises by carrying out “Energy Checks” (acc. to VDMA specification 24262) in their pump systems.

**\* Definition of Non-SME:**

Enterprises with more than 250 employees,  
more than 50 M€ turnover or  
total assets of more than 43 M€

# LOW PRESSURE CENTRIFUGAL PUMPS

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## **SKT / SKB / SKI**

Non-selfpriming single-stage end suction low pressure centrifugal pump acc. to EN 733 in long coupled design (SKT), in block design (SKB) and in-line design (SKI)

For clean water, sea water, brines and alkaline liquids  
in water supplying, dust extracting and spray-coating plants,  
in cooling and revolving circulations



- high efficiency
- low-noise operation
- modular construction
- optimal adjusting to the operating point
- exchangeable shaft sleeves
- use of high grade material
- little maintenance necessary
- easy to service

## SKT / SKB / SKI

### LIQUIDS

Fresh water, drinking water, boiler feed water, raw water, sea and brackish water, hot water, condensate, fuels, soles, lyes, etc.

### MATERIALS

Depending on the requirements of the liquids or the customers' requests, available in cast iron, nodular cast iron, bronze, cast steel or stainless steel

### TECHNICAL DATA

● <b>Capacity</b>	up to 3.500 m <sup>3</sup> /h (15.140 USGPM)
● <b>Head</b>	up to 105 m (344 ft)
● <b>Speed</b>	up to 3.500 rpm
● <b>Temperature</b>	up to 140 °C (284 °F)
● <b>Casing Pressure</b>	up to 16 bar
● <b>Shaft Sealing</b>	Gland packing or mechanical seals*
● <b>Lubrication</b>	Antifriction bearings grease lubricated Slide bearings liquid lubricated
● <b>Flange</b>	Discharge branch: from DN 32 to DN 350 Suction flange: DIN 2533, PN 16 DIN 2532, PN 10 Discharge flange: DIN 2533, PN 16 DIN 2532, PN 10

\* according to product profile

# HIGH PRESSURE CENTRIFUGAL PUMPS

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## CVP

Non-selfpriming multistage high pressure centrifugal pump  
in vertical design

For the pumping of clear and slightly contaminated liquids in:  
pressure boosting systems, central heating, cold and hot water circulation,  
water supply systems, power stations, filter units, fire extinguishing,  
irrigation plants and general industry







A motor controller which consists of a motor and an integrated, fully programmable frequency controller is optionally available. This controller provides exact and quick adjustment to changing operating conditions.

- high efficiency
- low-noise operation
- modular construction
- 3 hydraulic sizes – 1 casing
- variable flange position
- little maintenance necessary
- easy to service

## CVP

### LIQUIDS

Fresh water, drinking water, boiler feed water, process water, sea and brackish water, hot water, condensate, lye, drilling emulsions and many more liquids which are free of aggressive components and do not corrode the materials of construction

### MATERIALS

Impellers and shaft made of stainless steel, diffusers and wear plates made of Ryton, suction and discharge casing made of cast iron, shroud made of steel (optionally stainless steel). Other materials of construction can be selected according to requirements of the pumping medium.

### TECHNICAL DATA

● <b>Capacity</b>	up to 15 m <sup>3</sup> /h (66 USGPM)
● <b>Head</b>	up to 200 m (655 ft)
● <b>Speed</b>	up to 3.500 rpm
● <b>Temperature</b>	up to 80 °C (100 °C), 176 °F (212 °F)
● <b>Casing Pressure</b>	up to 22 bar
● <b>Shaft Sealing</b>	Mechanical seal
● <b>Lubrication</b>	Friction bearing lubricated by pumping liquid
● <b>Connections</b>	Suction nozzle R 1½" Discharge nozzle R 1¼"
● <b>Drive 50 Hz</b>	IEC-standard 3-phase electric motor 400 V, insulation class F, protection IP 55
● <b>Drive 60 Hz</b>	IEC-standard 3-phase electric motor 460 V, insulation class F, protection IP 55
● <b>Options for electric motors</b>	<ul style="list-style-type: none"> <li>• special voltage and/or frequency</li> <li>• PTC-resistors for operation with frequency transformer</li> <li>• integrated frequency transformer with PI-controller and sensor</li> </ul>

# HIGH PRESSURE CENTRIFUGAL PUMPS

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## VKI

Non-selfpriming multistage high pressure centrifugal pump  
in vertical in-line design

For the pumping of clear and slightly contaminated liquids in:  
pressure boosting systems, central heating, cold and hot water circulation,  
water supply systems, power stations, filter units, fire extinguishing and irrigation plants







A motor controller which consists of a motor and an integrated, fully programmable frequency controller is optionally available. This controller provides exact and quick adjustment to changing operating conditions.

- high efficiency
- low-noise operation
- modular construction
- use of high grade material
- little maintenance necessary
- easy to service

## VKI

### LIQUIDS

Fresh water, drinking water, boiler feed water, process water, sea and brackish water, hot water, condensate, lye and many more liquids which are free of aggressive components and do not corrode the materials of construction (1.4301 / AISI 304)

### MATERIALS

All pump parts in contact with the medium made of 1.4301 (AISI 304), 1.4401 (AISI 316) is optionally available

### TECHNICAL DATA

● <b>Capacity</b>	up to 26 m <sup>3</sup> /h (115 USGPM)
● <b>Head</b>	up to 230 m (755 ft)
● <b>Speed</b>	up to 3.500 rpm
● <b>Temperature</b>	up to 90 °C (120 °C), 194 °F (248 °F)
● <b>Casing Pressure</b>	up to 25 bar
● <b>Shaft Sealing</b>	Standardized mechanical seal
● <b>Lubrication</b>	Friction bearing lubricated by pumping liquid
● <b>Flange</b>	DN 32 to DN 50 DIN 2534, PN 25
● <b>Drive 50 Hz</b>	IEC-standard 3-phase electric motor 400 V, insulation class F, protection IP 55
● <b>Drive 60 Hz</b>	IEC-standard 3-phase electric motor 460 V, insulation class F, protection IP 55
● <b>Options for electric motors</b>	<ul style="list-style-type: none"> <li>• special voltage and/or frequency</li> <li>• PTC-resistors for operation with frequency transformer</li> <li>• integrated frequency transformer with PI-controller and sensor</li> </ul>

# PRESSURE BOOSTING SYSTEM

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## DEA

### Pressure boosting system with vertical centrifugal pumps

For the pumping of clean and cold water for pressure boosting in residential buildings, industrial operations, carwash and municipal water supply





- fully programmable system
- Zero-value cut-off
- monitoring of actual values
- auto-start function
- leakage control
- 24 h-short start operation
- operating hour counter
- line filter C 1
- alternating pump operation (DEA 2-6)

## DEA

System with 1 to 6 pumps with frequency controller for each pump, installed in a control panel (on request: integrated frequency controller on each pump)

Systems with other pump types and/or with other construction features are available on request, according to your individual specifications

Pumps and control panel are mounted on a stainless steel frame with vibration absorbing feet. Each pump is equipped with a ball valve or butterfly valve on the suction side and with a check valve on the discharge side. Fittings as well as suction and discharge pipes are made of stainless steel. The expansion vessel with approval for drinking water is made of lacquered steel, the flow assembly is made of red bronze. Special constructions are available.

## TECHNICAL DATA

### ● Performance data

#### DEA 1

- Q max. 20 m<sup>3</sup>/h
- p max. 10 bar

### ● Performance data

#### DEA 2-6

- Q max. 600 m<sup>3</sup>/h
- p max. 40 bar

### ● Electric equipment

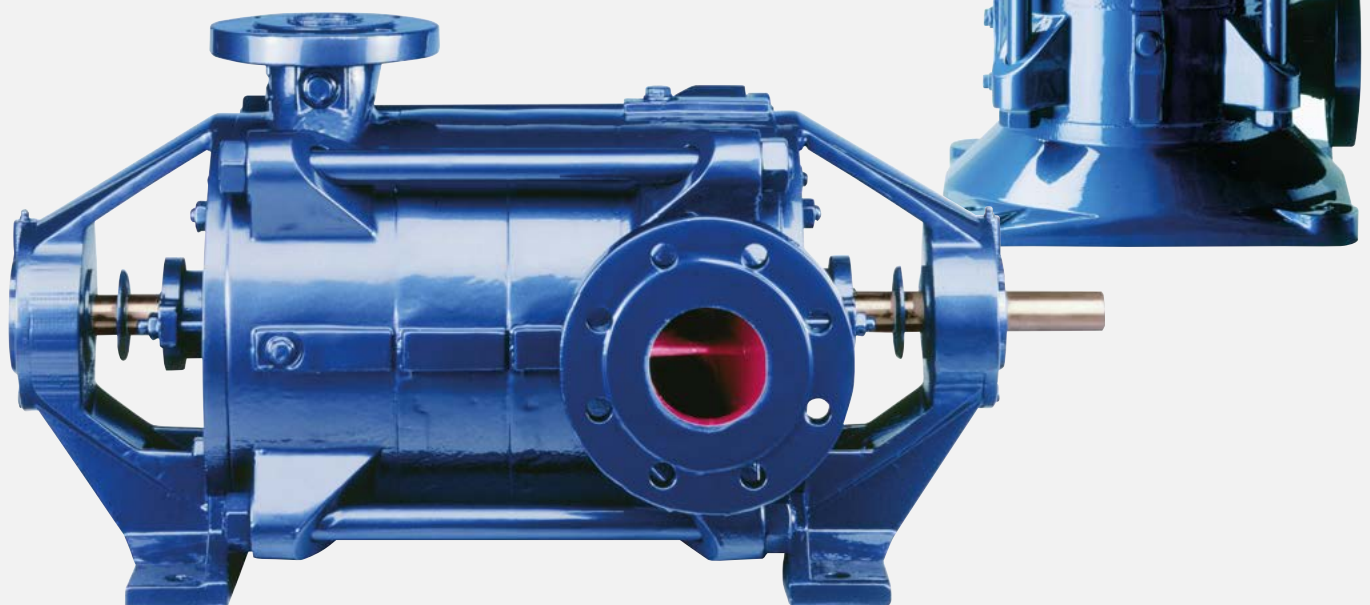
Multifunctional frequency controller with PI-controller for exact and quick functional adjustment to changing operating conditions. The actual values can be read out from a clear text display, the desired values can be adjusted by means of a keyboard. All pumps in the system are connected to the controller.

# HIGH PRESSURE CENTRIFUGAL PUMPS

## NMH / NMV

Non-selfpriming multistage high pressure centrifugal pump  
in horizontal (NMH) and vertical (NMV) design

For the pumping of clear and slightly contaminated liquids in:  
pressure boosting systems, central heating, cold and hot water circulation,  
water supply systems, shipbuilding, the mining industry, power stations,  
filter units, fire extinguishing and irrigation plants





A motor controller which consists of a motor and an integrated, fully programmable frequency controller is optionally available. This controller provides exact and quick adjustment to changing operating conditions.

- high efficiency
- low-noise operation
- modular construction
- optimal adjusting to the operating point
- exchangeable shaft sleeves
- use of high grade material
- little maintenance necessary
- easy to service
- ATEX conformity

## NMH / NMV

### LIQUIDS

Fresh water, drinking water, boiler feed water, process water, sea and brackish water, hot water, condensate, lyes, etc

### MATERIALS

Depending on the requirements of the liquids or the customers' requests, available in cast iron, stainless steel, bronze

### TECHNICAL DATA

● <b>Capacity</b>	up to 220 m <sup>3</sup> /h (970 USGPM)
● <b>Head</b>	up to 400 m (1312 ft)
● <b>Speed</b>	up to 3.500 rpm
● <b>Temperature</b>	up to 140 °C (284 °F)
● <b>Casing Pressure</b>	up to 40 bar
● <b>Shaft Sealing</b>	Gland packing or mechanical seals*
● <b>Lubrication</b>	Antifriction bearings grease lubricated Slide bearings liquid lubricated
● <b>Flange</b>	Discharge branch: from DN 32 to DN 80 Suction flange: DIN 2535, PN 40 Discharge flange: DIN 2535, PN 40

\* according to product profile



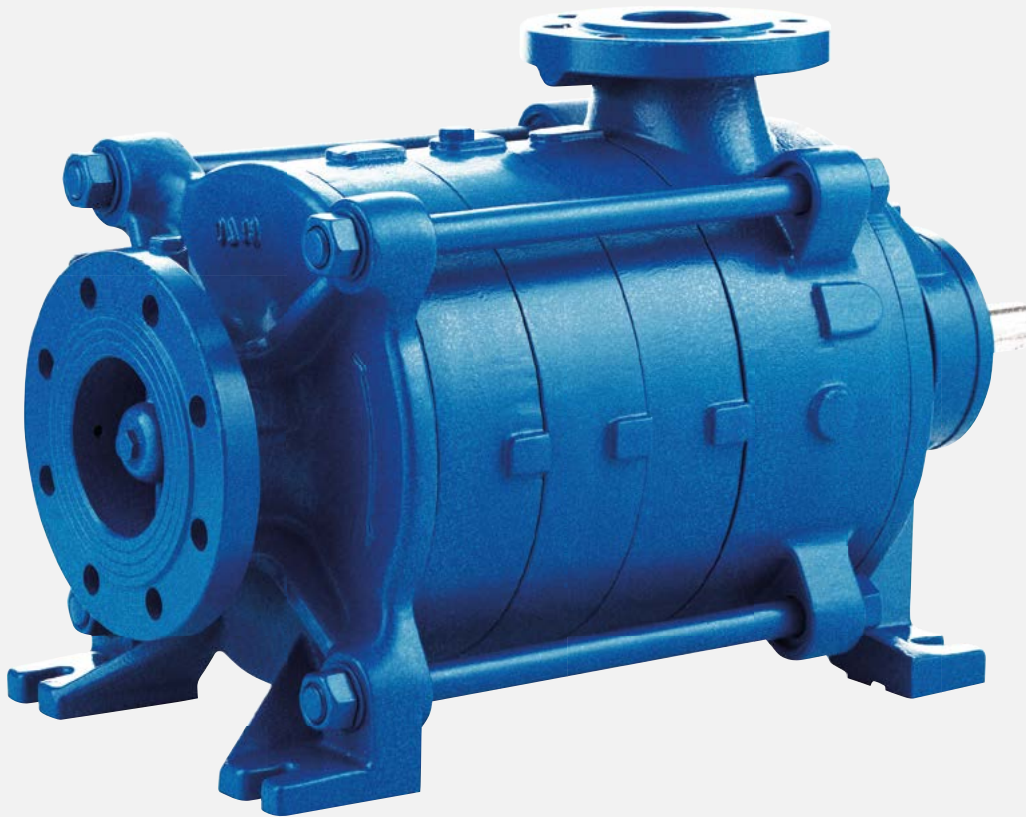
# HIGH PRESSURE CENTRIFUGAL PUMPS

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## NMH-A

Non-selfpriming multistage high pressure centrifugal pump  
in horizontal end suction design

For the pumping of clear and slightly contaminated liquids in:  
pressure boosting systems, central heating, cold and hot water circulation,  
water supply systems, shipbuilding, the mining industry, power stations,  
filter units, fire extinguishing and irrigation plants





- high efficiency
- low-noise operation
- modular construction
- optimal adjusting to the operating point
- exchangeable shaft sleeves
- use of high grade material
- little maintenance necessary
- easy to service

## NMH-A

### LIQUIDS

Fresh water, drinking water, boiler feed water, process water, sea and brackish water, hot water, condensate, lyes, etc

### MATERIALS

Depending on the requirements of the liquids or the customers' requests, available in cast iron

### TECHNICAL DATA

● <b>Capacity</b>	up to 220 m <sup>3</sup> /h (970 USGPM)
● <b>Head</b>	up to 400 m (1.312 ft)
● <b>Speed</b>	up to 2.900 rpm
● <b>Temperature</b>	up to 140 °C (284 °F)
● <b>Casing Pressure</b>	up to 40 bar
● <b>Shaft Sealing</b>	Gland packing or mechanical seals*
● <b>Lubrication</b>	Antifriction bearings grease lubricated Slide bearings liquid lubricated
● <b>Flange</b>	Discharge branch: from DN 40 to DN 80 Suction flange: DIN 2533, PN 16 Discharge flange: DIN 2535, PN 40

\* according to product profile

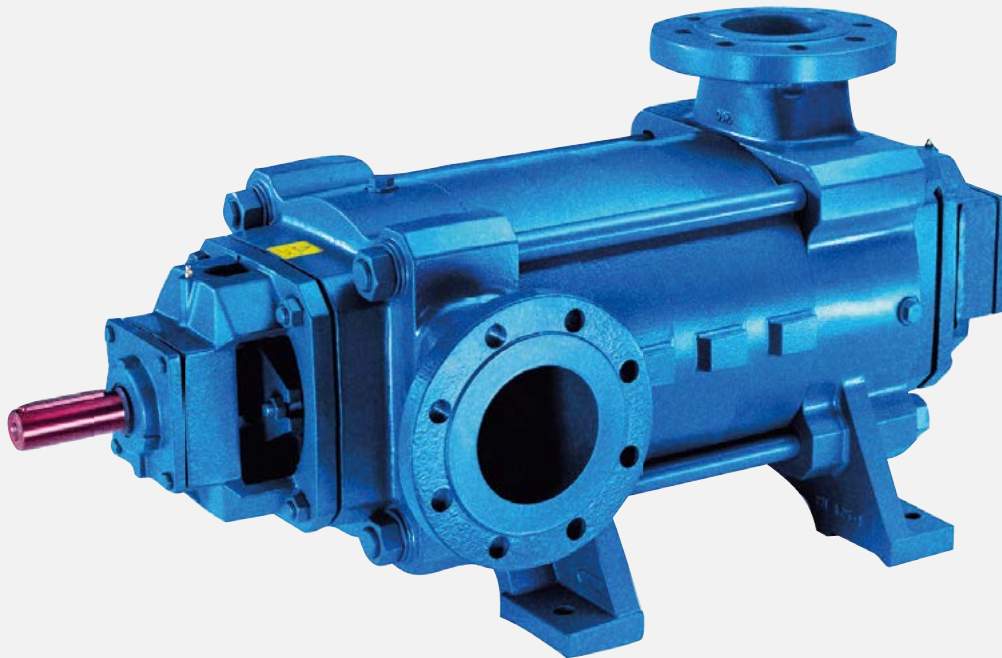
# HIGH PRESSURE CENTRIFUGAL PUMPS

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## MHC

Non-selfpriming multistage high pressure centrifugal pump  
in horizontal design

For the pumping of clear and slightly contaminated liquids in:  
pressure boosting systems, central heating, cold and hot water circulation, water supply systems,  
the chemical and petrochemical industry, shipbuilding, the mining industry, power stations,  
filter units, fire extinguishing plants and irrigation plants



- high efficiency
- low-noise operation
- modular construction
- optimal adjusting to the operating point
- exchangeable shaft sleeves
- use of high grade material
- little maintenance necessary
- easy to service

## MHC

### LIQUIDS

Fresh water, drinking water, boiler feed water, process water, sea and brackish water, hot water, condensate, acids, lyes, etc

### MATERIALS

Depending on the requirements of the liquids or the customers' requests, available in cast iron, spheroidal cast iron, bronze, stainless steel, duplex or super-duplex

### TECHNICAL DATA

● <b>Capacity</b>	up to 575 m <sup>3</sup> /h (2.531 USGPM)
● <b>Head</b>	up to 1.000 m (3.280 ft)
● <b>Speed</b>	up to 3.500 rpm
● <b>Temperature</b>	up to 140 °C (284 °F)
● <b>Casing Pressure</b>	max. 100 bar
● <b>Shaft Sealing</b>	Gland packing or mechanical seals*
● <b>Lubrication</b>	Slide bearings grease lubricated
● <b>Flange</b>	Discharge branch: from DN 50 to DN 150 Suction flange: DIN 2534, PN 25 or DIN 2535, PN 40 Discharge flange: DIN 2535, PN 40 or DIN 2546, PN 64 or DIN 2547, PN 100

\* according to product profile

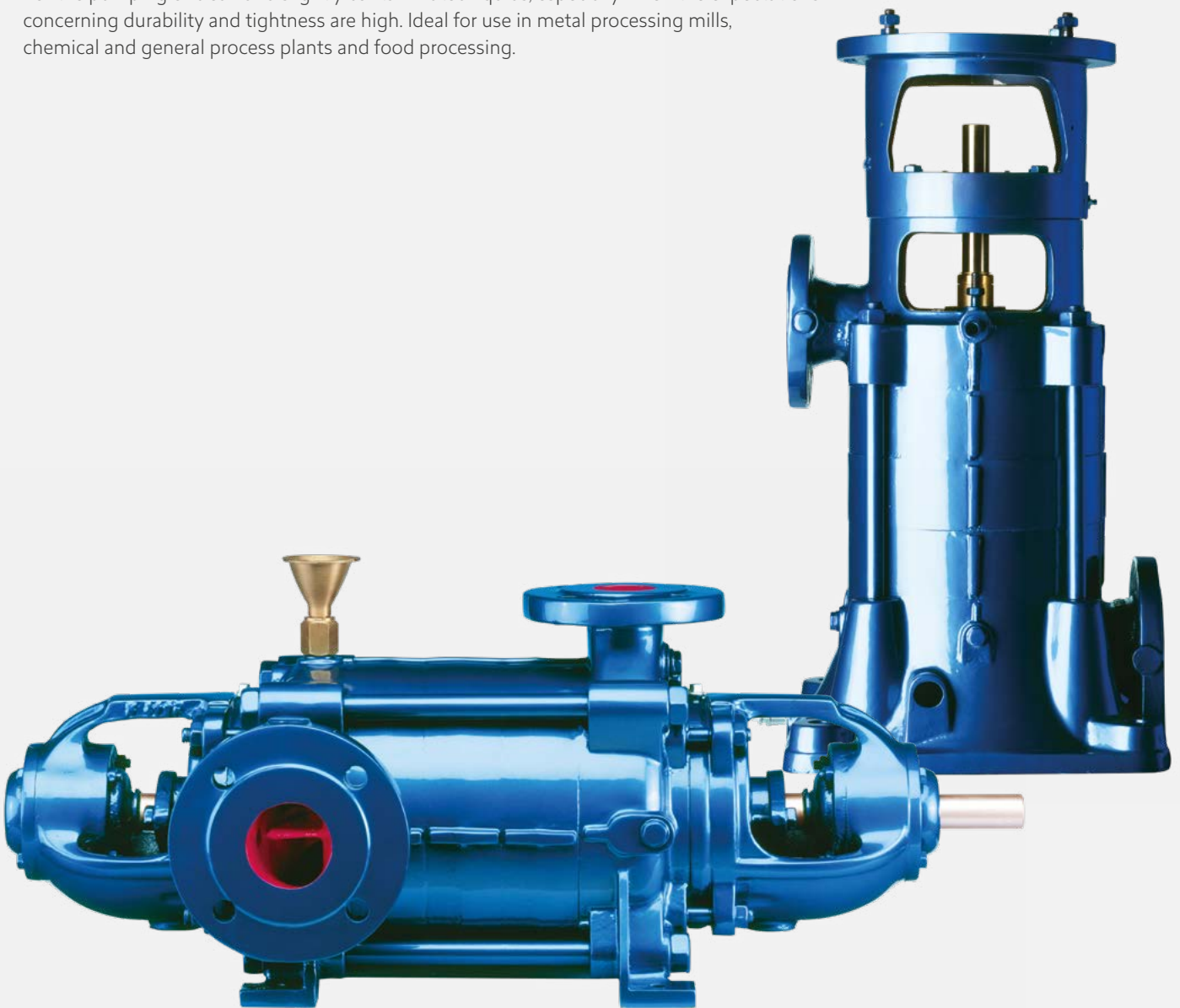
# HIGH PRESSURE CENTRIFUGAL PUMPS

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## **GH(S) / GV(S)**

Multistage high pressure centrifugal pump in horizontal (GH) or vertical (GV) construction, for non-selfpriming or selfpriming (S) operation

For the pumping of clean and slightly contaminated liquids, especially when the expectations concerning durability and tightness are high. Ideal for use in metal processing mills, chemical and general process plants and food processing.



- high efficiency
- low-noise operation
- amply dimensioned walls and chambers
- wide choice of special materials of construction
- various individual sealing options
- adaptability to many different operating conditions

## GH(S) / GV(S)

### LIQUIDS

Chemically and – to some extent – physically aggressive and abrasive liquids with a requirement for special materials and individual sealing methods.

### MATERIALS

Special material according to individual requirements, e. g. Duplex, Super-Duplex or other stainless steel types or alloys

### TECHNICAL DATA

● <b>Capacity</b>	up to 500 m <sup>3</sup> /h (2.200 USGPM)
● <b>Head</b>	up to 400 m (1.312 ft)
● <b>Speed</b>	up to 3.500 rpm
● <b>Temperature</b>	up to 160 °C (320 °F)
● <b>Casing Pressure</b>	up to 40 bar
● <b>Shaft Sealing</b>	Cooled or uncooled gland packing, single or double mechanical seals, cartridge seals as well as choice of accessories and peripheral arrangements.*
● <b>Lubrication</b>	Antifriction bearings grease or oil lubricated Friction bearing lubricated by pumping liquid
● <b>Flange</b>	Discharge branch: from DN 32 to DN 150 Suction flange: PN 16 to PN 40 Discharge flange: PN 16 to PN 40 BS and ANSI flange is also available

\* according to product profile

# VERTICAL IMMERSED PUMPS

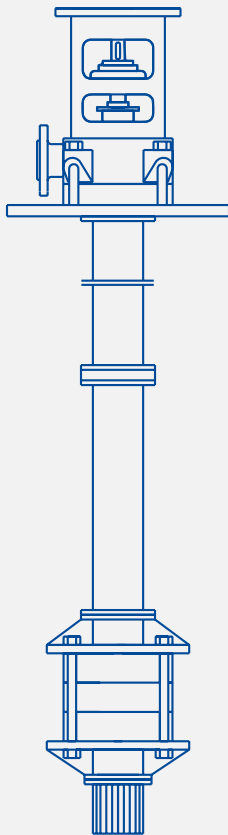
## NMVN / GVN / SVN / SKVN

### Vertical immersed pumps for installation into a tank

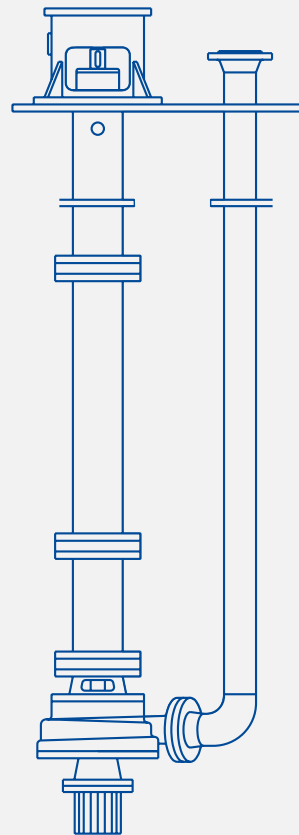
Wherever a conventional submerged pump is not desired or may not be used due to design reasons (e.g. high temperature of the medium).

The hydraulic elements originate from our programme of horizontal centrifugal pumps. The pumps will be mounted on a tank using a supporting plate, constructed as tank cover. The supporting plate can also be constructed as gas-tight round flange according to DIN, ANSI or other standards. Driver and shaft seal of the pump are located above the tank. The pump part is immersed into the tank and thereby into the medium. A line shaft pipe connects the pump to the cover plate.

This line shaft pipe can consist of either one or several segments, being constructed with intermediate pipes and shafts, bearings and shaft couplings. When using the hydraulic part of an end suction pump, discharge pipe and line shaft pipe are separate components. In multistage pumps, the line shaft pipe also serves as discharge pipe.



Multistage high pressure pump for clean water:  
Q max. 500 m<sup>3</sup>/h, H max. 400 m



Low pressure pump for clean or waste water:  
Q max. 600 m<sup>3</sup>/h, H max. 90 m





Multistage high pressure pump constructed as barrel-type pump:  
Q max. 400 m³/h, H max. 400 m

## NMVN / GVN / SVN / SKVN

### LIQUIDS

Clean water, boiler feeding water, condensate and cooling water (NMVN & GVN); Clean water or waste water in a low pressure range (SVN & SKVN)

### MATERIALS

As required according to the pumping medium, such as cast iron, cast steel or cast stainless steel. Special materials on request.

### TECHNICAL DATA

#### ● Performance data

The maximum pumping parameters such as flow capacity and head depend on the pump construction, operating speed, immersion depth, etc. Please send us your request in case you wish to know more. You will receive our quotation of an appropriately selected pump.

#### ● Shaft Sealing

As required by the customer or according to the pumping medium with gland packing or mechanical seal. The pumping medium allowing, a shaft seal may be omitted completely if line shaft and discharge pipe are separated.

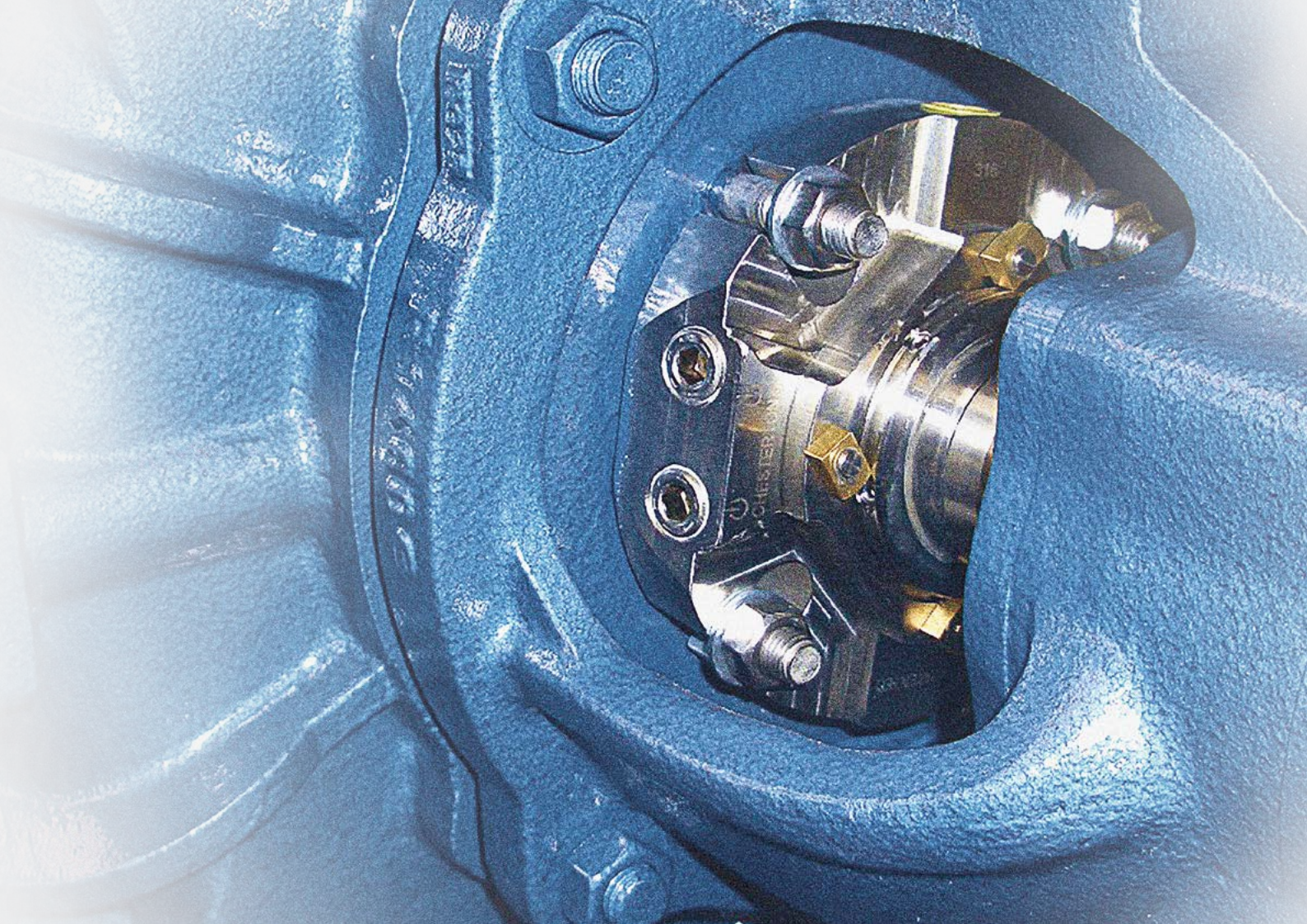
#### ● Lubrication

Friction bearings with pumping medium, with grease from automatic grease pump or with fresh water. The antifriction bearing is lubricated with grease or oil.

#### ● Special constructions

Many of the pumps already delivered have been realized following our customers' requests and requirements concerning material and special constructions.





# MORE ENERGY EFFICIENCY BY OSNA-PUMPEN

## DID YOU KNOW THAT ...

- pump applications in Germany consume approx. 65 TWh electricity per year (equal to 11 % of gross electricity output)?
- electric motors account for 64% of the total electric consumption, and 30% thereof are consumed by pumps (Fraunhofer Institute)?
- optimizing all pump systems installed in Germany would add up to potential energy savings of 15.000 million KWh per year (applicable equivalents would be 10 million tonnes CO<sub>2</sub> or potential savings of EURO 1200 million at 8 Eurocent per KWh)?
- possible energy savings in pumps and pump systems could reach 30% (or even significantly more some cases)?

Pumps belong to the most significant energy consumers in industrial processes. In order to deduce their true potential savings, detailed examinations focused on energetic aspects must be undertaken on pumps and motors as well as the entire pump system.

If you want to pump efficiently and energy-saving, you must optimize the entire system – motor, transmission, pump, pipes and auxiliary equipment. We support you with our 6 steps to effective energy saving!



# OUR 6 STEPS TO EFFECTIVE ENERGY SAVING

1

Optimal selection of an appropriate pump, suitably sized for the individual application, using a state-of-the-art, computerized pump selection programme.

2

Optimally designed impellers and pump casings, smooth casting surfaces (partially due to investment casting) ensure high hydraulic efficiency of our pumps. We can equip the pumps optionally with wear rings made of metallic or non-metallic material to reduce the efficiency loss which usually occurs in pumps made of cast stainless steel.

3

Machining of the impeller vane diameters to attain exactly the data requested by the customer – potential energy saving of 10 %.

4

For even more potential energy saving, we deliver our pumps with electric motors according to IE 4 super premium efficiency ratings on request, as an upgrade on top of the industrial standard IE 2 and IE 3 (increased or premium efficiency).

5

Use of variable frequency drive motors for applications with changing duty points – potential of energy saving of up to 60% is realistic.

6

Together with our customers we carry out “energy checks” at existing pump systems to deduce potential energy savings.



Wear Rings  
non-metallic



Wear Rings  
metallic

