



About us

EscherTec AG, founded in 1999, is an independent Swiss engineering and consulting company with a wide range of expertise and long-term experience in energy generation and energy efficiency.

More than 30 experts with a wide range of expertise from various areas contribute to our network.

We select the best experts of our network for your project team. The core team is located in our offices at the Technopark in Zurich, Switzerland; whereas some experts work remotely.

Our Customers

For our customers we offer engineering and consulting services in the energy sector and related sectors:

- **Cities, Municipalities and Real Estate Developers,** that want to introduce clean and smart energy solutions for their cities, districts or buildings.
- **OEM** Original Equipment Manufacturer,
- **Power plant operators** operating thermal power plants, hydro power plants and facilities that are based on renewable energy sources,



Smart Energy Solutions

We design and implement smart energy solutions for cities, municipalities and real estate developers.

Our aim is the efficient and sustainable energy generation. We provide solutions that are adaptable to local requirements and scalable to buildings, districts and cities needs.

We develop and assess smart energy solutions from basic design up to analyses and improvements of existing thermodynamic processes and develop optimized solutions for decentralized power generation and energy usage.

We concentrate on smart energy solutions that are based on the smart integration and interconnection of renewable energy sources.

OEM

We support OEMs in turbomachinery design for steam turbines, gas turbines and aero turbines. We can leverage an international network of leading experts for different design and engineering projects.

Power Plant Operators

For power plant operators our services include consulting, design and expertise for optimized planning, building, operating and maintaining of all types and sizes of power plants, e. g. fossil fuel-based, hydro power, renewable energies.

Our expertise ranges from mechanical engineering, process management, system integration to analysis and assessment of the operational behavior.

Customers & Working Experience

ABB Power Automation
ABB Power Generation Ltd
ABB Switzerland Ltd
ABB Turbo Systems
Alstom Power AG
Andritz Hydro
Axpö
BASF
Becker
BESSY Elektronenspeicherring
Biotronik
BKW
BMW AG
Bystronic
Climeworks AG
Clyde Bergemann Brinkmann
Cochlear
Concepts NREC, USA
CPS Creative Power Solutions
Cryostar-BOC
Etaeval GmbH
European Turbine Network
EWZ, Zurich
FPT Motorenforschung AG
Gebrüder Meier AG
General Electric Global Research
Groupement Berkine
Grundfoss, Denmark
Hella

Honeywell Automotive Software, Canada
IAV GmbH
Komax
Landis & Gyr
LTB Lasertechnik
Lucerne University of Applied Sciences
MAN Diesel & Turbo AG
MAN Turbo Aero Engines
MECOS AG
Municipality of Trebinje, Bosnia-Herzegovina
NORCE
Pollrich DLK Fan Factories
Pöyry Energy Ltd
Rittmeyer Instrumentation
Rolls Royce AeroEngines, UK/Germany
Rychiger
Siemens Power Generation
Sulzer Escher Wyss
SULZER Turbo AG
Syngenta
Tecan
TLT Turbo GmbH
University of Applied Sciences Northwestern Switzerland
Wärtsilä
Zühlke

Countries



We have a strong business network in Europe and South-East Asia. We are active with projects and business development activities in the following regions:

Europe / Northern Africa

Algeria
Bosnia-Herzegovina
Denmark
Germany
Macedonia
Norway
Serbia
Switzerland

Asia

China
India
Indonesia
Japan
Malaysia
Singapore
South Korea

Smart Energy Solutions & Renewable Energy for Industry, Cities, Districts and Buildings

General

Power markets fundamentals

Modelling and analysis of energy markets

Energy System Integration

Distribution

Storage (Power to x, CAES)

Conversion thermal to electrical or vice versa

Conversion of heating to cooling or vice versa

Development of smart energy solutions

Energy Efficiency & Renewable Energy

Consulting & engineering for renewable energy concepts

Hydrogen energy technologies (e.g. metal hydrogen storage)

CO2 reduction catalysis for energy storage

In-situ material surface analysis (e.g. photoelectron, synchrotron X-ray)

Integration of renewable energy sources

Systems integration to make use of water energy as heat.

Concepts for energy systems in residential, public and industrial context:

- Developing, financing and implementing of district heating installations

- Sustainable city development

- eea Consultant (European Energy Award)

Integration of solar thermal power and micro gas turbines.

Integration of high temperature fuel cells and micro gas turbines.

Biogas use in micro gasturbines, gas engines and and fuel cells.

District heating systems based on low temperature systems considering different end consumer needs.

Integrated energy concepts for blocks of buildings city centers making use of locally available renewable energy sources as hydro power and geothermal energy.

Energy efficiency analysis and improvement of industrial processes in combination with production rate increase.

Low temperature waste heat recovery systems and process integration.

Services and Expertise for OEM

	Turbomachinery Steam Turbines	Turbomachinery Gas Turbines	Aero Turbines
Power Plants / Industry			
R & D / Turbine Design			
Risk analysis and management	X	X	X
Method development for thermodynamic cycles	X	X	
Process engineering	X	X	X
Mechanical integrity analysis tools	X	X	X
Design of advanced flow paths and 3D Blading (axial and radial)	X	X	X
Optimizing air cooled condensers for ambient wind condition, air cooled condenser heat exchangers and the cooling flow path for large hydro generators.			
Aerodynamic Design & Optimisation			
Design of advanced flow paths and 3D Blading	X	X	X
Axial and radial compressor design		X	X
Inlet nozzle, seals, cavities, cooling passages, diffuser)	X	X	X
Control stage	X		
1D, 2D and 3D flow simulation, steady state and transient	X	X	X
Multiphase flow simulation (equilibrium and non-equilibrium phase change modelling)	X		
Heat transfer modelling	X	X	X
Developing loss models using CFD	X	X	X
Support for experimental flow testing	X	X	X
Mechanical Integrity			
Mechanical Design & Optimisation	X	X	X
Mechanical integrity analysis (blades, rotors, casings, etc)	X	X	X

	Turbomachinery Steam Turbines	Turbomachinery Gas Turbines	Aero Turbines
Power Plants / Industry			
Design for standardization & modular systems according applicable directives, norms & standards (ATEX, PED, API, EC,...)			
Turbomachinery and Field-testing Support			
Blade testing	X	X	
Design of test rig including instrumentation	X	X	
Support establishing test procedure	X	X	
Attend and support direction of tests	X	X	
Analyse test data	X	X	
Root Cause Analysis			
Support extraction of engine data	X	X	X
Analyse data, identify root cause and recommend actions	X	X	X
Health Monitoring			
Recommend additional engine instrumentation	X	X	X
Provide in-house developed gas path analysis software to analyse engine data and report location in turbomachinery of performance deterioration	X	X	X
In-house Tools			
AirFoil Designer pdesk® for gas and steam turbine blades	X	X	X
Radial compressor design tool		X	
1D design tool for steam turbine (including cycle)	X		
2D design and analysis tool for gas and steam turbines	X	X	
3D analysis tool for gas and steam turbines (including cooled blades)	X	X	X
parametrised 3D CAD blade generation with root and shroud (incl. Fillet radius)	X		

	Turbomachinery Steam Turbines	Turbomachinery Gas Turbines	Aero Turbines
Power Plants / Industry			
Combustors (Gas, Oil and Multi-fuel)		X	X
Combustor concept and design		X	X
Optimisation for fuel flexibility		X	X
Detailed chemistry modelling		X	X
Aerodynamic Modelling & Optimisation		X	X
2D and 3D flow simulation, steady state and transient		X	X
Fuel modelling (single and multiphase flow)		X	X
Combustion modelling		X	X
Emission modelling		X	X
Flame stability & flashback modelling		X	X
Heat transfer modelling		X	X
Combustor and Field-testing Support			
Design of test rig including instrumentation		X	
Support establishing test procedure		X	
Attend and support direction of tests		X	
Analyse test data		X	
Root Cause Analysis			
Support extraction of engine data		X	X
Analyse data, identify root cause and recommend actions		X	X

Services and Expertise for Power Plant & Hydro Power Plant Operators

General

Development of monitoring & diagnosis software

Software development for industrial automation systems

Signal processing and estimation optimization

Data analysis and image processing

Smart sensor /smart devices planning and implementation

Software engineering

Database design

Development of "Industrial Internet of Things".

Monitoring, Diagnosis & Analysis

Gas Path Analysis

Performance Monitoring and Diagnosis for Gas and Steam Turbines

Vibration and damping analysis

Power plant behavior analysis and modelling

System analysis and model-based control

Root Cause Analysis & Life Time Extension

Root cause analysis

Hydro Power

Efficiency measurements in any type of hydro power plants

Fluid structure interaction

Flow induced vibration

Discharge measurements

Hydro power plant optimization

Trouble shooting in hydro power plants

Heading research projects

**Enabling Clean Energy Solutions for the
next Generations**



EscherTec AG

Technoparkstrasse 1
CH – 8005 Zurich
Switzerland

+41 44 833 27 66
info@eschertec.com
eschertec.com