

Concept.
Design.
Execute.

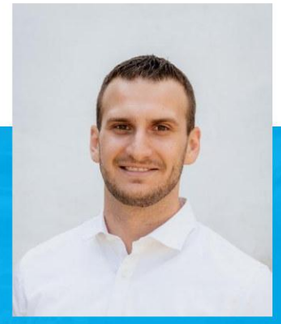


Mechanical Engineering & Hydropower

BAUCON INT.

Mechanical Engineering & Hydropower





Matteo Stupphann
Head of Mechanical Engineering & Hydropower
matteo.stupphann@baucon.at

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BauCon International ZT GmbH | Mechanical Engineering & Hydropower

PRECISION AT THE INTERFACE OF STRUCTURE AND MACHINE

Electromechanical equipment is the heart of every hydropower plant. Turbines, gates, valves and penstocks operate under extreme loads – their design largely determines efficiency, availability and service life. As an independent engineering firm, we bridge the critical interface between civil structures and mechanical engineering: neutral, objective and with proven design and calculation expertise for every project phase. Our services range from manufacturer-independent owner's representation and digital twins through to detailed design.

KEY HIGHLIGHTS & SCOPE OF SERVICES

- **Digital Hydro & Smart Maintenance:**
  Integration of digital twins for real-time monitoring and operating-time analysis of critical components (bearings, seals) and upgrading of existing plants for predictive maintenance.
- **Asset Optimisation & Repowering:**
  Independent feasibility studies, potential analyses and modernisation concepts for measurable increase in efficiency and energy yield of existing plants.
- **Owner's Representation & Procurement:**
  Preparation of manufacturer-neutral tender documents, technical bid comparisons and plausibility checks, plus expert support during factory acceptance tests (FAT) and commissioning (SAT).
- **Alpine Energy Storage:**
  Design of innovative pumped storage concepts for the smart multiple use of existing storage ponds and snowmaking infrastructure in ski resorts.
- **Engineering & Simulation:**
  Production-ready detailed design, structural FEA strength verifications and transient water hammer calculations for owners and hydraulic steel structure manufacturers.

WHY BAUCON INTERNATIONAL?

- **Manufacturer-independent:**
  As a neutral engineering firm, we exclusively represent the interests of the client – objectively in tenders, option comparisons and acceptance tests.
- **Interface expertise:**
  We seamlessly combine civil hydraulic engineering, geotechnics and mechanical engineering, minimising interface risks and additional costs during construction.
- **Upgrade instead of new build:**
  Rehabilitation and repowering concepts that make optimal use of existing structures and modernise them economically.
- **End-to-end support:** From the first concept study through permit applications to final trial operation.

Digital Hydro, Revitalisation & Feasibility Studies

We unlock untapped performance potential in your hydropower plant through manufacturer-independent feasibility studies, tailored repowering concepts and the integration of intelligent digital twins. With state-of-the-art 3D as-built surveys and sound hydraulic-mechanical optimisation, we sustainably extend the life cycle of your plant – for maximum availability, higher annual energy output and operating costs that remain predictable in the long term.

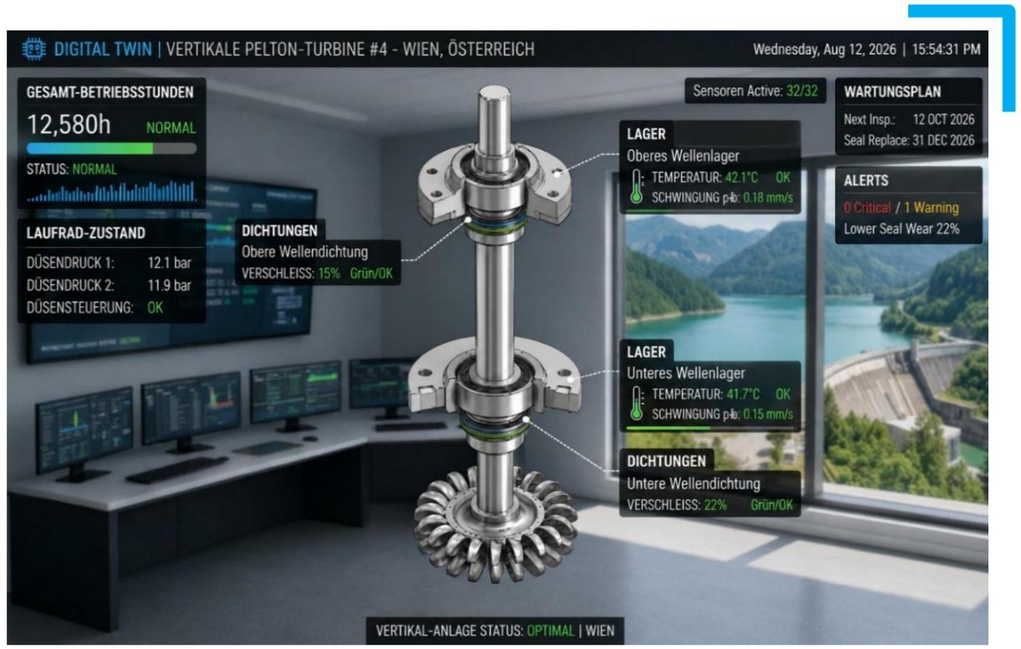


The Digital Twin

- **3D BIM & Operating Data:**
  Linking geometric as-built models with real operating and sensor data.
- **Condition Monitoring:**
  Continuous analysis of operating hours and wear parameters of critical components (main bearings, shaft seals, runners).
- **Predictive Maintenance:**
  Predictive maintenance strategies to avoid unplanned downtime and sustainably reduce operating expenses (OPEX).

Revitalisation, Repowering & Feasibility studies

- **Feasibility Studies:**
  Independent feasibility analyses for increasing the efficiency and output of existing and planned turbine and pump units.
- **Hydrological Adaptation:**
  Modernisation concepts for cost-effective optimisation under changed discharge conditions and residual flow requirements.
- **Interface Integration:**
  Targeted alignment of new mechanical equipment with the existing structure to minimise alterations and construction time.



Pumped Storage Power Plants for Ski Resorts & Alpine Infrastructure

Existing storage ponds and snowmaking systems hold enormous, often untapped energy storage potential. With tailored pumped storage concepts, we turn this infrastructure into highly flexible power plants that run economically all year round.



Infrastructure Dual Use & Storage Potential

- **Sector Coupling:**
  Smart multiple use of existing storage ponds and pressure pipeline networks for decentralised electricity storage.
- **Renewable Integration:**
  Targeted pumping with surplus electricity from alpine photovoltaic or wind power plants.
- **Peak Load & Flexibility:**
  Highly efficient power generation at peak demand to maximise profitability and support the grid.

Planning, Permitting & Operation

- **Authority- & Grid-Management:**
  Manufacturer-independent feasibility studies, permit design and technical grid connection assessments.
- **Holistic Planning:**
  Turnkey engineering design for turbine/pump units, hydraulic steel structures and hydraulic pressure pipelines.
- **Economical Self-Supply:**
  Year-round operational optimisation to cover in-house energy demand and cut local grid costs.



Owner’s Representation & Tender Support

As an independent engineering firm, we consistently represent your interests in dealings with suppliers and general contractors – from the first tender to flawless commissioning. With solid interface and procurement expertise, we ensure top technical quality, on-schedule contract performance and maximum cost certainty.



Tendering & Contract Award Support

- **Neutral Specification:**
  Preparation of manufacturer-neutral, technically precise tender documents for mechanical equipment, piping and hydraulic steel structures.
- **Technical Bid Evaluation:**
  Detailed comparison of options, interface review and plausibility analysis to prevent subsequent claims.
- **Negotiation Support:**
  Expert support in award negotiations to secure guaranteed efficiencies and scopes of supply in the contract.

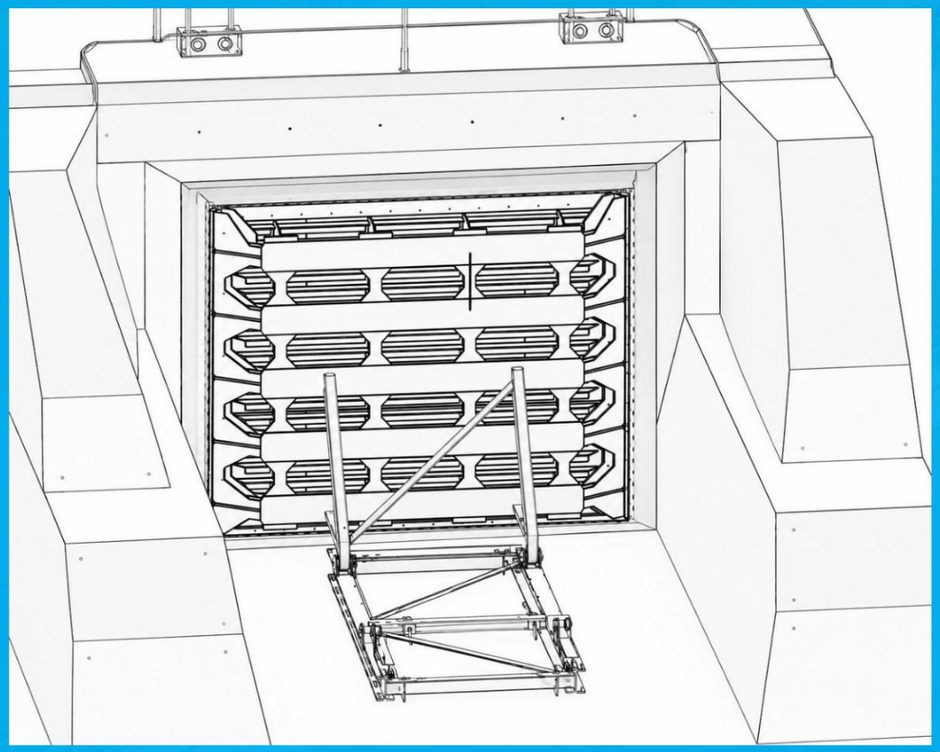
Quality Assurance & Commissioning

- **Review & Approval Services:**
  Expert review of calculations, supplier documents, shop drawings and inspection and test plans (ITPs).
- **Factory Acceptance Tests (FAT):**
  Independent representation of the owner during material tests, pressure tests and functional tests at the manufacturer’s works.
- **Installation & Commissioning (SAT):**
  On-site supervision and qualified support during dry and wet commissioning through to flawless acceptance.



Engineering, Design & Calculation

As an independent partner, we support owners in assessing existing plants and hydraulic steel structure manufacturers with production-ready designs. With in-depth FEA analyses, transient water hammer simulations and design expertise, we ensure maximum operational safety and standard-compliant execution quality.

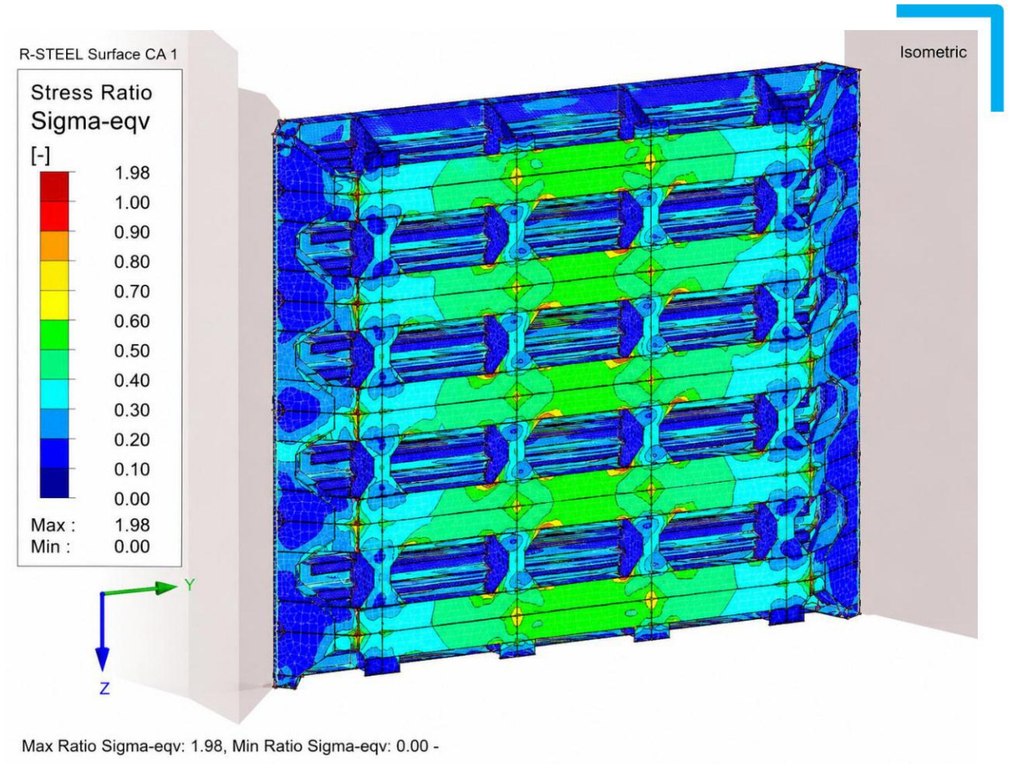


Simulation & Verification

- **Transient Water Hammer Analysis:**
  Numerical simulation of pressure surges in penstocks and surge tanks during rapid closing operations and load rejections.
- **FEA Strength Analyses:**
  Detailed stress and deformation analyses for gate leaves, turbine casings, bends, support structures and bifurcations.
- **Fatigue & Remaining Service Life:**
  Computational assessment of existing components (penstocks, gates and valves, crane rails) for a reliable determination of the remaining service life.

Detailed Design & Execution Planning

- **3D CAD Assemblies:**
  Production-ready modelling of mechanical systems and kinematic motion sequences for flaps, gates and drives.
- **2D Workshop Drawings:**
  Standard-compliant fabrication, welding and assembly drawings including bills of materials for hydraulic steel structure manufacturers.
- **Interfaces & Embedded Parts:**
  Precise design of foundation anchorages, recess plans and embedded parts for a perfect fit in the concrete structure.



Max Ratio Sigma-eqv: 1.98, Min Ratio Sigma-eqv: 0.00 -

Hydropower projects with contributions by BauCon Int.:

Year	Project Name - Location	Installed Capacity	Client	Role
2024	PSPP Riedl - Germany	350 MW	Verbund	Tender Design Optimisation
2024	HPP Traunfall - Austria	30 MW	Energie AG	Detailed Design
2024	PSPP Yeongdong - Korea	800 MW	Verbund	Advisory
2023	HPP Golling - Austria	50 MW	Verbund	EIA Permit Design
2023	HPP Tauernbach - Austria	30 MW	TIWAG	Detailed Design
2019	HPP Dionysen - Austria	60 MW	Verbund	Tender + Detailed Design
2023	PSPP Wurthendamm - Austria	470 MW	KELAG	Checking Engineer
2021	PSPP Tauernmoos - Austria	170 MW	ÖBB	Checking Engineer
2023	PSPP Latschau Rodund - Austria	280+200+290 MW	Illwerke	Checking Engineer
2022	PSPP Pioneer Valley - Australia	2500 MW	AFRY	Permit Design
2022	PSPP Borumba - Australia	5000+ MW	AFRY	Tender Design
2022	PSPP Limberg III - Austria	480 MW	Verbund	Detailed Design
2021	PSPP Manara - Israel	240 MW	Verbund	Detailed Design
2021	PSPP Ahunan - Philippines	1400 MW	AFRY	Tender Design
2020	HPP Luang Prabang	1470 MW	Ch. Karnchang Lao Ltd.	Detailed Design
2018	HPP Töging - Germany	140 MW	Verbund	Detailed Design
2019	HPP Manila - Philippines	5 MW	AFRY	Detailed Design
2019	HPP Arnstein - Austria	18 MW	Verbund	Permit, Tender and Detailed Design
2018	PSPP Galgenbichl - Austria	120 MW	Verbund	Permit, Tender and Detailed Design
2018	PSPP Kühtai - Austria	290 MW	Tiwag	Permit, Tender and Detailed Design
2017	HPP Scheibbs - Austria	15 MW	Hermann & Müller	Permit Design
2017	PSPP Dießbach - Austria	24 MW	AFRY	Detailed Design
2016	HPP Kirchbichl - Austria	38 MW	AFRY	Detailed Design
2016	HPP Beyhani II - Turkey	400 MW	AFRY	Detailed Design
2015	HPP Zwatzdorf - Austria	5 MW	AFRY	Detailed Design
2014	HPP Lower Kaleköy - Turkey	500 MW	AFRY	Detailed Design
2013	HPP Upper Kaleköy - Turkey	640 MW	AFRY	Detailed Design
2013	PSPP Reißeck II	430 MW	AFRY / Verbund	Detailed Design
2013	HPP Alpaslan II - Turkey	160 MW	AFRY	Detailed Design
2012	PSPP Hirzbach - Austria	1 MW	AFRY	Detailed Design
2012	HPP Bruck - Austria	10 MW	Hermann & Müller	Permit Design
2012	HPP Kavşak Bendi - Turkey	180 MW	AFRY	Detailed Design
2011	HPP Schwarzach - Austria	120 MW	Verbund	Detailed Design
2011	HPP Hieflau - Austria	63 MW	AFRY	Detailed Design
2011	HPP Beyhan 1 - Turkey	190 MW	AFRY	Detailed Design
2009	HPP Hallein - Austria	12 MW	AFRY	Detailed Design
2007	PSPP Limberg II - Austria	480 MW	AFRY	Detailed Design
2005	HPP Zemm/Ziller - Austria	345 MW	Verbund	Detailed Design
2003	HPP Loferbach - Austria	2 MW	AFRY	Detailed Design

Company History

BauCon was founded in 1986 by DI Harald Schlosser in Zell am See, Austria. Owing to high demand for planning services from the public and private sectors, the company grew rapidly.

In 1989, Dr Hans-Georg Leitner joined the company as Managing Director and introduced CAD-based design – a decisive step that contributed to BauCon's leading expertise in this field.

In 1993, DI Gerald Haussteiner joined as another Managing Director. In the same year, branch offices were opened in Berlin (Germany) and Kitzbühel (Austria), and the BauCon brand was officially established. Also in 1993, the company obtained ISO 9001 certification, which was reconfirmed in 2001 in accordance with ISO 9001:2000.

In 2001, an office was opened in Bolzano (Italy), followed by a further branch office in Vienna (2005). As a result, the number of employees rose to 50.

In 2017, a branch office was established in Hanoi (Vietnam) to support the growing number of international projects.

In 2018, Ing. Bernd Englacher, DI Jan-Peter Hasse and Dr Hans-Martin Leitner joined the company as new Managing Directors.

In 2020, the company expanded into Southeast Asia with the opening of an office in Bangkok (Thailand).

In 2023, the office in Salzburg (Austria) was opened. At the same time, DI Lukas Schlosser joined the management team.

In 2024, BCI – BauCon International was founded to drive international growth in a targeted manner. The number of employees rose to 100. Dr Hans-Martin Leitner and DI Florian Jandl took over management as CEOs.

In 2025, BCI established a further location in Australia with the opening of an office in Sydney.

OUR CLIENTS

AE&E / ALSTOM / Babcock Germany / AFRY / Siemens AG / Steinmüller / YARA / Verbund / Gruner / TIWAG / KELAG / ILLWERKE / Ch. Karnchang / Salzburg AG / Tractebel / Electra / Energie AG / Energie Steiermark / and many more

MANAGING DIRECTORS OF BAUCON INTERNATIONAL ZT GMBH



Dr. Dipl.-Ing.
Hans-Martin Leitner
CEO and Owner
BauCon International ZT GmbH



Dipl.-Ing.
Florian Jandl
CEO and Owner
BauCon International ZT GmbH

CONTACT AND LOCATIONS

Headquarters Vienna
BauCon International ZT GmbH

Marxergasse 1B
Building N1 / 3rd Floor
A-1030 Vienna

Phone: +43-1-813 14 15-0
Fax: +43-1-813 14 15-13
Email: office.wien@baucon.at

Branch Office Vietnam (Hanoi)
BauCon International ZT GmbH

2nd Floor, Chelsea Residences Building
No. 48 Tran Kim Xuyen Street
Yen Hoa Ward
Cau Giay District, Hanoi

Phone: +84-942 00 10 91
Email: office.hanoi@baucon.at

Branch Office Bangkok (Thailand)
BauCon International ZT GmbH

Alma Link Building, 17th Floor
25 Chit Lom Alley
Lumphini, Pratumwan District
Bangkok 10330

Mobile: +66 (0)65 236 7852
Email: office.bangkok@baucon.at

Branch Office Sydney (Australia)
BauCon International ZT GmbH

Level 5, 23–25 O'Connell Street
Sydney, NSW 2000

Email: office@baucon.au

Branch Office Berlin (Germany)
BauCon Berlin Kempfer

Neue Schönholzer Straße 1
D-13187 Berlin

Branch Office Bolzano (Italy)
BauCon ZT GmbH

Attn. Dr. Ing. Simon Neulichedl
Schlachthofstraße 57
I-39100 Bolzano

Branch Office Salzburg
BauCon ZT GmbH

Bayerhamerstraße 57
A-5020 Salzburg

Branch Office Kitzbühel
BauCon ZT GmbH

Wegscheidgasse 2a
A-6370 Kitzbühel

Branch Office Zell am See
BauCon ZT GmbH

Skiliftstraße 3
A-5700 Zell am See