

HÄNY-POWERLINE



Energy from drinking and waste water

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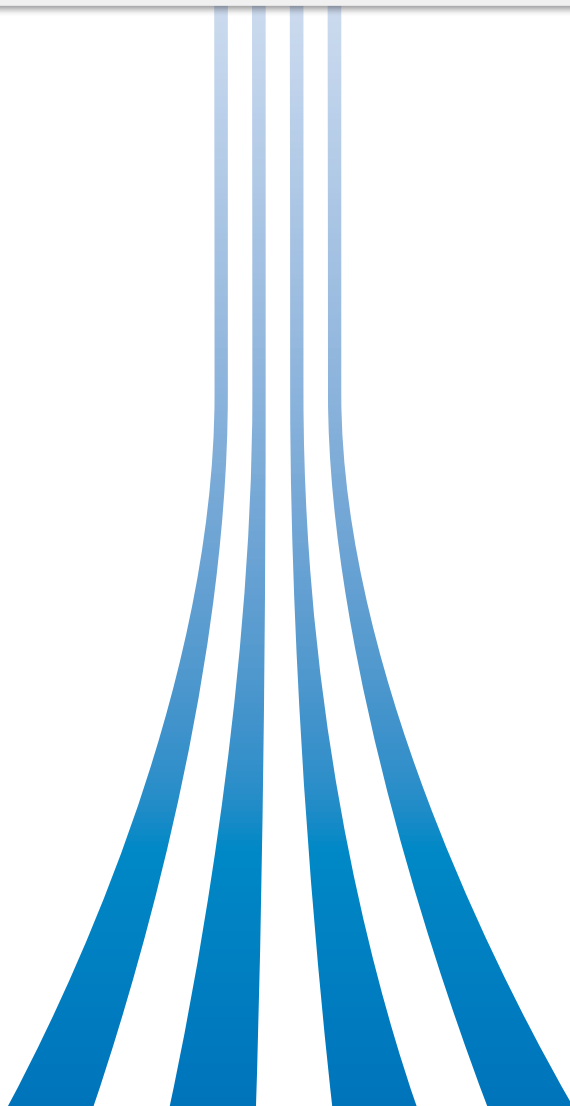
Use your own
energy on
location

ENERGY FROM DRINKING
AND WASTE WATER

HÄNY POWERLINE

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GOALS

«Water often contains a large energy potential»

With innovative technologies, the potentials in many places can be ecologically and economically reasonably used. Häny AG has set the goal of making this potential useful in a close cooperation with the builders and the planning engineers.

Our main goal

Our customers receive the best overall solution for an optimized production of energy. A quick refinancing and value added income of the company are our upmost goals.

Our further goals

- Offering energy production products for small hydro power plants from drinking and waste water from one source
- Our products are innovative and of a high quality
- We offer the entire business process, that is consulting, planning, realizing, operating and maintenance
- We strive for a strong anchoring of our products in the market
- We are a reliable partner for our customers



Our customers

- Water supply companies
- Cities
- Electricity supply companies
- Engineering offices
- Real estate companies
- General contractors



Energy from drinking and waste water

PRODUCT OVERVIEW

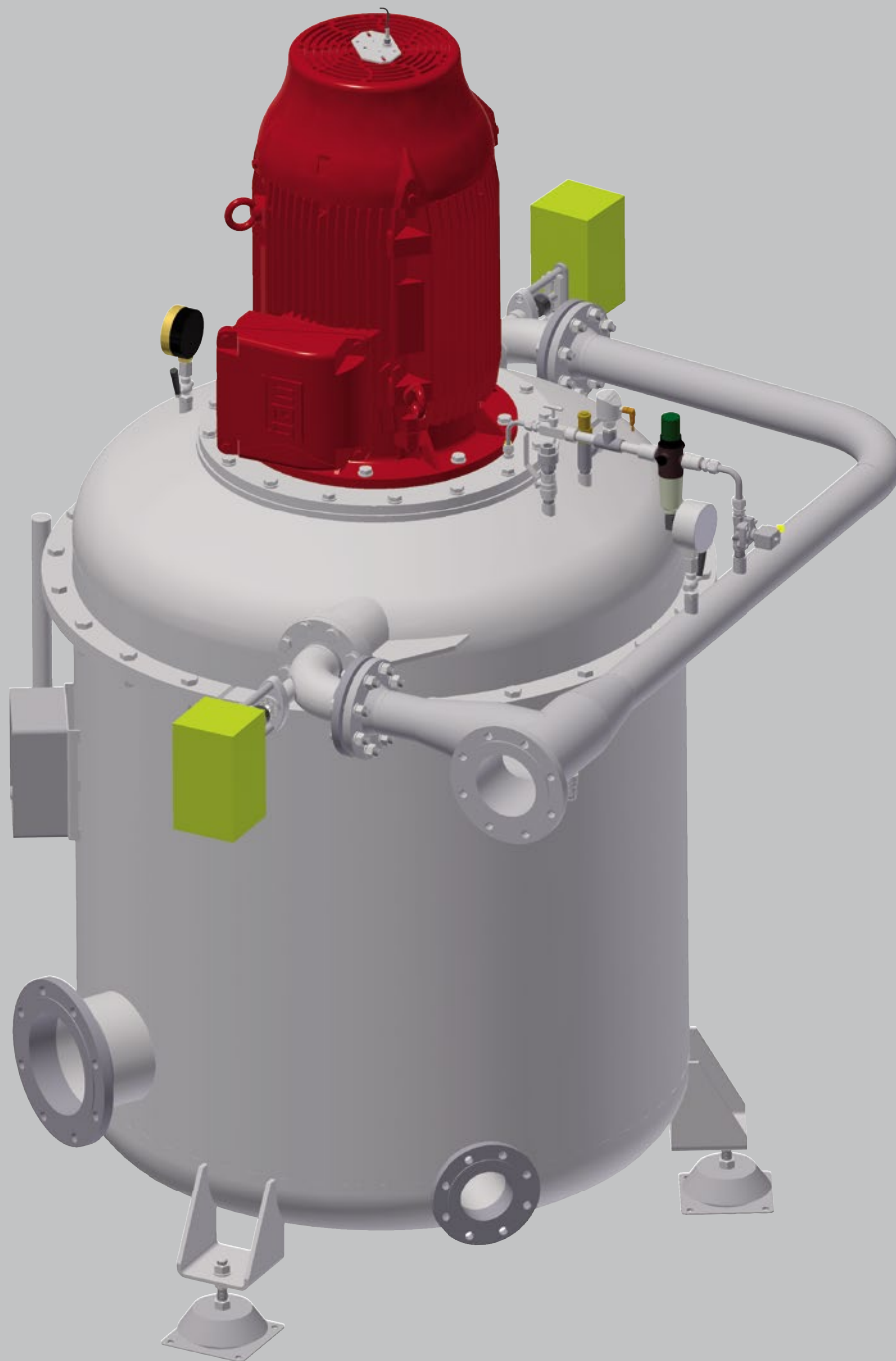
Häny AG offers you the following product lines

Energy production from one source for small hydro power plants.

GDPT	Counter pressure pelton turbine
PT	Pelton turbine
RLPT	Back flow pump turbine

Since our products are always individually designed for the project demands, we ask you to contact us so that we can give you detailed information or prepare a concrete offer for you.

Range of performance: 10 kW - 2 MW



You have the choice: Pressure or energy

COUNTER PRESSURE PELTON TURBINE

Previously, it was not possible to operate a pelton turbine (PT) in closed systems since the PT always needed a free outlet and cannot produce counter pressure. For this reason, the counter pressure pelton turbine (GDPT) was developed. With the GDPT, the turbine wheel turns in a pressurized air cushion. The latter prevents the liquid rubbing on the wheel, reduces pressure surges in the network, simplifies the regulation of the discharge and above all establishes the desired constant counter pressure.

This technology thus makes possible the combination of the advantages of the pelton turbine and the reverse flow pump turbine. On one hand, the good degree of efficiency as well as the variable discharge can be used on a large bandwidth of the PT and on the other hand it is possible to establish counter pressure on the outflow, like with the reverse flow pump turbine (RLPT). The GDPT thus, among other things, has the great advantage that it can be installed in an existing construction without needing a separate turbine room through the reservoir.

The counter pressure pelton turbine is a development from Häny AG. The wheel is individually calculated and designed for each turbine. Thus, the greatest possible degree of efficiency is reached. The shaft seal of the pressure tank to the ambient pressure occurs using a special bearing ring seal.

The water level in the pressure tank is continuously monitored. Different pre-defined switching and alarm levels control the air input and output. The sensors in the GDPT, which are reduced to a necessary minimum number, monitor themselves autonomously in operation. If one of the pre-set border values is exceeded, the facility is





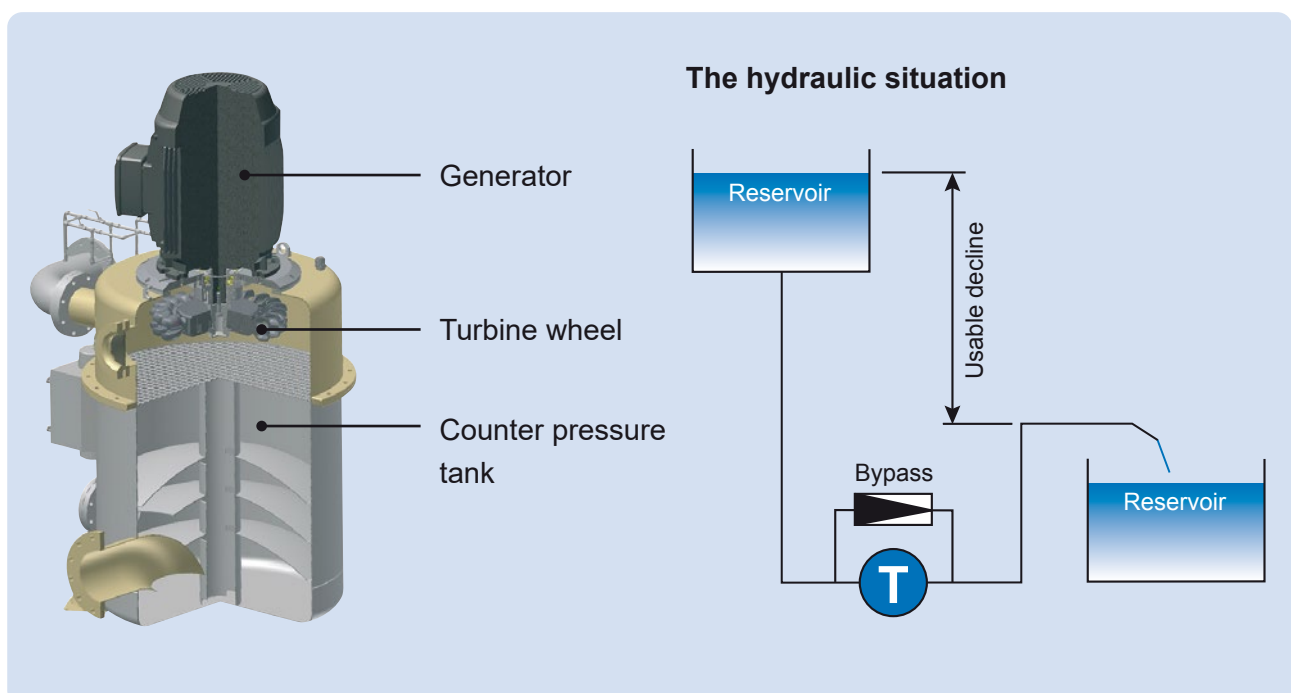
shut down through the closing of the jet needle (in emergencies battery operated) and the generator is separated from the network. If desired, the GDPT can also be provided with a hydraulically operated deflector which, when needed (without outside energy), deflects the radiation from the pelton wheel.

View of the counter pressure pelton turbine

A main area of use for the counter pressure pelton turbine is in reservoir management, between two pressure zones where previously pressure reduction valves or ring piston valves were used.

The facility is built in using a bypass to the existing pressure reduction in order to be able to ensure the supply security.

The sectional view shows the inflowing water on the turbine wheel which rotates in the pressurized air cushion. In the bottom part of the pressure container, the technically perfected separation of the water / air mix takes place.



COUNTER PRESSURE PELTON TURBINE

Both with the counter pressure pelton turbine as well as with all other turbines, to ensure the best possible degree of efficiency we offer exclusively asynchronous generators of the energy efficiency class 1.

For parallel network operation, we normally offer you asynchronous generators. For large facilities (as of approx. 300 kW) or isolated operation facilities synchronous generators.

With synchronous generators, the pelton or counter pressure pelton turbines must be provided with a deflector which diverts the stream from the turbine wheel e.g. in case of zero voltage.



1-stream counter pressure pelton turbine

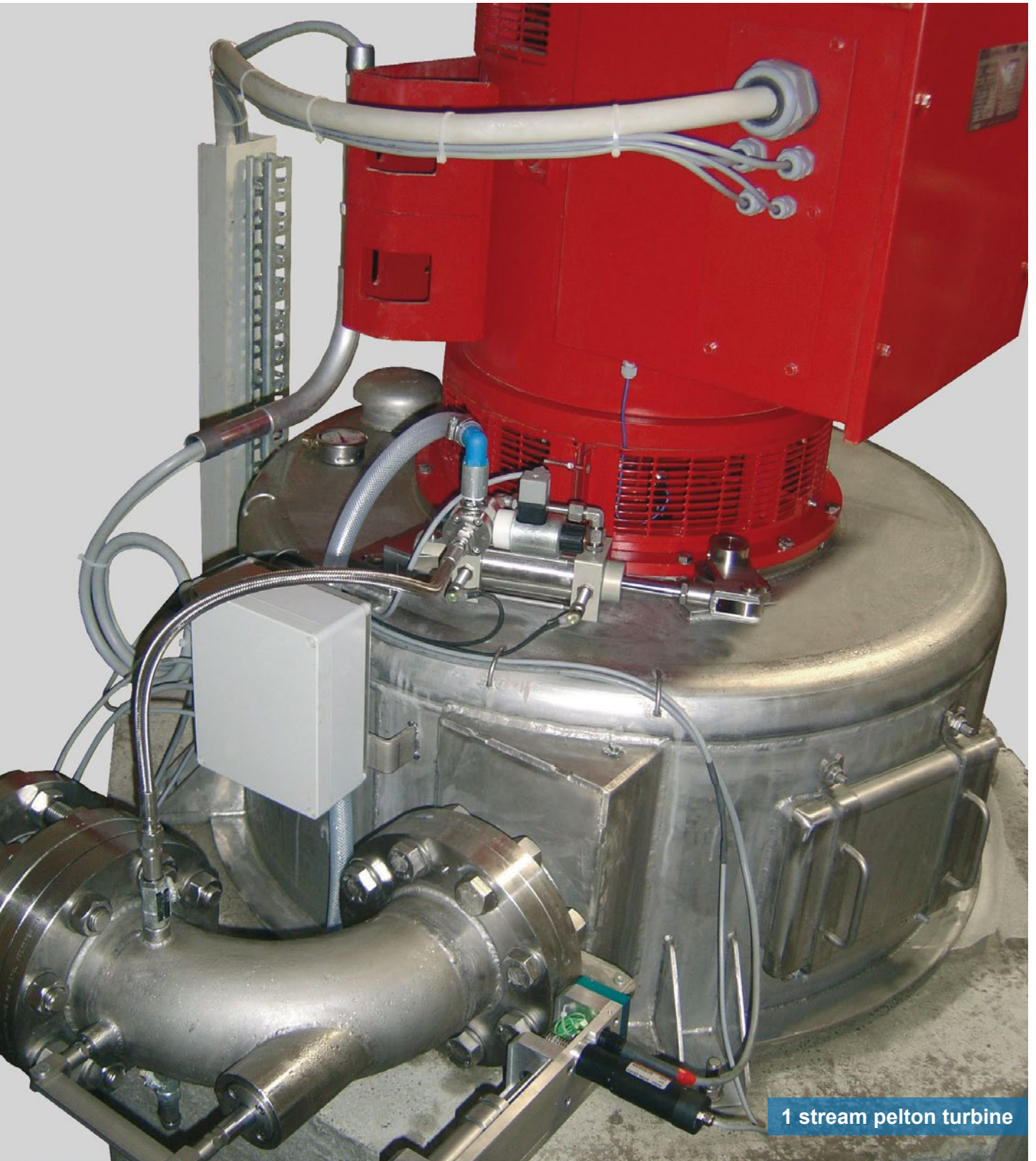
PELTON TURBINE

This action turbine with a classical construction is often used in drinking water power plants. Both in full operation as well as in partial operation (up to approx. 30% of Q_{max}) it reaches very high degrees of efficiency of more than 90% (as of 30% impact > 85% degree of efficiency) and has the possibility of varying the flow on a large scale.

However, it depends on a free discharge and is therefore mostly placed above the reservoir tank. The PT characterizes itself by a simple construction. Depending on the variation of the water quantity and the falling heights, it can be built with 1 to 3 streams. It is thus adjustable to many project situations. The water stream formed using the nozzle hits the runner buckets under atmospheric pressure. There is a detour by 180 degrees. If the buckets in operation move with around half of the flow speed, the diverted water stands still and thus has released its entire kinetic energy. It only has the potential energy to fall down in the turbine housing (free discharge).

The lifespan of a pelton turbine is 40 and more years.

Our pelton turbine assortment reaches from the micro turbine of 10 kW to the large pelton turbine with a capacity of 2 MW.



1 stream pelton turbine

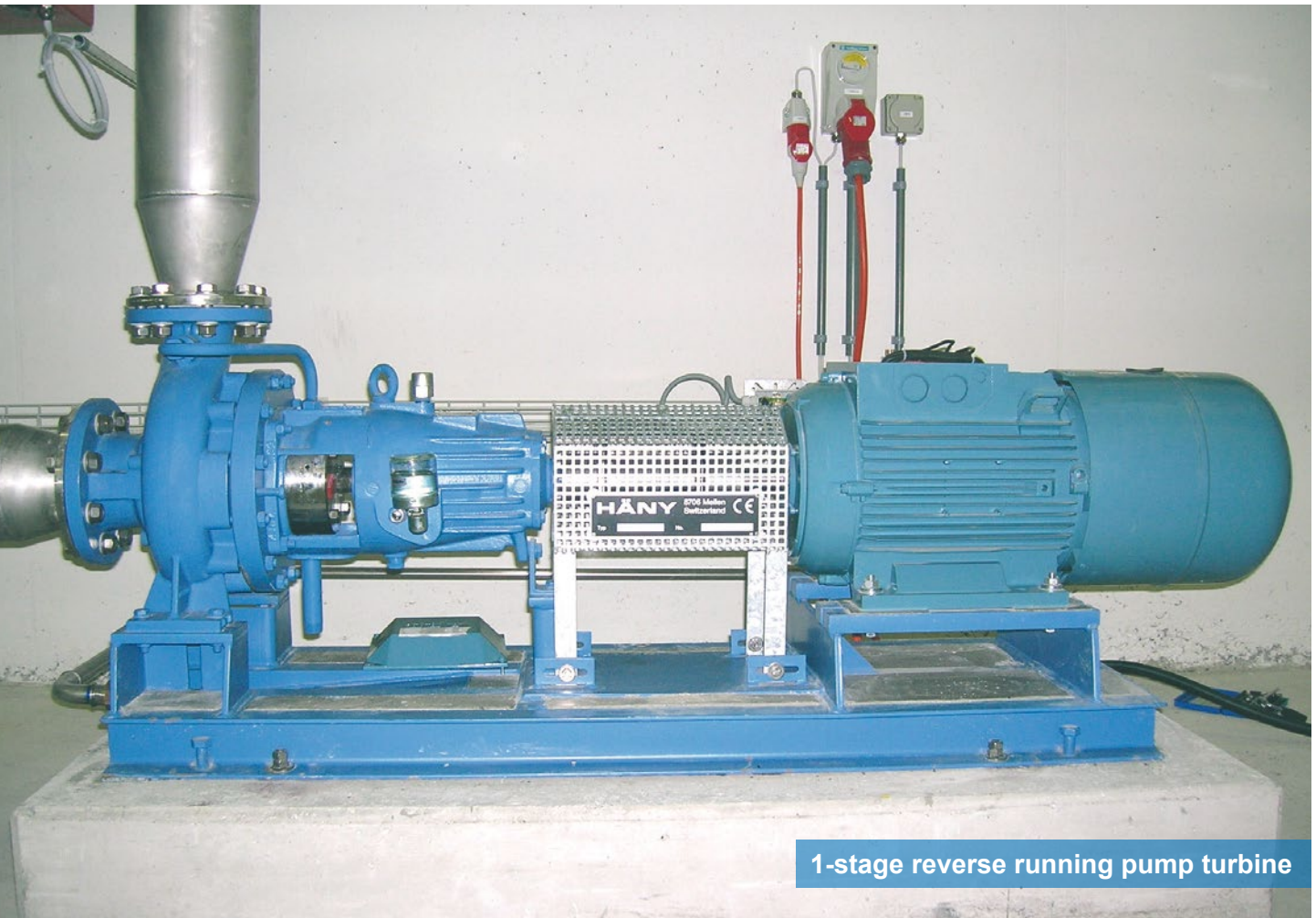
REVERSE FLOW PUMP TURBINE

The proven technology of the reverse flowing rotary pump (RLPT) is the most cost efficient in comparison with the other turbines. This turbine can also be operated with the counter pressure on the discharge, enabling for example a placing in the pipe cellar or a downstream treatment (UV, processing facility etc.) of the water. The output cannot be regulated with this variation, thus often a floor operation is intended. The degree of efficiency is lower than with the pelton turbines. The comparison of the hydraulics shows similarities with the Francis turbine. Multi-stage high pressure pumps can be used or one-stage low pressure pumps. Both are optimized to the advantage of a higher degree of efficiency. Often it makes sense to use two or more RLPTs parallel to each other. Further advantages of the RLPTs are short delivery times for the turbine and the spare parts. Furthermore, no additional specific professional knowledge is necessary for the maintenance.

We also offer products which allow for waste water to be turbined. In this area of use, it has been shown that waste water in principle must be pre-treated using a mechanical rough cleaning before it is lead to a reverse running rotary pump since otherwise the danger of blockage is too high.

RLPTs can also be used in connection lines of reservoirs as of a height difference of 20 meters.

The lifespan of the RLPTs is 25 to 35 years, depending on the model.

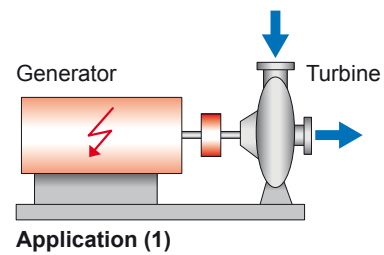


1-stage reverse running pump turbine

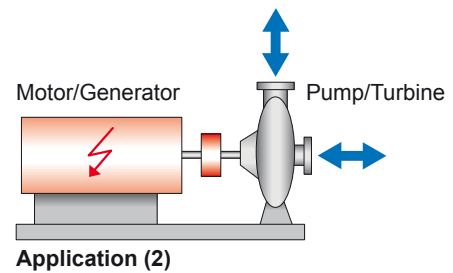
REVERSE FLOW PUMP TURBINE

The tested possibilities for application are diverse:

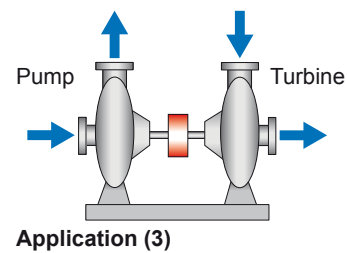
- as a pump which is directly coupled to the generator (1)



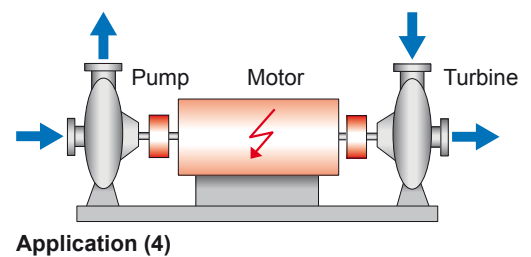
- as a combination pump / turbine with motor / generator (2)



- a pump, directly coupled with a further pump as turbine (3)

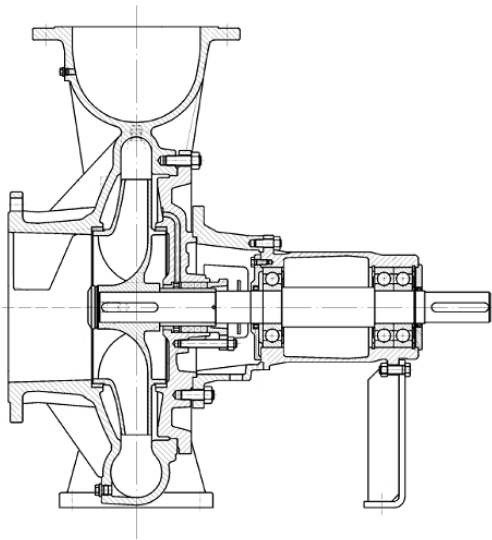


- or as a pump with a motor and coupled pump as turbine (4)

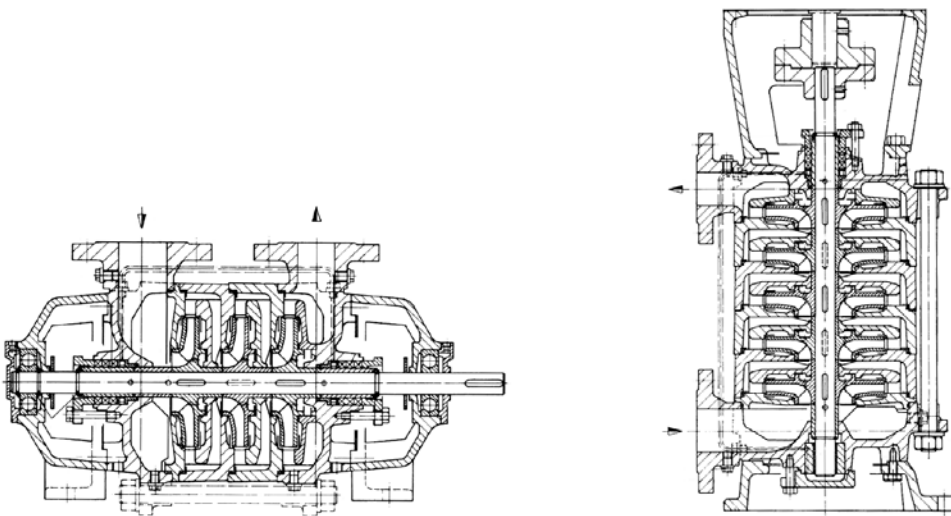




Construction forms and types of assembly



One-stage low pressure pump



Multi-stage high pressure pumps (horizontal and vertical)

HÄNY AG

Consulting

We offer you our consulting services in each phase of your project. In doing so, we are happy to support the local engineering office with our know-how and our experience.

In the start phase for the clarification of a project, this consultation is free of charge for you. In this process step, the general framework conditions are recorded and clarified to see if a project in principle can be realized technically and legally. If the project is technically and legally feasible, the further steps follow according to the projection process.

With DWPP, in the next project step, a rough analysis of the project is created. This contains a listing of the first arrangements, the determination of the location, and forms the decision basis for triggering the fine analysis.

In the fine analysis, all decision bases regarding the granting of credits and realizing the DWPP are listed. The available energy potentials are explained in detail and an individual assessment with the current technologies is carried out. Also, a suggestion for the selection of technologies and a description of the operating concept are made. Often, the rough and fine analysis is created in a full analysis.



Planning

Also in the planning phase, we are happy to support your local engineering office with our know-how and our experience.

After the project identification has been carried out positively, this process step includes all further steps up until the start-up of the project. These include:

Preliminary project or concession project

- Construction project incl. requests
- Implementation project, realization and start-up of operations

For the entire process with a drinking water power plant, a time need of at least one year must be calculated.



Consultation with the project engineer on location

HÄNY AG

Realization

The realization is the main process part of our partner on location.

The entire realization process runs in close cooperation and coordination with the construction company, the responsible engineering office, the other companies which participate in the project (e.g. electricians) and official offices.

We make the distinction between the following process steps:

Common calculation

and calculation of efficiency

Work preparation

Clarification of all technical details and work processing

Acquisition/Production/Manufacturing

includes test operation at the production location if needed

Assembly

on location

Start-up of operations

adjustment, tests and training the customers

Aftercare operations

of the facility



Operation and maintenance

Along with our partners on location, we would be happy to offer you our efficient service and support network.

Our partner would be happy to offer you a **main-tenance proposal** in four modules:

Base module «light»

Periodic maintenance of the facility through our professionals

Additional module «complete 1»

Spare parts and worn parts of the facility in normal operation included

Additional module «complete 2»

interventions in case of failures of the facility

Additional module «all inclusive»

Exchange of the facility when reaching the maximum lifespan



Assembly of a pelton turbine

HÄNY AG

Häny AG offers other products and services for export:

Complete overhauls

Häny AG specialises in the complete overhaul of Sulzer pumps manufactured before 1999 in Winterthur (CH), particularly the HPL, HPH, BPK and BPS series.

After a complete overhaul, the pump is technically and hydraulically “as new”. The efficiency is at least equivalent to that at its initial acquisition.

Thanks to the earlier takeover of the “Sulzer Pumpen Schweiz (PUCH)” business unit we were able to preserve and further develop the valuable know-how and the production documents.



Pressure drainage systems with Ecocut® and Econex® pumps

Cost efficient waste water pumps for properties like single and multi family houses, campsites, sports and leisure time parks, excursion restaurants, with a large distance to the public canalization system since pressure lines with a very small cross section can be used.

Ecocut®

Capacity: 1,5 - 7,5 kW (1 - 4 l/s)

Maximal up to 3000 m far

Maximal up to 150 m high

Econex®

Capacity: 1,5 - 2,5 kW (0,6 - 1,8 l/s)

Maximal up to 2800 m far

Maximal up to 120 m high



HÄNY AG

**Our aim is not to meet your expectations,
but to surpass them – and to enthuse you.**

Innovative and safe pump solutions, turbine and injection systems

For decades, Häny AG has been a household name for pump and system technology for water supply and sanitation in the municipal and industrial segments. Our know-how also leads to convincing and clear results in building services engineering as well as swimming pool technology. Offering innovative turbine solutions, Häny AG enables more efficient use of renewable water power in times of energy shortages. Last but not least, we are among the leading manufacturers of injection systems.

Top quality over 5 generations

Ever since its foundation by Eduard Häny-Pfister in 1875, Häny AG has been a family business. Today the company is managed by the fifth generation of the family and employs roughly 150 staff. Over time, the company has transformed itself from a pump manufacturer into a systems provider. For the most part procuring our pumps from the global market, we are now capable of suggesting to our customers the best possible solution in specific situations. Where unusually sophisticated pumps or special solutions are called for, we continue to manufacture these in Jona, Switzerland.

Your competent services and solution

By thinking and acting outside the box and thanks to our unique consultancy, manufacturing and servicing competence, we are able to offer the optimal solution for any product range. All from one source – reliable, custom-tailored, and safe.



Headquarters Häny AG Jona, Switzerland

Warranty: 2 years according to the „General conditions of contract for the supply of machinery and spare parts (2006)“ of the Swiss Association of Machinery Manufacturers (VSM). These conditions of supply are an integral part of this document. Explicitly excluded from the warranty are:

1. Cost which arise in addition to the direct replacement covered by a warranty component (transport costs, travelling expenses, accommodation costs, disassembly and assembly costs and all other costs of third parties)
2. Wear parts for example shaft seals and cutting systems (the list is not exhaustive)

HÄNY AUSTRIA GMBH



Sales partners:

