



**RASEMA**  
**S.r.l.o.**



Our company **Rasema s.r.o.**, was founded in 2014 as successor company of Tech-Art s.r.o. covering business for process automation and Power engineering in Slovakia and also in EU . Our employees have 25 years and more experiences while working for companies like ABB for many years

Our team made many complex projects in Power and also in Process automation field . Our main motto is – Think different . This motto is driving us to our main goal to help our customers to solve they problems, and be much more effective in process automation, energy consupction and maintenance .





## Our scope

- Delivery and mounting of electrical equipment and switchgears
- Electrical design and electrical documentation drawing
- Delivery and rewamp for existing switchgears
- Complex delivery and mounting of measurement and regulation devices
- Design, delivery and mounting of control systems HW and SW (ABB, Siemens, Mitshubishi)
- Delivery of complex solutions of process automations



## Our scope

- Delivery and mounting of auxiliary equipment for control systems
- Delivery of technological solutions for process control
- Design of application software for process automation, information systems and visualisation of process
- Design of application software for applications of ABB, Siemens, Mitsubishi, Microsoft etc.
- Delivery and mounting of operator stations, operator panels, servers and UPS systems
- Delivery and mounting of communication fieldbuses (Ethernet, Profibus, Profinet, etc.)



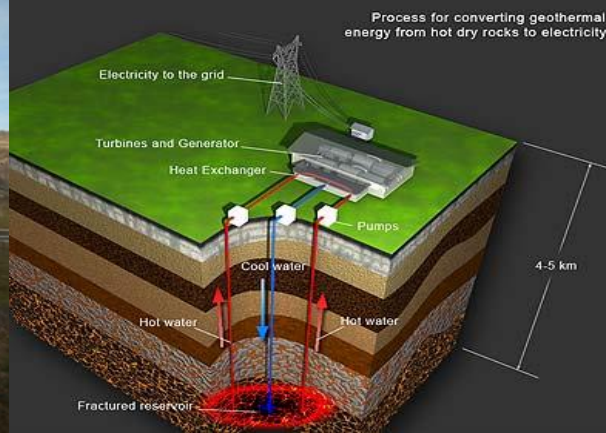
## Our scope - drives and robots

- Design, delivery and mounting of low-voltage and high-voltage motors and generators
- Design, delivery and mounting of special motors (high temperatures, special enclosures ect ...)
- Design, delivery and mounting of special semiconductor devices like rectifiers, excitation systems
- Design, delivery and mounting of frequency convertors for LV, MV



## Our scope - drives and robots

- Design, delivery and mounting of LV, MV and HV drives and DC drives
- after-warranty services, preventive maintenance, rewamp and reconstruction of existing drives, motors and gearboxes
- Vibrodiagnostics measurements for motors
- Thermography measurements for electrical equipment
- Design, delivery and mounting of robots and whole robot cells workplaces
- Start-up of drives systems and robot systems (ABB, Mitshubishi)
- Monitoring and thermography from ground and also from sky



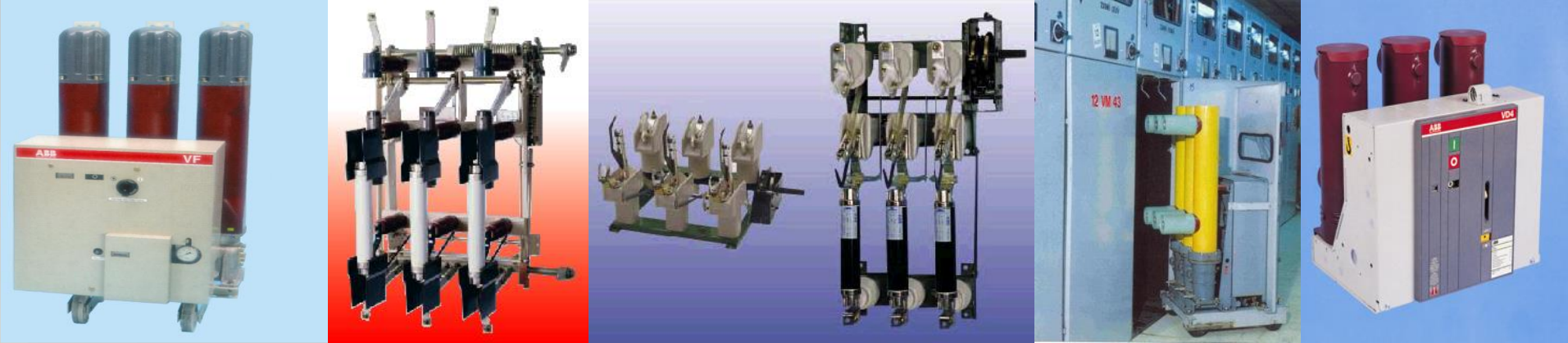
## Our scope

- Energy audit for electrical equipment
- Design, delivery and mounting of technological devices and lines
- Design, delivery and mounting of positioners and position drives
- Design, delivery and mounting of process regulators and recorders
- Design, delivery and mounting of process analysis devices for liquid  
( pH, conductivity, ORP, dissolved Oxygen, ... )



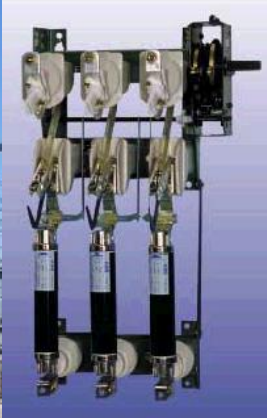
## Our scope in field equipment - measurement

- Design, delivery and mounting of gas analysys
- Design, delivery and mounting of AMS (EM) systems
- Design, delivery and mounting of chromatographs, photometers and spectrometers
- Design, delivery and mounting of laboratory spectrometers
- Design, delivery and mounting of tensiometer systems, crane weight systems and systems for lengt, pressure, speed measurements
- Commissioning, warranty and post-warranty service
- Trainings



## Our scope in MV and HV field

- Warranty and after warranty services for MV and HV equipment
- Diagnostics of MV and HV equipment
- Spare parts delivery
- Specialist supervision
- Delivery and mouting of MV and HV switchgears (ABB, Siemens, Schneider)
- Special enclosed HV switchgears (ABB)
- Rewamping of existing old switchgears



## Our scope in HV field

- Delivery and mounting of HV transformers
- Delivery and mounting of HV drives and generators
- Configuration and mounting of HV protection (ABB)
- Design and project documentation for HV switchgears
- Design and realization of HV switchgears control

# Special solutions

- Design, project documentation drawings and realization of alternative power plants (gas, wind, solar, geothermal and biogas )
- Design and realization of fire protection systems
- Design of customer special solutions
- Emergency services 24/7
- Building automation
- Camera and security systems (licence from Slovak Ministry of Interior)





## PV power plants

- Preparation of project study, basic engineering, project documentation, landscaping, civil works and after service and administration of PV power plants
- Our last project was design and administration of PV project 14,3 MWp
- We cooperate with leading manufacturers in this field
- We cover the realisation of PV projects in EU and Ukraine

# References

- U.S.Steel Steam boiler K1 (realization, upgrade and service)
- Automation of Steam boiler and turbine in city heating plant(Panavesio Latvia)
- Level 2 automation upgrade for data export for CMS (St.Nicolaus Slovakia)
- Water cooling system for HRM automation (U.S.Steel Košice)
- O2 gas production system ASU 9 in U.S.Steel (servis – 10 years )
- Small water power plant automation 1MW (MVE Kostol'any nad Hornádom)
- Alcohol production automation (SLL Leopoldov a.s.)
- Automation of many technologies around Slovakia
- Automated robotic cell for briquettes of wood sawdust (Topol'čany)

# References

- PV power plants constructions in Slovakia and Hungary
- Optimization and control of PV power plants
- Long-term service of DCS and Microscada systems (U.S.Steel Košice)
- Automation of distribution materials and filtering (B6 Lučenec)
- Automation of process line for Bentonite (Romin Kamenica)
- Automation of process lines for cheese (TAMl a.s. Kežmarok)
- And many more applications

# Reference BARCOM PV plant and battery

- Installed power 660kWp , 1910 panels Q-Cells G8 – 345Wp
- Delivery 7 pcs inverters HUAWEI SUN2000 100KTL M3
- Delivery 14 pcs string-box for DC protection
- Delivery of battery storage 600kW/1000,8KWh ECOGI
- Installation of power in the form of a Rh cabinet through the switch
- Assembly of the dispatching control of the source and the protectors (AXA)
- Project documentation
- Engineering and administrative activity

# Reference BARCOM PV plant and battery



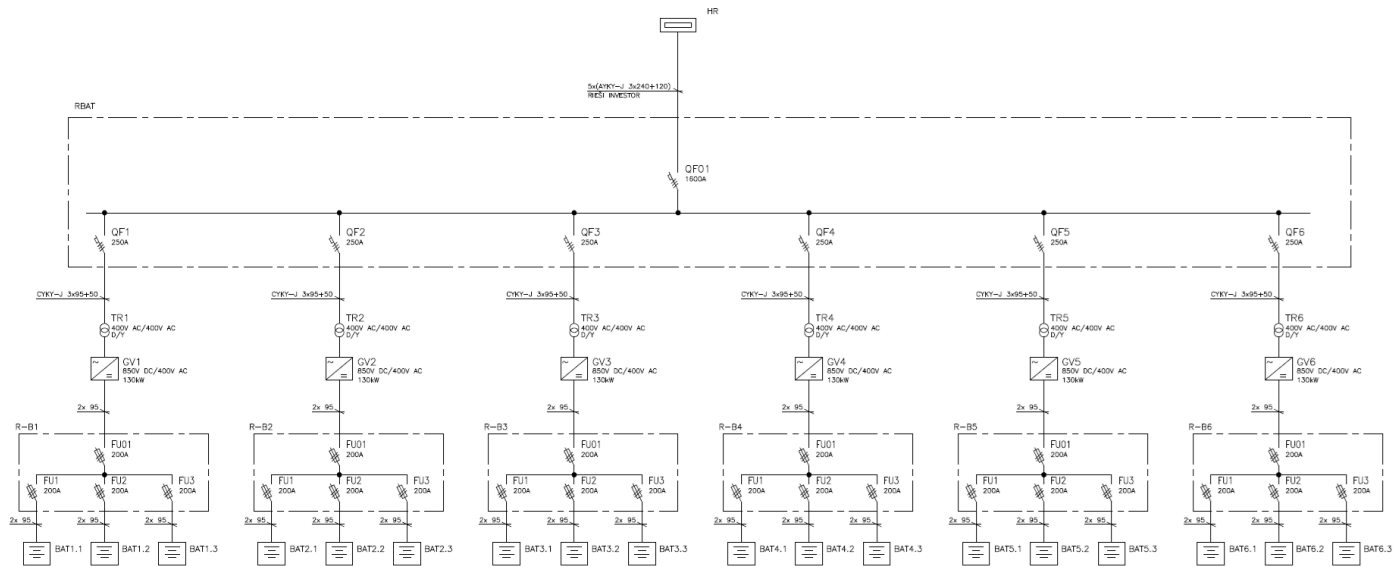
# Reference BARCOM PV plant and battery

- Huawei Sun2000 inverters strategically spaced after halls for optimization of cable routes
- In the first stage installed 6pcs and in the second 1pc (second stage was the reconstruction of the original 10 -year FVE)



# Reference BARCOM PV plant and battery

- ECOGI battery storage is tailor -made in the configuration of 18pcs manufactured switchboards of 21 LTO batteries, BMS module and central BMS switchboard with display
- Discharging and charging are provided by 6pcs inverter VONSCH made to measure, connected via separating transformers
- The performance output is through HR switchgear via AXA controlled by HRM
- Data collection and battery control ensures separate PLC
- Communication between devices is on the interface Modbus TCP on a separate network
- Communication to the superior system and visualization is on a separate network to increase security



# Reference BARCOM PV plant and battery

## ➤ Ecogi battery storage

High lifetime up to 35,000 cycles

Wide temperature range  $-50^{\circ}\text{C}$  to  $+65^{\circ}\text{C}$ .

The safest commercially available articles, non -flammable, non -explosive, without fluid

Easy maintenance - modularity, the ability to change modules even during operation

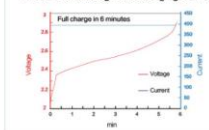


Fast charge  
/discharge

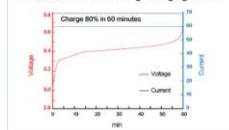


Wide  
temperature  
range

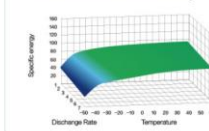
Nano LTO Batteng Fast Changing Curve



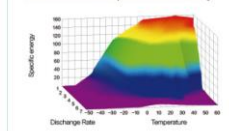
Other Lithium-ion Batteng Changing Curve



Performance of Nano LTO battery



Performance of Graphite Lithium battery



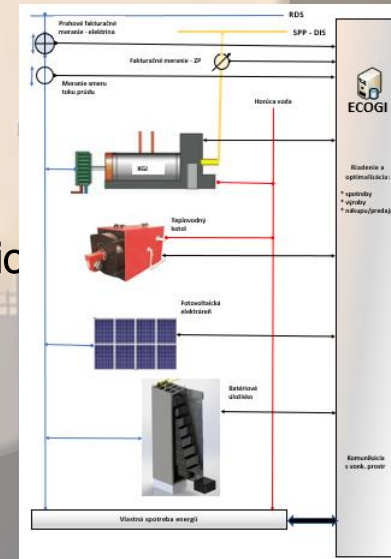
# Reference BARCOM PV plant and battery

## ➤ Battery storage ECOGI



# Reference BARCOM PV plant and battery

- Automatic loading of electricity prices from SPOT-U every 5 minutes to automate sales and buying energy
- Monitoring of battery storage and photovoltaic power plant (FVE)
- Battery storage control for the most cost -effective energy sales
- Optimization of charging from the network in sections below the limited level and discharge in sections above the limit set value
- Optimization of the use of fve surpluses by changing to another form of energy (heat, cold)
- Optimization of charging vehicle charging from FVE surpluses
- Fully configurable solution according to customer requirements
- Data input to superior systems via PostGRESQL
- Management and Communication with L1 and L3 ModbusCP -based device
- Possibility to extend the monitoring and analysis of gas consumption



# Partners

Our main partners for HW and specials solutions are ABB, Siemens, Wago and other .

Our employees are trainend by this companies for more effectiveness



# Certification and insurance

- Our company has special certified system for safety in work, fire safety and protective equipment(PPE) – covered by external company [www.boz.sk](http://www.boz.sk)
- Our company is now in copyright supervision for certificate ISO 9001 by TUV
- Our insurance is 1.000.000 EUR for damages to the customer

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