



Energy from the Heart of Europe



Turbines

Pumps

Small Hydro Power Plants

About the company

Kolektor Turboinstitut, who started as an independent laboratory for turbo machines and later on developed into complete hydro energy solution provider, is strategically located in Ljubljana, Slovenia, where it offers complete services for turbine and pumps modelling, R&D and small & mini hydro power plants.

In addition to the above, we provide full pre-tender support for large hydro projects, enabling hydroelectric power plant owners to gain efficiency, assure successful outcomes and increase value of their investment.

Areas of expertise

Turbines

- Independent laboratory for model & site testing
- Design, model testing
- Turbine refurbishment
- Small water turbines design and production (up to 20 MW)



Pumps

- R&D and testing
- Pumps refurbishment Solving pump operational problems, consultancy and education
- Design, engineering, production, after sales

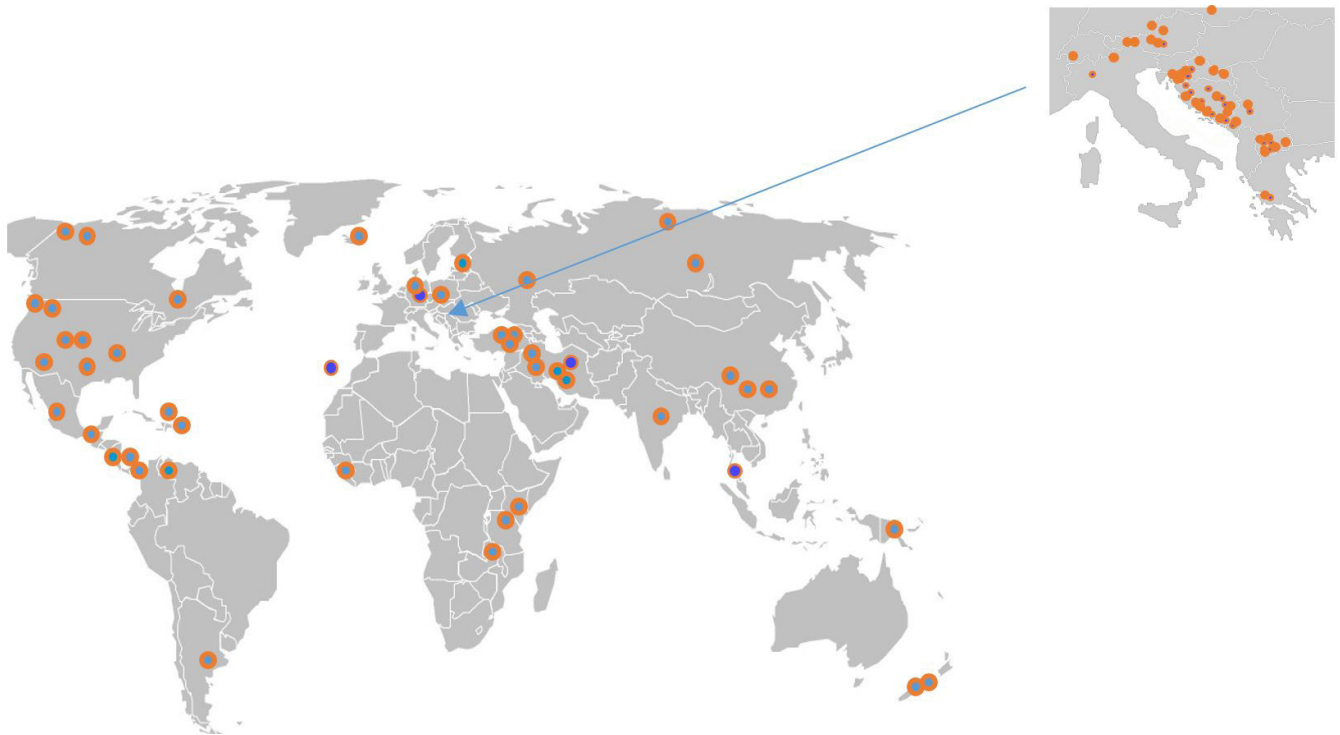


Small Hydro Power Plants

- Water to wire HPP electromechanical equipment design and engineering
- Control and governor equipment design and production
- Complete Hydropower project & plant development (BOT, EPC)

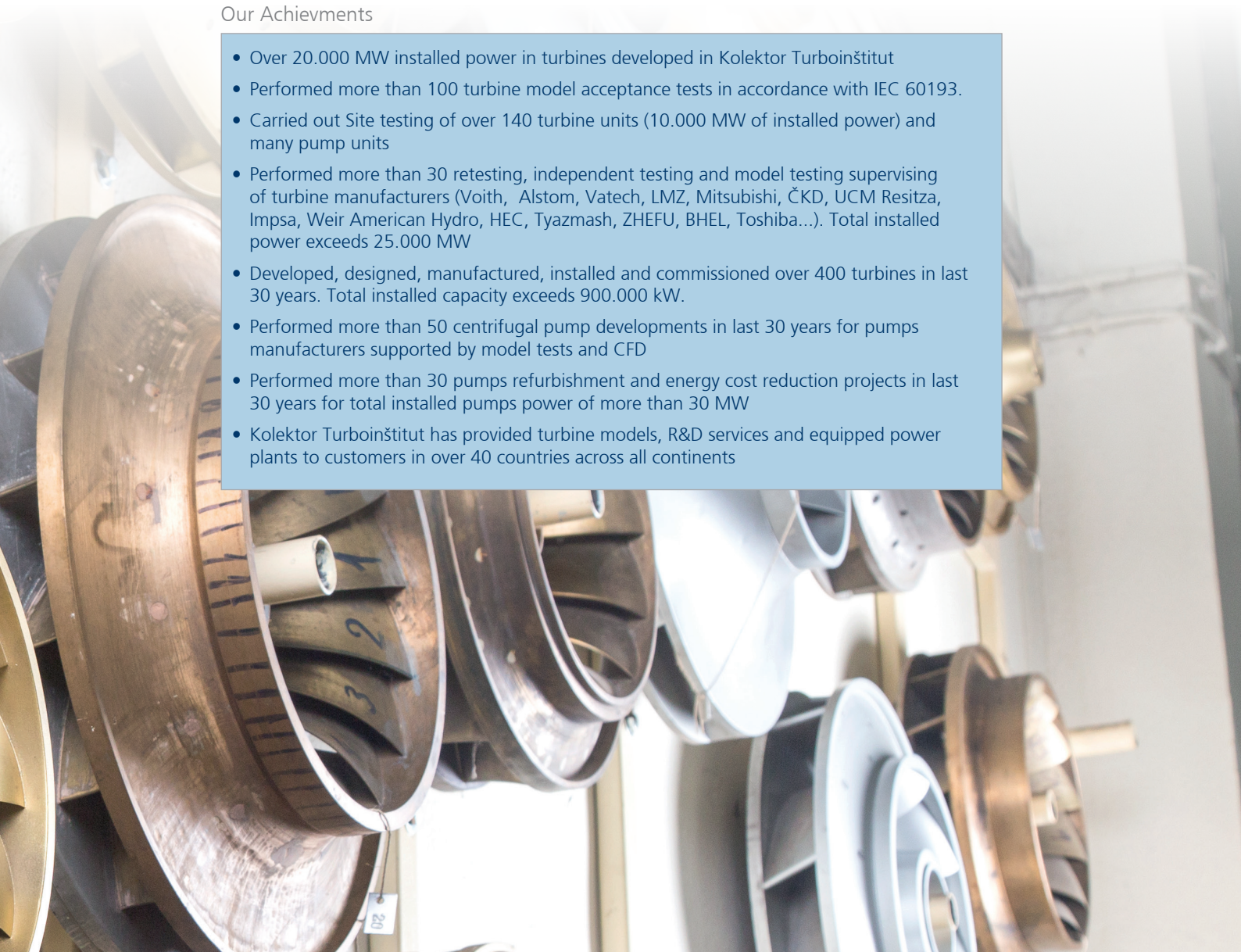


World map KTI location and references



Our Achievements

- Over 20.000 MW installed power in turbines developed in Kolektor Turboinstitut
- Performed more than 100 turbine model acceptance tests in accordance with IEC 60193.
- Carried out Site testing of over 140 turbine units (10.000 MW of installed power) and many pump units
- Performed more than 30 retesting, independent testing and model testing supervising of turbine manufacturers (Voith, Alstom, Vatech, LMZ, Mitsubishi, ČKD, UCM Resitza, Impsa, Weir American Hydro, HEC, Tyazmash, ZHEFU, BHEL, Toshiba...). Total installed power exceeds 25.000 MW
- Developed, designed, manufactured, installed and commissioned over 400 turbines in last 30 years. Total installed capacity exceeds 900.000 kW.
- Performed more than 50 centrifugal pump developments in last 30 years for pumps manufacturers supported by model tests and CFD
- Performed more than 30 pumps refurbishment and energy cost reduction projects in last 30 years for total installed pumps power of more than 30 MW
- Kolektor Turboinstitut has provided turbine models, R&D services and equipped power plants to customers in over 40 countries across all continents



Small Hydro Power Plants

Small Hydro Power Plants

Turbine design and production

Turbine is one of the most important parts of the HPP.

Small turbine (up to 20 MW) design and production is the core line of business for Kolektor Turboinstitut.

Turbine design is always customized to site conditions and power plant design requirements, whereby we combine a vast knowledge and models test library accumulated in over 65 years of history, to achieve the best outcome and the plant performance for our customers.

In the last 20 years, we supplied turbines for more than 400 projects all over the world.

Small hydro equipment design and engineering

Small hydro equipment design and engineering is the second key strength of the Company. More than 100 SHPPs have been completely equipped under Kolektor Turboinstitut's responsibility.

Activities comprise:

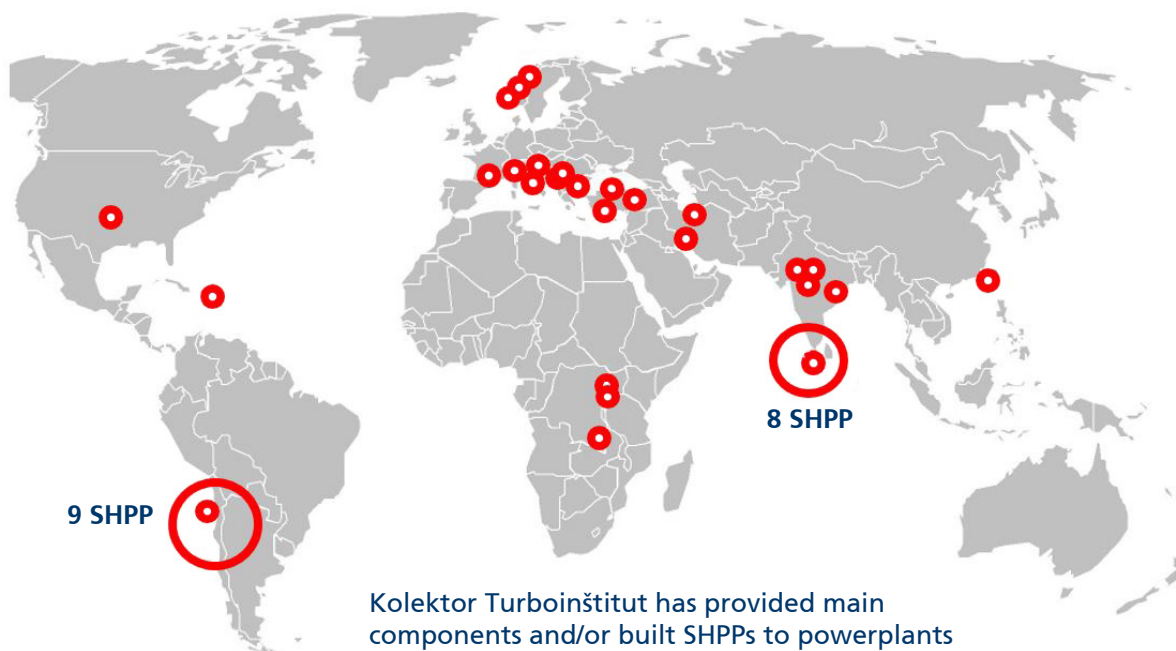
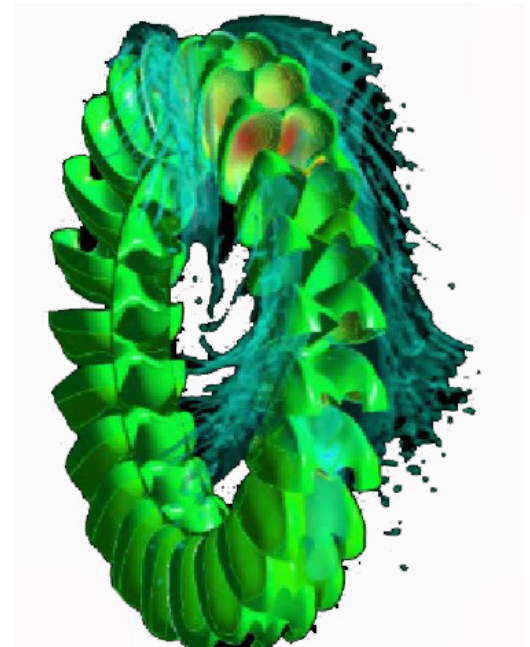
- hydro plant optimization in the design stage,
- design and production of the turbine governor, unit and power plant control
- engineering of the generator,
- design and engineering of the switchyard, transformer, auxiliary electrical and mechanical equipment,
- site installation, and commissioning of the supplied equipment and
- training.

Kolektor Turboinstitut provides complete Water-to-Wire HPP electromechanical equipment design, engineering and the complete scope of after sales support activities for electro mechanical equipment

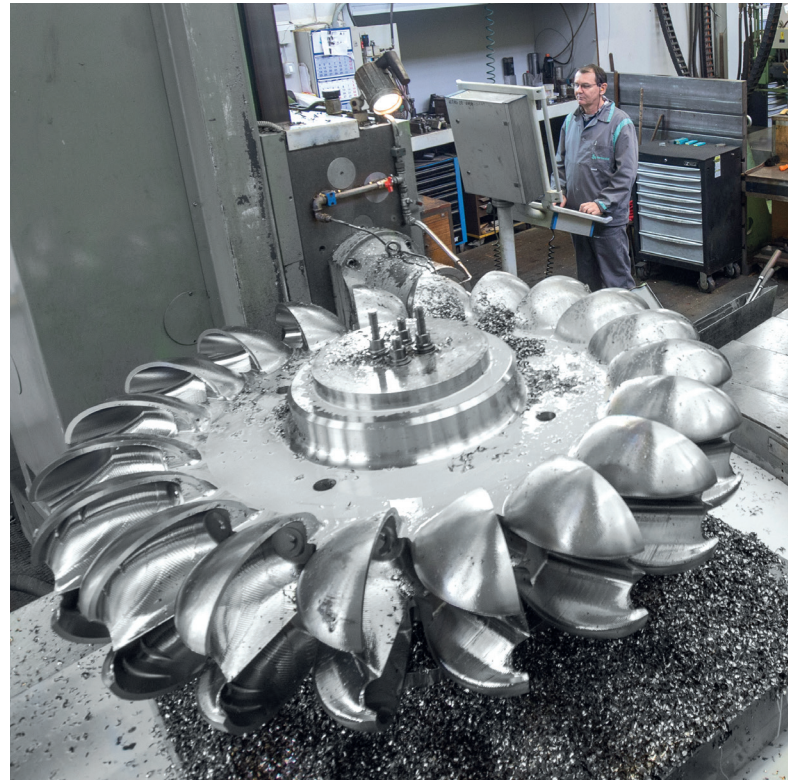
HPP Project Development

Kolektor Turboinstitut is developing the turnkey SHPP projects:

- developing own small hydro sites from green field
- EPC and BOT contracting whole power plant for other investors



Kolektor Turboinstitut has provided main components and/or built SHPPs to powerplants located in over 30 countries worldwide



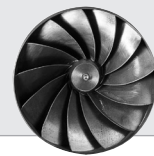
Turbines

Kolektor Turboinstitut is an independent institute focused on the research and development of

- Pelton
- Francis
- Kaplan
- Bulb turbine models
- Site testing and
- Complete scope of activities related to turbine refurbishment.



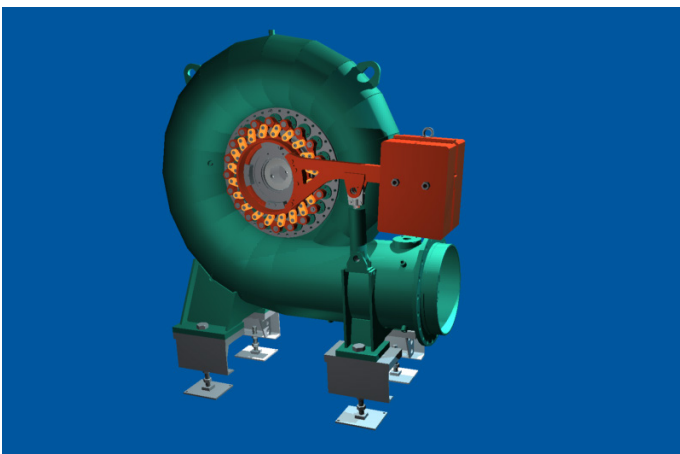
We have one of the most modern test rigs in the world.



We can offer consultancy services in the pre-tender research phase or act as an independent institute to support HPP owners/investors in verification of their projected hydro mechanical plant performance.

Turbine models are designed, produced and tested according to the latest international engineering standards and meet all requirements for up to date turbine model testing:

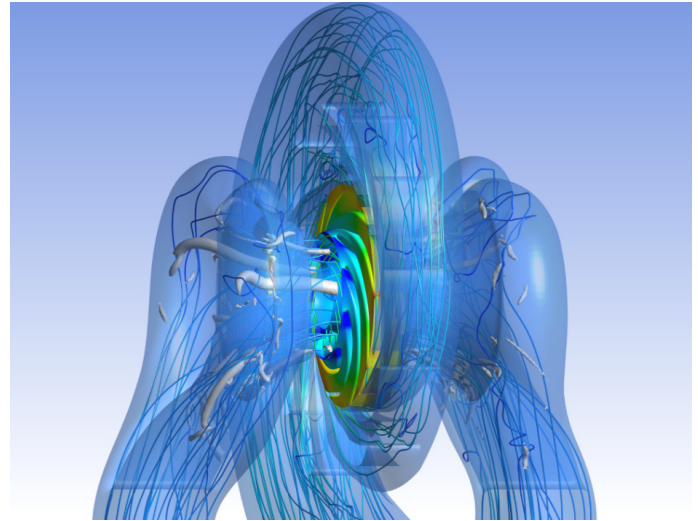
- All the conditions specified in the relevant IEC standard for model acceptance tests are met,
- Measurements can be made under all operating conditions with a 350 mm outlet runner diameter model of Francis, Kaplan and tubular turbines and a 100 mm bucket width of Pelton turbines,
- Modern instrumentation ensures a high degree of accuracy and repeatability. Data acquisition and processing are carried out automatically on every test rig and
- Complete instrumentation of each test rig can be calibrated at any time in order to check the accuracy of the delivered data of each instrument.



Pumps

R&D and testing

- Hydraulic and mechanical development of all types of centrifugal pumps (more than 65 years of experience!) supported by CFD simulations (more than 30 years of experience!) and model testing.
- Physical model testing and CFD simulations of vertical pumps intakes and hydraulic development of suction structures.
- Independent testing of prototype and model pumps in the laboratory of Kolektor Turboinstitut on closed or open loops test rigs according to different international standards, site tests of pumps and system



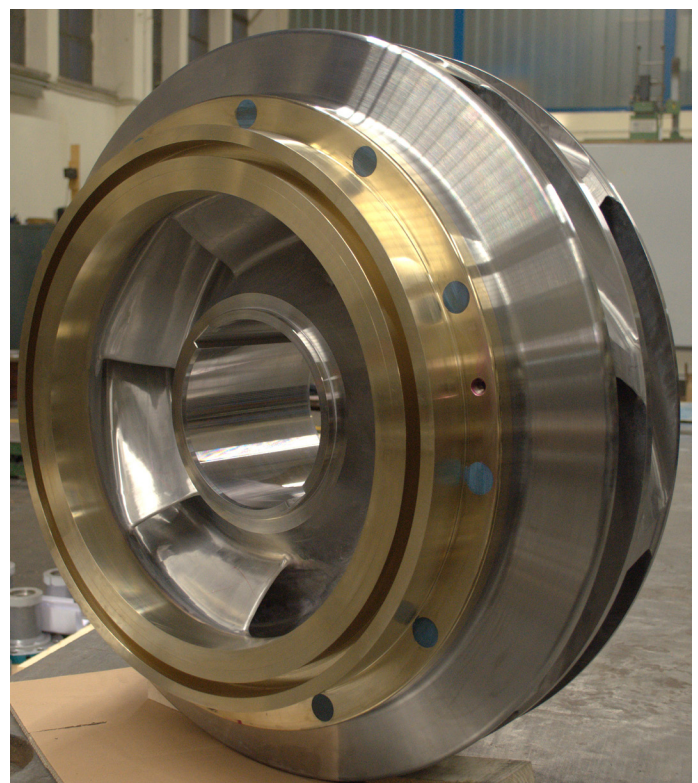
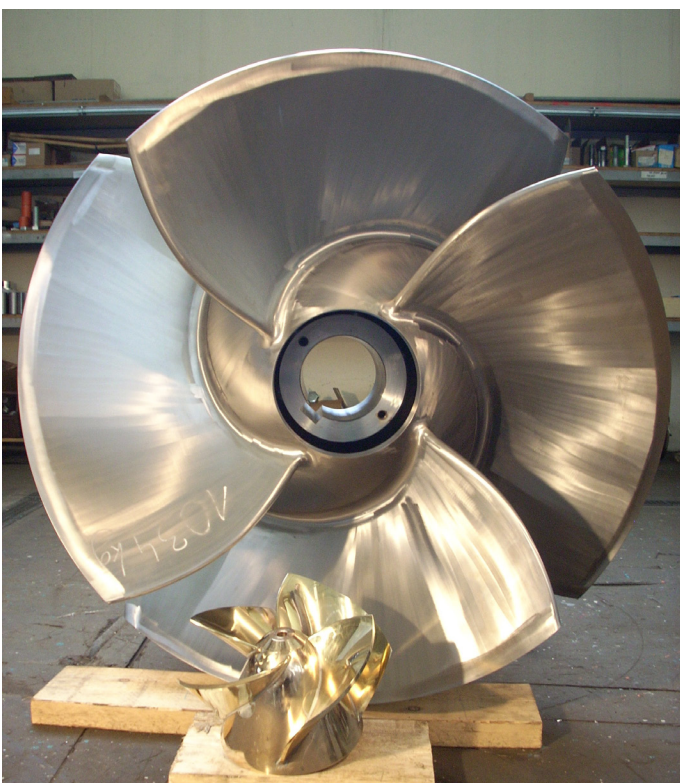
Rationalization of energy consumption and refurbishment of bigger pumps

- Analysis of existing situation (site testing, reverse engineering, CFD simulations, analysis...)
- Proposals for improvements (hydraulic and mechanical development, CFD simulations, model testing,...)
- Realization (design, production, assembling, installation, putting in operation, confirmation by testing).

Design, engineering, production, after sales

- Production of »custom made« pumps and pumps parts
- Design and engineering of complete electro – mechanical equipment for pumping plants and systems and small-hydro – »PAT« (Pump running as Turbine)
- After sales activities on pumps of own production or other manufacturers
- Technology transfer for production and testing of pumps
- Calibration of flow- and energy meters of bigger dimensions in own laboratory and at site, design and manufacturing

Technical services available include reliable design, model development and testing, fluid flow analyses, study of cavitation, vibrations and the dynamic behavior of hydro-turbine or pump, and site testing.



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