

## COMPANY PRESENTATION

**Profile** Easy Energy Companies & Consulting SA (EECC) is a young and dynamic, Swiss based company specialised in the engineering and execution of power plants and fuel conversion solutions. Driven by a strong innovation spirit, EECC is a competent and focused team of engineers and specialists.

**Philosophy** Customer satisfaction is our energy! EECC follows a philosophy of total customer satisfaction by integrating each customer requirement in the focus of its activity.

**Objectives** EECC always targets high quality products and services, considering optimal investment cost and life cycle cost. The continuous research of new technologies and methods offers to its customers the highest added value and best image.

**Services** With about 30 years of experience in the field of turbo machinery, EECC is highly specialised in the power generation engineering and consulting field.

EECC offers many kind of services to its customers:

project management; feasibility studies; inspections / expertises; process engineering; instrumentation and control; auxiliaries and third party components design and development; instrumentation upgrades; supply and implementation of new equipment in existing power plants; engineering for gas and steam turbine auxiliaries and controls.

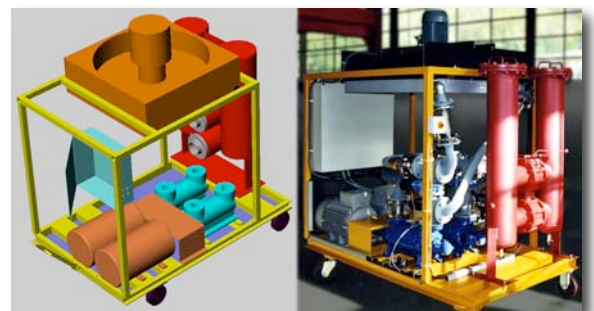
Multilingual skills of our team (English, French, Italian, German, Spanish, Russian) and worldwide contacts allow EECC to offer perfect services all over the world.

**Products** EECC designs and manufactures power plant auxiliaries and controls, from concept to commissioned units:

- Fuel control systems
- Fuel transfer and treatment systems
- Lube oil systems
- Hydraulic safety units
- Heat extraction systems
- Water drain and protection systems for evaporative coolers
- Water drain filters for evaporative coolers
- Base frame springs

**Young and Franklin** EECC is official representative and technical support for "Young and Franklin" gas and steam turbine control and protection products. Y&F is leading supplier of fuel control valves for gas turbines and its components are installed in over 15'000 gas and steam turbines of all sizes worldwide.

EECC provides components and spares from Y&F and related services in its dedicated territories and develops upgrades to state of the art controls using Y&F components.



## Customers

Our main customer segments are:

- Steel industry
- Aluminium industry
- Oil & Gas industry
- Chemical industry
- Paper & printing industry
- IPP's
- Public utilities
- District heating



## Reference highlights

### Engineering and consulting:

- Consulting for 400MW CC power plant
- Project management for 80MW district heating power plant
- GT controls specification & commissioning support for 170MW Unit

### Supply of systems and hardware:

- Liquid fuel control system for 5 MW class gas turbines
- Lube oil skid for 10MW class gas turbines
- Integrated lube oil control blocks for 5MW class gas turbines



**Worldwide presence** EECC is present on all 5 continents with consulting, engineering services and system design.

**Tools** EECC works with state of the art engineering tools like Solidworks (3D CAD), Thermoflex (thermodynamic cycle calculation).

In addition, a fully automated hydraulic test bed for pressures of up to 400bar is available for quality certification or troubleshooting.

**Team** EECC is a team of engineers and professionals, whose main strength are a long experience (up to 25 years) in the field of turbo generators, power plants and sustainable energy. The experience of the team members ranges from research & development, application engineering, project management, sales and marketing (equipment, EPC's, customer service and retrofits).

- **Peter Altwegg** – CEO and senior consultant

Master in mechanical engineering ETH Zürich (Switzerland)

Worldwide experience: VP Engineering in leading gas turbine packaging company, group leader sales combined cycle power plants North America. Guest Professor for mechanical engineering.

- **Daniel Pfammatter** – senior engineer

Master in mechanical engineering ETH Zürich (Switzerland)

Wide experience in power plant commissioning, development engineering and project management. International experience in Europe, Middle East and North Africa.

- **Personnel:**

1 Mechanical Engineer Msc	1 Sales Engineer
1 Electrical Engineer Bsc	2 Design Engineer
3 Mechanical Engineers Bsc	2 Administrative Employees



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## REFERENCES: EECC SYSTEMS AND PARTS

<p><b>Gas turbine fuel control</b> Fuel distribution and metering system for low emission gas turbines, including analysis of the combustion requirements, mechanical and electrical design, control logic development, software implementation, equipment installation and on site commissioning and prototype testing.</p>	<p>Switzerland 2004</p>
<p><b>Liquid fuel transfer and treatment</b> Fuel transfer and treatment skids for 6MW gas turbine applications, customized to site requirements, filtering quality, air &amp; water separation.</p>	<p>Switzerland 2004</p>
<p><b>Lube oil system</b> For gas turbines up to 10MW. The skid includes all required equipment, such as large capacity duplex oil filter, fully redundant pumps with automatic changeover, coolers and controls.</p>	<p>Switzerland 2004</p>
<p><b>Hydraulic turbine protection unit</b> Protection unit designed for turbomachinery protection.</p>	<p>Switzerland 2007</p>
<p><b>Systems for evaporative cooler</b> Evaporative cooling pads</p>	<p>Turkey 2007</p>
<p><b>Systems for evaporative cooler</b> Upgrade of existing evaporative cooler components. Water treatment equipment</p>	<p>Germany 2007</p>
<p><b>Hydraulic turbine protection unit</b> Protection unit designed for turbomachinery protection.</p>	<p>Germany 2008</p>

## REFERENCES: Y&F PARTS

<p><b>RVDT retrofit kit</b> for gas fuel control valves for GE turbines.</p>	<p>Italy</p>
<p><b>Control valve repair and retrofit package</b> for GE turbines</p>	<p>Germany, Italy, Pakistan</p>
<p><b>Fuel valve electronic controller card</b> for GE turbines</p>	<p>Switzerland</p>
<p><b>Turning device ratchet valve</b> for GE turbines</p>	<p>Italy</p>
<p><b>DLN valve repair kit</b> for GE turbines</p>	<p>Italy</p>
<p><b>Fuel valve actuator</b> for Solar turbines</p>	<p>Azerbaijan, Pakistan, Turkey, Turkmenistan</p>



## ON SITE SERVICES

<b>Installation and commissioning</b> of gas turbine liquid fuel control system.	Germany	2004
<b>Inspection support</b> of a gas turbine major overhaul.	Algeria	2006
<b>Installation and commissioning</b> of control valve repair and retrofit package on a 120MW gas turbine.	Italy	2007
<b>Supervision of overhaul</b> of gas control valves and stop-ratio valves in a major refinery plant.	Italy	2007
<b>Assessment of gas turbine compressor conditions</b> Operation procedures instruction and instrumentation assessment.	Algeria	2007
<b>Supervision of overhaul</b> of gas control valves and stop-ratio valves in a major refinery plant.	Italy	2007
<b>Erection supervision and commissioning</b> of a microturbine.	Italy	2007
<b>Commissioning</b> of fuel gas compressor.	Italy	2007
<b>Overhaul of gas control valve</b> and troubleshooting support.	Germany	2008

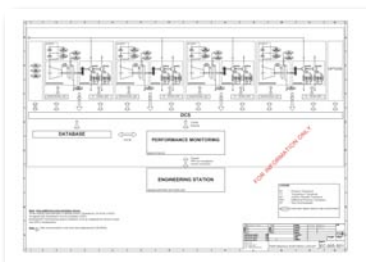


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## CONSULTING & ENGINEERING REFERENCES

<p><b>Specification, engineering and commissioning</b> of GT liquid fuel control system to accommodate cost reduction, dynamics during transients, reliability and repeatability improvement.</p>	Germany	2004
<p><b>Concept and detail engineering</b> of auxiliaries for aero derivative gas turbines, combining leading-edge technology with proven solutions. Auxiliary systems include fuel, lubrication, cooling, ventilation, air intake, exhaust and fire fighting systems, as well as full instrumentation scope.</p>	Switzerland	2004
<p><b>Consulting</b> for the permitting and contracting phase of a 400MW combined-cycle power plant.</p>	Spain	2005
<p><b>Consulting for sales support</b> for a gas compressor packager, including technical and commercial project definition.</p>	Switzerland	2005
<p><b>Engineering support</b> on the application for construction permit of a combined cycle power plant.</p>	Spain	2005
<p><b>Engineering of generic technical purchase specification</b> for utility size combined cycle power plants.</p>	Switzerland	2006
<p><b>Project management</b> of the repair and recommissioning of a CHP plant, which was partially destroyed by a fire.</p>	Germany	2006
<p><b>Concept and detail engineering</b> of gas fuel operation and control concepts for heavy duty gas turbines.</p>	Switzerland	2006
<p><b>Consulting</b> for site selection and accessibility evaluation for a large combined cycle power plant project.</p>	Italy	2006
<p><b>Instrumentation upgrade and diagnosis system implementation</b> Support for the implementation of monitoring and diagnosis systems for preventive maintenance and performance monitoring of turbomachinery.</p>	Algeria	2006
<p><b>Feasibility study</b> for a biomass power plant. Development of sustainable concepts for biomass use in power plant applications in typical central European conditions.</p>	Switzerland	2006
<p><b>Project management</b> for process equipment installation in industrial plant.</p>	Italy	2006
<p><b>Concept and detail engineering</b> of dual fuel operation and control concepts for heavy duty gas turbines.</p>	Switzerland	2007
<p><b>Independent expertise</b> Damage assessment of a 6MW class gas turbine after a compressor damage.</p>	Italy	2007



<b>Detail engineering</b> of upgrade packages for steam turbine hydraulic control system.	Switzerland	2007
<b>Engineering support</b> for gas turbine fuel control equipment development	USA	2007
<b>Concept and detail engineering</b> of gas turbine instrumentation upgrades, including safety relevant measurements for SIL 3 requirements.	Switzerland	2007
<b>Specification of gas turbine fuel compressor</b> Creation of performance specification for industrial gas turbine plant and general sales support.	Turkey	2007
<b>Performance specification of gas compressor</b> for chemical plant, general sales support.	Turkey	2007
<b>Concept and basic engineering</b> for the turbomachinery part of a solar thermal power plant.	Switzerland	2007
<b>Feasibility study</b> for revamping of coal power plant with new steam turbine.	Russia	2007
<b>Feasibility study and basic engineering</b> for biomass power plant.	Hungary	2007
<b>Detail engineering</b> for all rotating machines of a biomass power plant.	Hungary	2007
<b>Engineering support</b> for microturbine installation.	Italy	2007
<b>Force and strain analysis</b> of GT baseframe anchorage system.	Germany	2008
<b>Project management</b> for a CHP plant.	Germany	2008
<b>Risk analysis</b> for GT auxiliaries and controls.	Switzerland	2008
<b>Startup optimisation</b> of a heavy duty gas turbine.	Germany	2008
<b>Safety integration engineering</b> for heavy duty gas turbine installation.	Switzerland	2008
<b>Detail engineering</b> of dual fuel operation and control concept for heavy duty gas turbine power plant.	Switzerland	2008
<b>Investigation of gas turbine incident root cause</b> On site investigation and analysis of causes of incident with a gas turbine.	Germany	2008
<b>Feasibility study</b> for integration of alternative heat source into existing w/s cycle.	Switzerland	2008
<b>Feasibility study</b> for large size stand-alone power plant based on thermal solar energy.	Greece	2009
<b>Feasibility study</b> for medium size stand-alone power plant based on thermal solar energy.	Greece	2009
<b>Feasibility study</b> for medium size stand-alone power plant based on thermal solar energy.	Italy	2009
<b>Due diligence</b> for combined cycle power plant.	Italy	2009
<b>Concept engineering</b> for printing industry integrated energy concept.	Germany	2009



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## YOUNG AND FRANKLIN

**Young & Franklin Inc** and its subsidiary, Tact air Fluid Controls Inc., are manufacturers of controls used by the land-based turbine, aircraft, defence and oil industries. The company, founded in 1918, is privately owned and is located in Liverpool, a suburb of Syracuse, New York. Since the 1950's, Y&F has been the original source of robust precision hydraulic controls to the land-based gas turbine industry. Y&F continues to manufacture a broad range of products for GE Energy (including Nuovo Pignone and Energy Products Europe), Solar Turbines, Pratt & Whitney and others around the world.

Building on the knowledge and experience in the turbine control, Y&F has developed a line of electromechanical, electro hydrostatic and full electric products to complement the hydraulic offerings.

**Presence** EECC represents Young & Franklin Inc. in all countries of continental Europe east of the river Rhine, incl. Italy, Russia and former CIS countries, as shown on the map beside.

**Representation** EECC is official representative and technical support for Young and Franklin gas and steam turbine control and protection products. Y&F is leading supplier of fuel control valves for gas turbines and its components are installed in over 15'000 gas and steam turbines of all sizes worldwide.

EECC provides components and spares from Y&F and related services in its dedicated territories and engineers upgrades to state of the art controls using Y&F components.

**Service** EECC has a certified Repair, Overhaul and Service facility for Y&F original equipment. A fully automated hydraulic test bed for pressures of up to 400bar is available for quality certification or troubleshooting.

EECC is also certified and qualified to offer on-site service, overhaul, substitutions & troubleshooting in its dedicated territories for Y&F products.

