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**EL-INSTA ENERGO Ltd.**

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acting Czech, Slovakia

Employs 15 workers

Focus Energy (transmission and production), industry and infrastructure  
Engineering (design, design protection, consultancy)

Area of low and medium voltage (36kV)

Compensation systems - active filters (EPCOS, ALSTOM, MERUS POWER)

Digital Protection (arc flash protection) (ARCTEQ, VAMP)

Transformers (dry, oil and instrument transformers ) (TESAR )

Switchgears (primary and secondary distribution) (SAREL)

Area of high and extra high voltage (36 to 400 kV)

The instrumental current and voltage transformers (ARTECHE)

Distribution transformers, furnace and rectifier (ETRA)

Disconnectors (COELME)

C.B.s and GIS substation ( ALSTOM)



**We provide:**

network power quality analysis, including result protocol and design solutions

design activities (compensation switchboards, LV and HV)

project design of protection - settings

relay parameterization / voltage regulators

commissioning (medium voltage switchgear, transformers, secondary industries)

business consulting

thermal measurement

supervisory activity

FAT (acceptance devices in factories)

**We do not provide:**

assembly work (only on request and through subcontractors)

## Power factor correction

- **TDK EPCOS** - supplier of LV components for reactive power compensation (Germany)
- **NOKIAN CAPACITOR ALSTOM** - supplier of components for MV and HV reactive power compensation (Finland)
- **Merus POWER** - compensation systems, active filters, STATCOM and SVC (Finland )



## Power factor correction

- **TDK EPCOS - Germany**
- components for reactive power compensation low voltage:
- (capacitors, contactors, controllers, analyzer, chokes, thyr. switches)
- partner since 1998
- stocks Hrušovany u Brna



10kV switchgear - with thyristor switching 400V - modular switchboard tuning 7%



## Power factor correction

### NOKIAN CAPACITORS - Finland (ALSTOM)

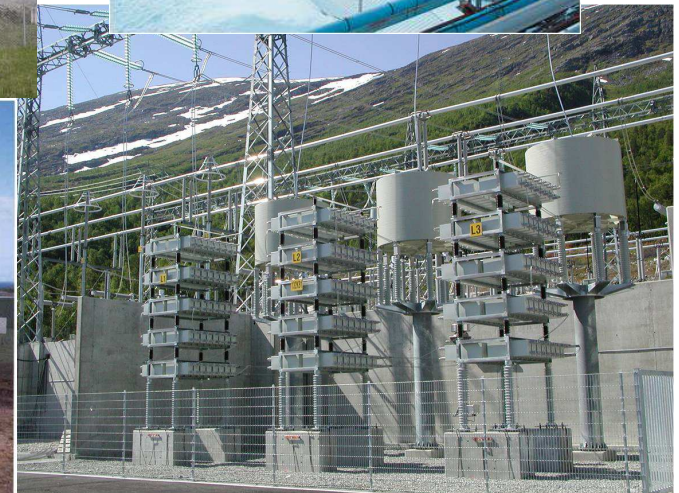
Cooperation since 2003

The comprehensive offer of compensation to 750kV

Shunt reactors - reactors, short circuit limiting reactors, high voltage capacitors, SVC, Serial compensation, filter compensating equipment, compensation for Railways decompensation reactors.

Production and design from one supplier (capacitors, reactors and systems)









SEPS - Slovakia, Bratislava substation STUPAVA at 400/220 / 110kV shunt reactors and short circuit limiting reactors Phase I 90Mvar 10kV 5000A + 3 x + II stage 90Mvar





ZSR - Trnava substation 27kV 50Hz 1-phase 2 x + 6MVAR balance protection



ZSR - Banska Bystrica substation 27kV 50Hz 1-phase 2 x + 6MVAR balance protection



## Reactive power compensation - references Nokian Capacitors

**CEPS** - short circuit limiting reactors 250 and 150A Týnec, Albrechtice, Krasikov, Reporyje, Kletna - consumption

Sokolnice 3 x 30Mvar - shunt reactors

Reporyje 3 x 15Mvar - shunt reactors

Chodov 3 x 15Mvar - compensatory chokes (in implementation)

**SEPS** - Stupava I. 15Mvar 6 x 3 x + CLR + 5000A Stupava II 6 x 15Mvar

Rimavská Saturday 6 x 15Mvar - compensatory chokes (in implementation)

**NAFTAN Novopolosk BY-26ks** 3f short circuit limiting reactors from 300 to 1000 6kV

**US STEEL SK** - short circuit limiting reactors 1000 - 3000

**NAFTAN Novopolosk B-2** pieces 3f short circuit limiting reactors 4000A 6kV

**AZOT Grodno BY** - 6 pieces duplex reactors 2000A 6kV

**ŽSR-SK** (Railways of the Slovak Republic) - Galanta, Zohor, Jablonica, Nove Mesto nad Vahom, Trnava, Banska Bystrica, Kozárovce, Hronská Dubrava, in implementation of Puchov, Komarno, Nové Zámky ) - FKZ filter compensating equipment

**PPA** - 1000A current limiting reactor 60Hz - Cuba

**CKD Praha** - 2 x 2200A starting reactors for 10MW machine - Russia

2 x 1000A limiting reactors - Lochochemie Lovosice

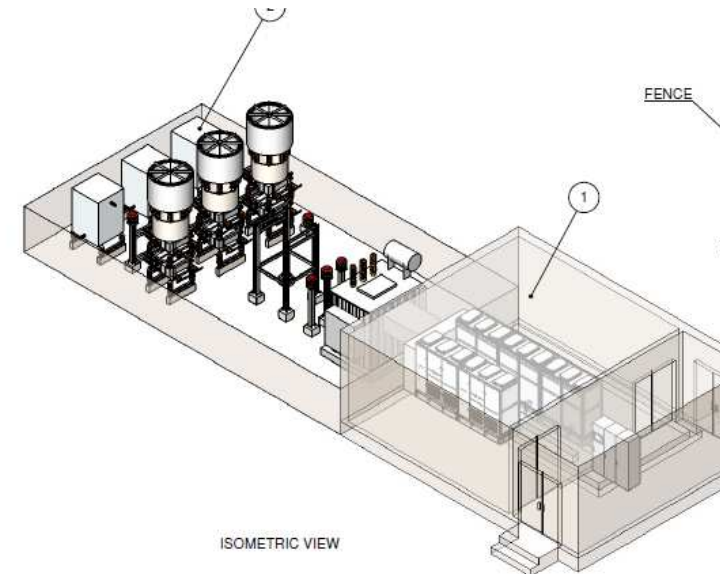
**SLOVALCO** - 2 x harmonic filters 110kV x 2 32Mvar

## Reactive power compensation

### Merus Power FINLAND (2010)

#### Reactive power compensation systems, semiconductor technology and passive filter

- STATCOM (SVC) systems, continuous compensation
- Active compensation network (harmonic filtering)
- HITECH solutions





## Digital Protection (Flash)

### ARCTEQ a VAMP (Finland)

- protection manufacturers
- Partner since 2006
- Arc protection, differential, generator, terminals, motor protection
- 15 years of experience (user friendly)
- Adjustment programs VAMP SET
- A group of professional staff (for CZ and SK)



## References – arc flash protection and digital Protection

- **SIEMENS - ČEZ** - Thermal Power Station Tušimice - 300 fields Arc Guard (2008 + 2009)
- **SIEMENS - Syria** - 5 x VAMP40
- **Zetor** - production of tractors - VAMP40 + 20 x 2 x 265 VAMP differential (40mV transformer)
- **ABB Brno** - supplies of measuring terminals VAMP 260
- **ENEL** - water power. Krpeľany 3 x Ts (10MW generator (2d + 1 g + 1 + 1c) a complete set of protections - TG1 and TG2 and TG3) + spare parts
- **ENEL** - Nováky - Thermal Power Plant - Flash 30 fields
- **DT Prostějov** - VAMP 20 x 40 + 20 x 96 VAMP
- **FVE Hrušovany** - 2 x 3 x VAMP135 + 96 VAMP (solar power plant)
- **FVE Markušovce and Mečedělovce** (4 x VAMP230)
- **Sugar factory Sered'** - 10MW generator (VAMP 210 and VAP265)
- **Unkovice FVE, FVE Polom, FVE VESELKA** - HRM VAMP 230 and VAMP96
- **Slovnaft Bratislava** - 10 x VAMP40, TRASPETROL fathoms
- **ZSR** - balancing protection - NUR36 (10 channels x 2 x 2 filter kit = 40 pcs)
- **VAMP** arc protection, ARTEQ
- **ČEZ Pruněřov CZ**- 300 fields, Lovochemie, Energetika Trinec (ARCTEQ)
- **ENEL** - Mochovce SK -500 EMO34 fields (the largest flash of realization within Vamp)
- **The biogas plant Stonava**, Kostrolná the Danube - VAMP 230
- **Slovalco** - 4 units protected by a filter compensating equipment

Transformers (dry, oil, instrument and high voltage switchgear (secondary and primary distribution)

**TESAR**

Power transformers to 20MVA / 36kV (dry / oil) - distribution, rectifier  
Measuring current and voltage transformers

**SAREL**

High-voltage switchgear 6 - 36 kV (primary and secondary distribution)  
( references CEZ, CEZ ENERGO, CKD, BEKAERT, DALKIA)



4.1 MVA

12,5 MVA

1





## Instrumental transformers (110 to 420 kV)

### ARTECHE - Spain

- Instrument current transformer (oil, SF6)
- Instrument voltage transformers (capacitive, oil, SF6)
- Combined instrument current and voltage transformers
- Detectors of high-voltage lines (sensART)
- Digital – optical solution
- CMI approved
- References in the Czech Republic, Slovak Republic  
(Transmission and distribution)





## Power transformers (110 to 420 kV)

### ETRA – Slovenia

- distribution Transformers
- furnace transformers
- rectifier transformers
- special transformers
- the performance of 500MVA and the voltage 420 kV

References in the Czech Republic, Slovak  
(Transmission and Distribution)

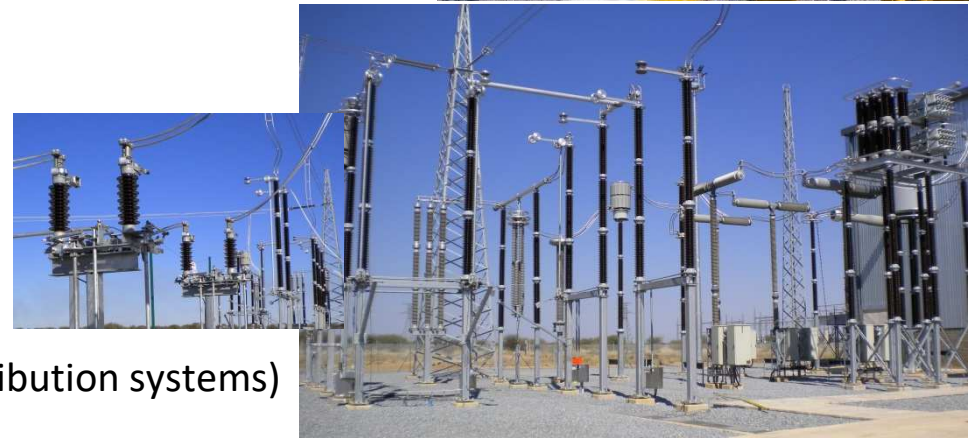




## Disconnectors (110 to 420 kV)

### COELME – Italy

- Disconnectors manufacturer :
- Pantograph (halfpantograph), central, V type,
- Rotary, vertical, horizontal
- Motor drives, with earthing blades
- to thousand amperes and up to 800kV
- References in the world (transmission and distribution systems)





## Circuit breakers and gas insulated switchgear ( GIS ) (110 to 420 kV)

### **ALSTOM**

- Gas Insulated Switchgear 110 to 420 kV
- Curcuit Breakers 110kV - 400kV

