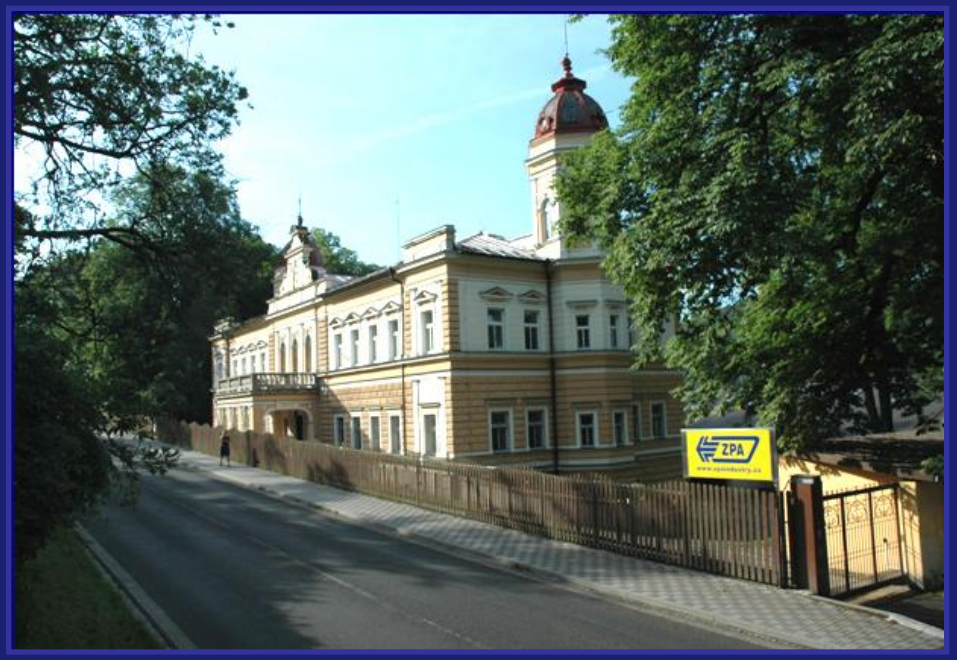
# ZPA Industry a.s.

- Introduction
- About ZPA Industry
- Reference



# About the Company

- Engineering company
- Headquarters in Prague, Czech Republic
- Certification - ISO 9001:2008
  - ČSN ISO/IEC 90003:2005
- 100 employees
- Offices and representatives worldwide

# Main Activities

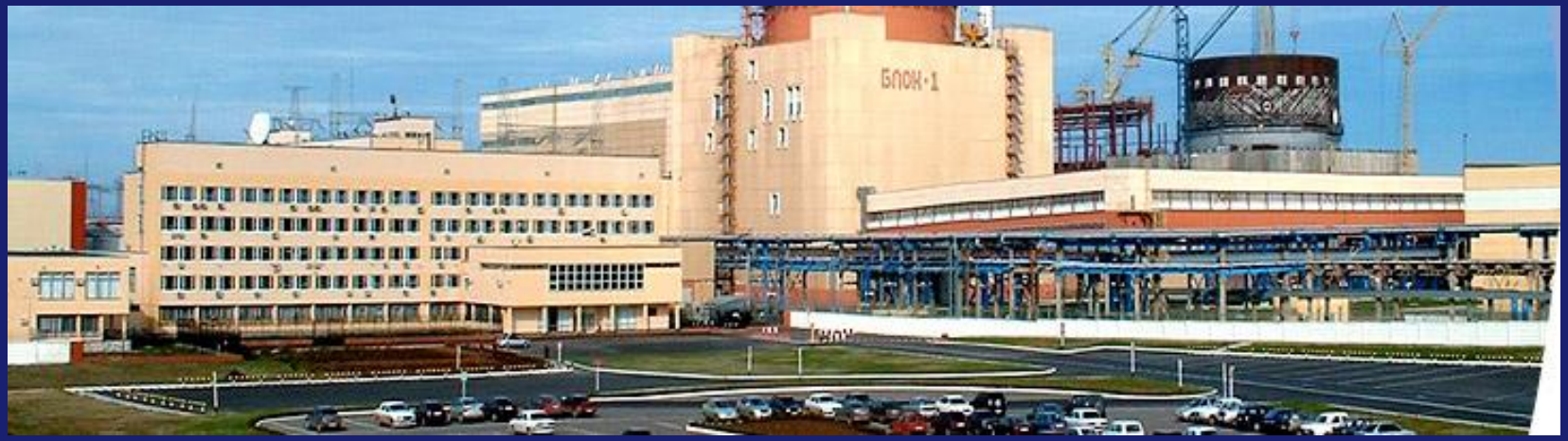
| Our Profession | Our Activity |
| --- | --- |
| Electrical Systems<br>HV&LV, UPS | >> Consulting<br>>> Feasibility Study<br>>> Basic Design<br>>> Detail Design<br>>> Software Design<br>>> Project Management<br>>> Procurement<br>>> Manufacturing/FAT<br>>> Erection<br>>> Commissioning/SAT<br>>> Training<br>>> Maintenance<br>>> Service |
| Field Instrumentation<br>Sensors, Valves<br>Servomotors | |
| Fire and GAS<br>Detection System<br>ESD Systems | |
| Control Systems<br>PLC, PAC, DCS, PESS | |
| HMI/SCADA<br>Historian, PCIMS/MES<br>Maintenance, Change Management | |
| Industrial Communications<br>Wire and FO, Wireless CCTV-<br>Ethernet RFI | |

# We offer a system that „provides“:

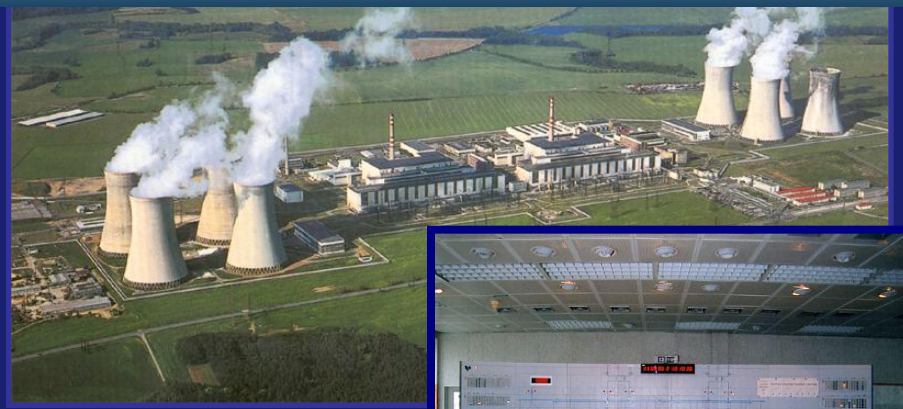
- Full control of LV, MV, HV switchyards (including communication via IEC61850, protections, etc.)
- Full control of auxiliaries (WT and WWT station, Water-pumping station, etc.)
- Optimization of process control
- Remote control
- Increased reliability of operation
- Minimizing of maintenance costs and downtime
- Maintenance of the system without shutdown
- Control room equipment
- Smoothing of  the management and control (life extension technology equipment)

# Our interest

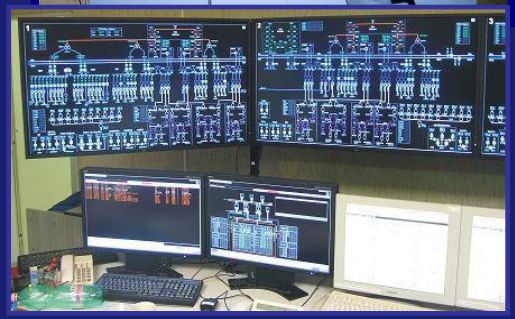
- ZPA Industry a.s. has the interest in reconstruction of obsolete systems and participate in new projects in the development of nuclear energy (Volgodonsk,Leningrad nuclear powerplant)



# Nuclear Power Plant Dukovany – Reconstruction



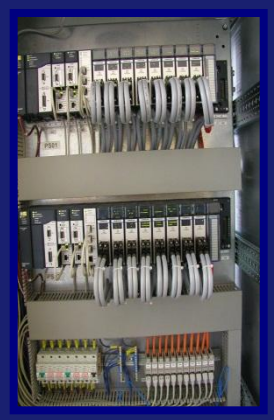




- modern processor redundant CS GE IP, including construction of new redundant optical communication lines
- complete modification central control room

**Control system**

- GE Fanuc Rx3i two redundant pairs, including 17 I/O units Rx3i, NiU block and Genius (1378 DI, 165 DO, 175 AI)
- CIMPLICITY visualization 07.05 (5000 points), par redundant server, 3 station operator
- Historization – Historian (4000 points for 1500 points of the exact time stamp of distinctive signals with 5ms)
- Optical redundant communication bus



**Scope of works and supplies**

The project, dismantling and electro and I&C, new control system including application software, common control center for 4 blocks,communication network

**Start / completion date :** 10/2008 - 10/2010

# Nuclear Power Plant Dukovany – Reconstruction

ZPA Industry a.s. has realized as the major subcontractor complete reconstruction of the electrical system, field instrumentation, control system and SCADA for 12 DGS (Diesel Generator Station)

- CS controls all DGS in all operating modes
- GE Fanuc Series 90-30 and CIMPLICITY HMI Plant Edition (SCADA system)
- compliance and IEC 880 for the development of software security systems for nuclear power

**Basic data**

CPU -120 Licenses Cimplicity HMI -14 screens - 330
analog. I/O - 2122 basic scan bus - 500ms
binary I/O - 14980 com. process stations - 72

**Commissioning**

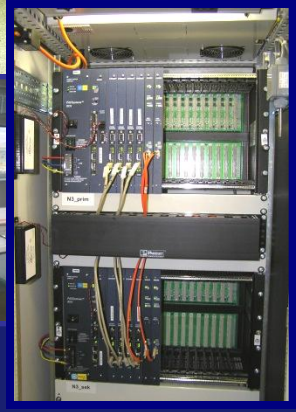
- **P**roject - 3 stages (each stage - 4 DGS – each DGS 25 days) 2000, 2001, 2002

# Power Plant Pocerady – Recovery CS GE Fanuc B3

- CS upgrade of unit with output 200MW
- shutdown block 15.8.2008
- trial operation started 8.11.2008
- complete handover 14.11.2008
- work on the part of I & C at shutdown block has taken only 2 months, after this time the block was again start up

**Control system**

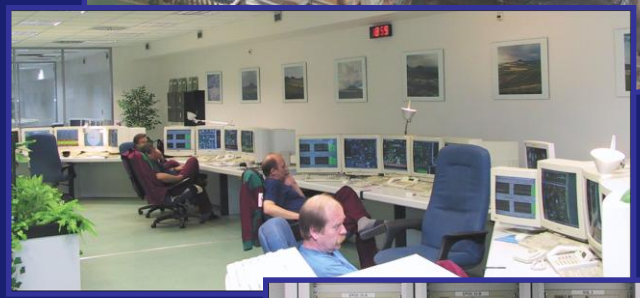
- Redundant Controllers GE Fanuc PAC Systems RX7i with mirroring memory
- CPU controllers have been replaced by NIU block
- Communications - Ethernet Redundant bus
- upgrade the SCADA CIMPLICITY HMI System
- new optical line for the bus Ethernet



**Scope of work**

- project documentation for part I & C
- delivery of the RS GE Fanuc PAC Systems RX7i and RX3i
- host application software, SCADA application software
- supply of switchboards
- delivery of fiber optic cabling and cable routes installation, start up

# Power Plant Pocerady – Control Room



- each of five blocks - a separate CS
- GE Fanuc Series 90-30 and 90-70
- CS of the block is divided into 43 functional units according to the technological operation of the PLC
- CS is applying to the management of automatic start-up and shutdown, control of technological variables, autonomous protection of technological units that have a redundant PLC
- CS allows shutdown block to a predefined state without operator intervention  for each block is 6800 input / output
- CIMPLICITY HMI project architecture is built on a network solution from a single console access to projects of individual block everything in full operation)
- simplification of maintenance and elevation the overall overview of the projects operated

# Power Plant Pocerady – Complete reconstruction

ZPA Industry as the main contractor has performed a Complete reconstruction of electrical systems, field instrumentation, control systems and SCADA system for all five blocks of 200 MW

**A project in basic data**

Cimplicity I/O points: 34000 points
Cimplicity Servers/Viewers: 12/44
switchboards to 6kV: 410 switchboards
HV switchboards: 130 switchboards
GE Fanuc Series 90-30/90-70: 252 / 8 systems

- after CS implementation failure rate of 78% decreased = significant increase in reliability

**Commissioning**

| | |
|---|---|
| Block No. 6 and 3 | 1993 |
| Block No.2 | 1995 |
| Block No.4 | 1996 (implementation within 3 months) |
| Block No.5 | 1998 |

# References

Afghanistan Albania Algeria Argentina Bangladesh Barma
Bosna and Herzegovina Brasil Bulgaria Cambodia Cuba
Czech Republic Denmark Egypt Finland Germany Hungary
China India Iran Iraq Korea Pakistan Peru Poland
Romania Russia Saudi Arabia Serbia Slovenia Syria Mexico

# References Power Generation CZ

| | | | |
|---|---|---|---|
| Pocerady | Reconstruction of BCOV GE IP | Dukovany | Control system DUS (complete reconstruction of control room of electrical equipment) |
| Pocerady | New procedure of bolier for reducing CO and NOx B2,3,5,6 | Dukovany | Optimalisation of switch-board ventilation of CS DG |
| Pocerady | Service and regular maintenance - holding a permanent ES | Dukovany | Adaptation of algorithms feed pumps DG |
| Dukovany | Optimalization of protection functions DG | Pocerady | Reconstruction of CS GE Fanuc B3 |
| Prunerov | Increasing the efficiency of boilers K3 and K6 in the EPRI | Pocerady | Direct speed operating CS Fanuc |
| Prunerov | Upgrade of visualization of Cimplicity HMI CS | Pocerady | Servomotor cabinets for B3,B5 |
| Pocerady | Data transfer from gas EPC control system | Pocerady | Replacement of I.level condensate pumps B5 |
| Pocerady | Control System GE Fanuc modifications | Pocerady | Control system upgrade GE Fanuc B4 |
| Pocerady | Replacement of pit condensate pumps | Pocerady | Fire-stopping barriers of coaler bridges EPC |
| Pocerady | IT security and plant-wide upgrade SCADA Cimplicity v.6.1, WINDOWS 2003 R2 | Pocerady | Edits of control system Fanuc Pocerady power plant for conn.of control system |
| Dukovany | Set-up of algorithm over revolution protections | Pocerady | Terminals connection of power plant TELEPOC and Units CS |
| Dukovany | Dosing pumps of rust-inhibitor DG No.1-12 | Dukovany | Exchange of eletrical equipment and ASCI of power plant DGS Dukovany - Technical support |
| Pocerady | Modernizing of common oil economy | Dukovany | Service and technical support |
| Pocerady | Technical support by setting of burning K2,K4 | Pocerady | Delivery and instalation of archiving server UPV |
| Pocerady | Set-up of control sys.-Exchange of gen.breaker | Pocerady | Reconstruction of regulation TG 200MW |
| Pocerady | Reconstr.of condensate pumps 2nd grade-unit 3-M&R | Pocerady | Exchange condensate pumps 2nd grade B4 |
| Pocerady | Repair of F&C system GE Fanuc | Dukovany | Inovation of bormeter 1. till 4. unit |
| Pocerady | Stabilization of operating of descuming-dedging | Pocerady | Boiler K5 startup racionalization |
| Dukovany | Dieselgenerators 12x3MW | Pocerady | Central Control Room |
| Dukovany | Unit No.1-3, 4 partially - digitalisation of docs. | Dukovany | Controlled Zone - BCS drives and Swagelok |
| Pocerady | Chemical Water Treatment Unit 5&6 | Pocerady | Boiler K6 startup racionalization |
| Pocerady | Condensate pumps II.level, B6 | Prunerov | Setting of Prosonic 867 |
| Pocerady | Central Control Room, B2-B6 | Pocerady | Coal Supply Machine reconstruction |
| Pocerady | Coal Defrosting Tunel revision | Prunerov | Slug Transport EPR1 exchange |

| | | | |
|---|---|---|---|
| Pocerady | Ventilator reconstruction | Pocerady | Remote Stoper Control, Dreging Station |
| Pocerady | Technology blocks overhaul, B3 | Prunerov | Sludge Bed USAK |
| Pocerady | Power Supply for Control Systems | Prunerov | Y2K tests of Control Systems |
| Pocerady | Coal Supply - CS tuning on Storing Mach.B | Pocerady | Control Room B6 to Control Room B5 |
| Pocerady | Overall Technology Control B6 adjustment | Pocerady | Electrical Generator Protections overhaul |
| Pocerady | Reconstruction of 6kV Control Circuits, B6 | Pocerady | Operator Station Modernisation UNIX-WinNT |
| Pocerady | Modernisation of coal supply | Prunerov | Water Treatment System |
| Pocerady | El.protections control&monitoring from BSIII. | Pocerady | Complete reconstruction of Unit 5 - 200MW |
| Prunerov | CWT - Raw and Filtered Water overhaul | Pocerady | Fuel Chainfeeder Control overhaul |
| Tisova | CWT - Neutralisation Station overhaul | Pocerady | Plate Caps Control System overhaul |
| Prunerov | Fly Ash Handling on EPRU I | Prunerov | Cooling Overvoltage Protection |
| Tisova | CWT - Waste Water Measurement | Pocerady | Excavation Station |
| Prunerov | Dust and Soot Collection on EPRU II | Pocerady | Conveyor Bridge ZPD-200 |
| Prunerov | Belt Transport of Coal Line A | Prunerov | Boiler K5 Denitrification |
| Tisova | Mixing Device ERICH II | Tisova | RGO Unit 6, MODIN regulation compensation |
| Tisova | RGO Unit 6, Pressure Sensors | Tisova | RGO Unit 6, Gas Burners |
| Tisova | RGO Unit 6, Equipment DANOX | Tisova | RGO Unit 6, Control System |
| Tisova | CWT - Cleaner | Tisova | Belt Trasport - Stabilizer |
| Pocerady | Stabilizer Production | Pocerady | Pumping Station of Cooling Water |
| Tusimice | Fly Ash Transport | Tisova | Electric Feeders Reconstruction II. |
| Prunerov | Coaling II.Phase | Prunerov | Desulphurization of Units 1-4 |
| Pocerady | Feeding Water Sampling | Pocerady | Inner Coaling |
| Prunerov | Desulphurization of Unit 5 | Tisova | Electric Feeders Reconstruction I. |
| Prunerov | Unit 3 Denitrifi cation | Tusimice | Gathering Machine |
| Pocerady | Chain Fuel Feeders | Pocerady | Continues Temperature Monitoring |

# References Power Generation - world

| | | | |
|---|---|---|---|
| CH,Shen Tou | Technical support and design | BIH,Ugljevik | Monitoring System on 300MW |
| CH, Shen Tou | Unit 4x200MW | CU,Nuevitas | Unit 3x125MW |
| EG,Kafr | Dawar Unit 110MW | VT, Da Hang | Da Hang Power Station |
| AR, Lujan | Unit 1x250MW, Lujan de Cuyo | Albania | Hydro Power Korca 1x3MW |
| Barma Hydro | Power Tha Fon 3x6MW | Cambodia | Hydro Power Chak Angre 3x6MW |
| UAE Abu  Dhabi | Dhabi 2x150MW | Syria Homs | 4x64MW |
| Peru Iguitos | 2x10MW | Peru Pucallpa | 2x10MW |
| Albania Fieri | 1x60MW | Brasil | Sotelca 2x125MW |
| Bulgaria | Sofia 1x30MW | Egypt | Beida Dyers 3x6MW |
| Hungary | Inota 2x125MW | Romania | Doicesti 2x100MW |
| Cuba | Nuevitas 3x64MW | Egypt | Deshna 2x4,5MW |
| Bulgaria | Plovdiv 1x30MW | Detmarovic | Units 4x200MW |
| Brasil | Port Alegre 3x8MW | Cuba | Regla 1x64MW |
| Cuba | Cuba Hector Pavone 1x33MW | Denmark | Amager 1x125MW |
| Romania | Ludus 5x100MW | Pakistan | Guddu 2x110MW |
| Algeria | Skikda 2x137MW | Argentina | Rio Turbio 2x110MW |
| Brasil | Igarape 1x125MW | Finland | Hanasaari 2x114MW |
| India | Madras 1x110MW | Bangladesh | Khulna 1x60MW |
| Korea | Unggi 2x50MW | Romania | Brazi 2x200MW |

# THANK YOU FOR YOUR ATTENTION.