



***Reference list of
selected projects realized
within 1998 - 2008***

ZAT a.s.
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Mission:

ZAT a.s. is a worldwide supplier of automation for industrial processes on the basis of both our own control system and other Manufacturers' systems.

Our main focus is to maximally adapt to the requirements of customers on the basis of a long-term knowledge of their needs.

We focus mainly on the branches with high demands for reliability and individual solutions, especially in the area of power generation, minerals mining and transportation.

We use our own control system and the system of other renowned manufacturers.

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Control & Information System for Power Generation Units

Delivery of Control System:

Accerra – Italy

TG1, P (MW): 120; controlled technology (turbine): extraction
Start of operation: 2004

ZAT PRIMIS, T + ST + PS

TG2, P (MW): 120; controlled technology (turbine): extraction
Start of operation: 2005

T + ST, SIMADYN + SIMATIC

Cerceda - Spain

TG, P (MW): 50; controlled technology (turbine): condensing
Start of operation: 2001

T + OCH, SIEMENS -
SIMADYN, SIMATIC

Dětmorovice

TG4, P (MW): 220; controlled technology (turbine): condensing
Start of operation: 1996

T + ST, reduced EHS,
SIEMENS

Steam feed pump, TN4

Start of operation: 1996

T, reduced EHS, SIEMENS

TG3, P (MW): 200; controlled technology (turbine): condensing

Steam feed pump, TN3

Unit 4, P (MW): 200

Start of operation: 1997

T + ST, red. EHS, SIEMENS
T, reduced EHS, SIEMENS
SIEMENS - TELEPERM XP

Unit 3, P (MW): 200

TG1, P (MW): 200; controlled technology (turbine): condensing

Steam feed pump, TN1

Start of operation: 1998

SIEMENS - TELEPERM XP
T + ST, red. EHS, SIEMENS
T, reduced EHS, SIEMENS

Unit 1, P (MW): 200

TG2, P (MW): 200; controlled technology (turbine): condensing

Steam feed pump, TN2

Start of operation: 1999

SIEMENS - TELEPERM XP
T + ST, red. EHS, SIEMENS
T, reduced EHS, SIEMENS

Unit 2, P (MW): 200

Start of operation: 2000

SIEMENS - TELEPERM XP

Dunamenti – Hungary

Combined cycle, Unit 1, P (MW): 60; controlled technology (turbine):
condensing back-pressure
Start of operation: 1998

SIEMENS, TELEPERM ME

Combined cycle, Unit 2, P (MW): 25; controlled technology (turbine):
condensing back-pressure
Start of operation: 1998

SIEMENS - TELEPERM ME

EL Sauz – Mexico

TG, P (MW): 150; controlled technology (turbine): condensing
Start of operation: 2003

SIMADYN

Felton - Cuba

Unit 1, P (MW): 250

Start of operation: 1998

ZAT-Plant Suite MP

Unit 2, P (MW): 250	Delivery of Control System:
TG1, TG2, P (MW): 2x250; controlled technology (turbine): condensing	ZAT-Plant Suite MP
Start of operation: 1999	ZAT PRIMIS, T + OCH + PS
Overhaul of fuel handling system, compressor station and firefighting water handling system	ZAT-Plant Suite MP
Start of operation: 2004 - 2005	
<u>Helsinki - Hanasaari B - Finland</u>	
Unit 1, P (MW): 113; controlled technology (turbine): back-pressure	T, SIMADYN
Unit 2, P (MW): 113; controlled technology (turbine): back-pressure	T, SIMADYN
Start of operation: 2000	
<u>Hermosillo - Mexico</u>	
TG, P (MW): 90	SIEMENS – SIMADYN
Start of operation: 2005	
<u>Chvaletice</u>	
TG3, P (MW): 220; controlled technology (turbine): condensing	ZAT PRIMIS, T
TN3, P (MW): 7.5; controlled technology (turbine): steam feed pump	ZAT PRIMIS, T
Start of operation: 1996	
TG4, P (MW): 200; controlled technology (turbine): condensing	ZAT PRIMIS, T
TN4, P (MW): 7.5; controlled technology (turbine): steam feed pump	ZAT PRIMIS, T
Start of operation: 1997	
TG2, P (MW): 200; controlled technology (turbine): condensing	ZAT PRIMIS, T
TN2, P (MW): 7.5; controlled technology (turbine): steam feed pump	ZAT PRIMIS, T
Start of operation: 1998	
<u>Kafr el Dawar - Egypt</u>	
Feed pump	ZAT-Plant Suite MP
Start of operation: 2001	
TG2, P (MW): 110;	PRIMIS + OP
Start of operation: 2006	
<u>Kakanj - Bosnia and Herzegovina</u>	
TG 5, P (MW): 110; controlled technology (turbine): extraction	T + PS + OCH, SIEMENS - SIMADYN
Start of operation: 2004, (2008-modification)	
<u>Katowice – Poland</u>	
TG, P (MW): 120; controlled technology (turbine): condensing	ZAT PRIMIS,T,OCH,PS,ST, OP
Start of operation: 1999	
<u>Khulna - Bangladesh</u>	
Unit 110 MW control system	ZAT-Plant Suite MP
Start of operation: 1999	
<u>Kolubara – Serbia</u>	
TG 5, P (MW): 110; controlled technology (turbine): condensing	T + ST + PS, SIMADYN
Start of operation: 2002	
TG and Electrical part	SIEMENS - TELEPERM XP
Start of operation: 2003	

	Delivery of Control System:
<u>Komořany</u> TG4, P (MW): 32; controlled technology (turbine): condensing Start of operation: 2000	ZAT PRIMIS, T + ST + OP
<u>La Puebla - Spain</u> TG, P (MW): 3,2; controlled technology (turbine): condensing Start of operation: 2001 - 2002	ZAT PRIMIS, T + ST + OP
<u>Ledvice</u> TG3, P (MW): 110; controlled technology (turbine): condensing Start of operation: 1999	ZAT PRIMIS, T + PS
TG2, P (MW): 110; controlled technology (turbine): condensing Start of operation: 2001	ZAT PRIMIS, T + PS
<u>Mangalore – India</u> TG, P (MW): 25; controlled technology (turbine): condensing Start of operation: 1998	ZAT PRIMIS
<u>Mělník I.</u> Overhaul of units 5 & 6 control systems Overhaul of water chemical treatment plant Start of operation: 1996	ZAT-Plant Suite MP ZAT-Plant Suite MP
Internal coal handling system Start of operation: 1997	ZAT-Plant Suite MP
Overhaul of units 1 & 2 control systems Start of operation: 1998	ZAT-Plant Suite MP
Overhaul of external and internal coal handling system Start of operation: 2000	ZAT-Plant Suite MP
Overhaul of boiler water feeding system of units 5 & 6 Start of operation: 2001	ZAT-Plant Suite MP
Extension of control system for reducing and cooling systems Monitoring of electrical protections, units 1 – 6 Start of operation: 2002	ZAT-Plant Suite MP ZAT-Plant Suite MP
Replacement of Z300, units 3 & 4 Hydraulic control of TG Start of operation: 2003	ZAT-Plant Suite MP ZAT-Plant Suite MP
Central control room of EMĚ I power plant Start of operation: 2004	ZAT-Plant Suite MP
Overhaul of metering vibration and and ZSB TG1-4 Supply of external data field Start of operation: 2006	ZAT-Plant Suite MP ZAT-Plant Suite MP

	Delivery of Control System:
<u>Mělník II., III.</u>	
TG9, TG10, P (MW): 110; controlled technology (turbine): extraction Start of operation: 1995 (2008-modification)	ZAT PRIMIS, T + PS
TG11, P (MW): 500; controlled technology (turbine): condensing Start of operation: 1996 (2006-modification)	ZAT PRIMIS – take-off
Steam feed pump TN11 Start of operation: 1996 (2006-modification)	ZAT PRIMIS – temperature stress
Overhaul of water chemical treatment plant III (WCTP) Start of operation: 1996	ZAT-Plant Suite MP
Overhaul and extension of unit B 11 - TU (DENOX – NOx reducing plant) Start of operation: 1996 (2007-modification, 2008-completion)	ZAT-Plant Suite MP
Overhaul of BÚK (condensate water treatment system) of 500 MW unit Start of operation: 1996 (2006-modification)	ZAT-Plant Suite MP
Overhaul of control room of WCTP TG11, P (MW): 500; controlled technology (turbine): extraction Start of operation: 2002	ZAT-Plant Suite MP T + PS + OP, PRIMIS
Overhaul of HMI of BÚK, DENOX TG11, P (MW): 500; controlled technology (turbine): condensing Steam feed pump TN11 Start of operation: 2006	ZAT-Plant Suite MP ZAT PRIMIS, T + OCHR ZAT PRIMIS, T + OCHR
Overhaul of control system TG 500MW and TBN 17,5MW TG11, P (MW): 500; controlled technology (turbine): condensing Modification of regulator TB 500MW a TB 17,5MW Modification of algorithm combustion control Start of operation: 2006	T + OCHR, PRIMIS ZAT-Plant Suite MP
Upgrade of control system DENOX B11 500MW Start of operation: 2007	ZAT-Plant Suite MP
<u>Mexiko Monterey</u>	
Resuscitation of control system turbine 93,5MW Start of operation: 2006	T + OCHR, PRIMIS
<u>Ocana – Spain</u>	
TG, P (MW): 3,2; controlled technology (turbine): condensing Start of operation: 2002	T + OCH + ST + OP, SCHNEIDER – TSX PREMIUM
<u>Power Station Opatovice</u>	
TG2, TG6, P (MW): 55; controlled technology (turbine): extraction TG2, P (MW): 55; controlled technology (turbine): condensing TG3, P (MW): 55; controlled technology (turbine): condensing Overhaul of boiler K3 - 230 t/h Central regulator of power output Units 3 & 4 Start of operation: 1995 (2005-modification)	ZAT PRIMIS T ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP

TG3 , P (MW): 55; controlled technology (turbine): extraction	Delivery of Control System:
TG4 , P (MW): 55; controlled technology (turbine): condensing	ZAT PRIMIS, T
	ZAT-Plant Suite MP
TG5 , P (MW): 55; controlled technology (turbine): back pressure	ZAT-Plant Suite MP
Boiler K5	ZAT-Plant Suite MP
Start of operation: 1996	
Transport of dry ash	ZAT-Plant Suite MP
Start of operation: Stage I: 1996, Stage II: 1997	
TG1 , P (MW): 55; controlled technology (turbine): condensing	ZAT PRIMIS, T
Start of operation: 1997	
Coal handling system	ZAT-Plant Suite MP
Start of operation: 1998	
Water chemical treatment plant	ZAT-Plant Suite MP
Start of operation: 1999	
Monitoring and information system	EasyMon
Automatization of circulating pumps	ZAT-2000 MP
Control system of water-gate at inflow	ZAT-2000 MP
Overhaul of boiler K1	ZAT-2000 MP
Overhaul of control system of water chemical treatment plant	ZAT-2000 MP
Control system of fly ash transport	ZAT-2000 MP
Overhaul of boiler K2	ZAT-2000 MP
Start of operation: 2002	
TG6 , P (MW): 60; controlled technology (turbine): extraction	ZAT PRIMIS 2000, ZAT-Plant Suite MP, T + ST
Stand-by power and heat supplies of Opatovice power plant	
- Boiler K13 – 30MW, Chrudim	
- Boiler K14 – 45MW, Farářství, Hradec Králové	ZAT-Plant Suite MP
- Boiler K15 – 45MW, ZVÚ, Hradec Králové	
- Boiler K16 – 45MW, ZVÚ, Hradec Králové	
TG3 , P (MW): 55; controlled technology (turbine): extraction	ZAT PRIMIS 2000, T
Start of operation: 2004, 2005	
Control system of “ZGOT” stacker/reclaimer	ZAT-Plant Suite MP
Control system of “KN 160” stacker/reclaimer	ZAT-Plant Suite MP
Start of operation: 2005	
<u>Oroszlány - Hungary</u>	
TG , P (MW): 55; controlled technology (turbine): condensing	ZAT PRIMIS 2000, T
Start of operation: 2004 (2008–modifications on Block diagram)	OCH, OP, ST
<u>Paskov</u>	
TG1 , P (MW): 20; controlled technology (turbine): condensing	SIEMENS - SIMADYN
Start of operation: 1998	
TG2 , P (MW): 20; controlled technology (turbine): condensing	SIEMENS - SIMADYN
Start of operation: 1999	
GO TG1 , P (MW): 20; controlled technology (turbine): condensing	SIEMENS - SIMADYN
Start of operation: 2006	

	Delivery of Control System:
<u>Prunéřov I</u>	
TG3 , P (MW): 110; controlled technology (turbine): condensing Start of operation: 1999	ZAT PRIMIS, T + PS + OP
TG4 , P (MW): 110; controlled technology (turbine): condensing Start of operation: 2000	ZAT PRIMIS, T + PS + OP
TG5 , P (MW): 110; controlled technology (turbine): condensing Start of operation: 2001	ZAT PRIMIS, T + PS + OP
TG6 , P (MW): 110; controlled technology (turbine): condensing Start of operation: 2006	T + PS + OP, PRIMIS
<u>Prunéřov II</u>	
TG3 , P (MW): 215; controlled technology (turbine): condensing Transport system of fly ash and gypsum Start of operation: 1996	ZAT PRIMIS ZAT-Plant Suite MP
TG21 , P (MW): 210; controlled technology (turbine): condensing Start of operation: 1998	ZAT PRIMIS
TG4 , P (MW): 110; controlled technology (turbine): condensing Start of operation: 1996	ZAT PRIMIS
TG25 , P (MW): 210; controlled technology (turbine): condensing Start of operation: 1997	ZAT PRIMIS
TG23 , P (MW): 210; controlled technology (turbine): condensing Start of operation: 1998	ZAT PRIMIS
TG24 , P (MW): 210; controlled technology (turbine): condensing Start of operation: 1997	ZAT PRIMIS
TG21 , P (MW): 210; controlled technology (turbine): condensing TG3 , P (MW): 110; controlled technology (turbine): condensing Start of operation: 1999	ZAT PRIMIS ZAT PRIMIS, T + PS + OP
<u>SEINAIOKI - Finland</u>	
Units 1 & 2 (EHS and exciting set) , P (MW): 113; controlled technology (turbine): back-pressure Start of operation: 2008	T, SIMADYN
Overhaul of technological parts EHS Start of operation: 2006	SIEMENS- SIMADYN,TEPELPERM
<u>Shen Tou - Chine</u>	
Steam feed pumps TN3 & TN4 Soot blowers and sprayers of boilers K3 & K4 Switchboards for transducers Start of operation: 2004	T + OCH + ST + OP, SIMADYN ZAT-Plant Suite MP ZAT-M, V
TG3 , P (MW): 500; controlled technology (turbine): condensing TG4 , P (MW): 500; controlled technology (turbine): condensing Start of operation: 2005	SIMADYN SIMADYN

	Delivery of Control System:
<u>Shenzhen – Chine</u> TG, P (MW): 6; controlled technology (turbine): condensing Start of operation: 1999	ZAT PRIMIS, T + PS
<u>ŠKODA POWER</u> Control system of balancer shaft tunnel Start of operation: 2006	ZAT-Plant Suite MP
<u>Talkha – Egypt</u> Chlorination station and pumps failure signalling Start of operation: 1996	ZAT-Plant Suite MP
TG1, P (MW): 210; controlled technology (turbine): condensing Start of operation: 1994	ZAT PRIMIS 86 + Analog control system
TG2, P (MW): 210; controlled technology (turbine): condensing Start of operation: 1993	ZAT PRIMIS 86 + Analog control system
SCADA of unit 2 – 210 MW Start of operation: 2000	ZAT-Plant Suite MP
SCADA of unit 1 – 210 MW Start of operation: 2001	ZAT-Plant Suite MP
<u>Liberec incinerator plant</u> TG, P (MW): 3; controlled technology (turbine): back-pressure Start of operation: 1998	ZAT PRIMIS, T + OCH + OP
<u>Tisová</u> TG6, P (MW): 110; controlled technology (turbine): condensing Start of operation: 2006	ZAT PRIMIS 2000, T
<u>Trutnov – Poříčí II.</u> Engineering of fluid boiler K2, P (MW): 55 Start of operation: 1998	SIEMENS – TELEPERM XP
Machine hall of TG3, P (MW): 55 Start of operation: 2005	SIEMENS – TELEPERM XP
<u>Třebovice</u> TG15, P (MW): 66; controlled technology (turbine): extraction Start of operation: 1998	T + OCH + ST ; SIEMENS - SIMATIC, SIMADYN
TG16, P (MW): 66; controlled technology (turbine): extraction Start of operation: 2005	ZAT PRIMIS 2000, T + OCH + ST
<u>Tušimice II.</u> TG22, P (MW): 200; controlled technology (turbine): condensing Steam feed pump TN22 TG24, P (MW): 200; controlled technology (turbine): condensing Steam feed pump TN24 Start of operation: 1995	ZAT PRIMIS ZAT PRIMIS ZAT PRIMIS ZAT PRIMIS

Technological (“KOCH” tube conveyer) and long-distance belt conveyer Ash deposition Start of operation: 1996	Delivery of Control System: ZAT-Plant Suite MP ZAT-Plant Suite MP
TG23, P (MW): 200; controlled technology (turbine): condensing Steam feed pump TN23 Start of operation: 1997	ZAT PRIMIS + revolution counter, DISIT ZAT PRIMIS + revolution counter, DISIT
Lomazice pumping station of raw water ETU II compressor station Start of operation: 2002	ZAT-2000 MP ZAT-2000 MP
Slag transport system and usage waste water Start of operation: 2004	ZAT-Plant Suite MP
<u>Tychy – Poland</u>	
TG, P (MW): 40; controlled technology (turbine): condensing Start of operation: 1999	ZAT PRIMIS, T + OCH + PS + ST + OP
<u>Ugljevik - Bosnia and Herzegovina</u>	
Measurement of unit self-consumption and installation of uninterruptible power supply Start of operation: 2001	GE FANUC
<u>Ulaanbaatar - Mongolia</u>	
Training centre Start of operation: 2003	ZAT-Plant Suite MP
TEC1 power plant – coal handling system Start of operation: 2003 - 2004	ZAT-Plant Suite MP
TEC1 power plant – coal handling system, Stage II Start of operation: 2005	ZAT-Plant Suite MP
Automatic coaling ELE č.4 Supply for training center – University technical Start of operation: 2006	ZAT-Plant Suite MP ZAT-Plant Suite MP
Techno-park on Mongolic Control ELE č. 4 Start of operation: 2007	ZAT-Plant Suite MP ZAT-Plant Suite MP
<u>Vřesová</u>	
Transport of fly ash Start of operation: 2005	GE FANUC, In Touch
<u>Zlín</u>	
TG2, P (MW): 30; controlled technology (turbine): extraction Start of operation: 2000	ZAT PRIMIS, T + OCH + ST

Exciting Sets

Nuclear Power Plants	Country	Generator	Sn (MVA)	lfn (A)	Ufn (V)	Nn (1/min)	AVR Type	Start of operation
<u>Dukovany</u>	CZ	DG12	3,5	250	97	600	DCP 1606	1995
	CZ	DG11	3,5	250	97	600	DCP 1606	1995
	CZ	DG9	3,5	250	97	600	DCP 1606	1995
	CZ	DG8	3,5	250	97	600	DCP 1606	1995
	CZ	DG10	3,5	250	97	600	DCP 1606	1996
	CZ	DG7	3,5	250	97	600	DCP 1606	1996
	CZ	DG1,4-6	3,5	3318	107	500	DCP 1610.05	2000
	CZ	DG2	3,5	3318	107	500	DCP 1610.05	2001
	CZ	DG3	3,5	318	107	500	DCP 1610.05	2002
<u>Jaslovské Bohunice V1</u>	SK	G111	7,5	366	98	3000	DCP 1608.16	1997
	SK	G111/112	7,5	366	98	3000	DCP 5103	1997
	SK	G11	259	2400	346	3000	DCP 1608.11	1998
	SK	G21	259	2400	346	3000	DCP 1608.11	1998
	SK	G211	7,5	366	98	3000	DCP 1608.16	1998
	SK	G211/221	7,5	366	98	3000	DCP 5103	1998
	SK	G12	259	2400	345	3000	DCP 1608.11	2000
	SK	G121	7,5	366	98	3000	DCP 1608.16	2000
	SK	G22	259	2400	346	3000	DCP 1608.11	2002
	SK	G121	7,5	366	98	3000	DCP 1608.16	2002
	SK	G1	259	2400	346	3000	DCP 1608.11	1999
	SK	G2	259	2400	345	3000	DCP 1608.11	2000
	SK	G3	259	2400	346	3000	DCP 1608.11	2001
	SK	G3	259	2400	346	3000	DCP 1608.11	2002
<u>Mochovce</u>	SK	TG22	259	2400	332	3000	DCD 1601	2003
	SK	TG12	259	2400	332	3000	DCD 1602	2004
	SK	TG21	259	2400	346	3000	A50-AC.2D	2004
	SK	TG11	259	2400	346	3000	A50-AC.2D	under realization
	SK	TG12	259	2400	346	3000	A50-AC.2D	2005
	SK	TG11	259	2400	346	3000	A50-AC.2D	2006
	SK	TG22	259	2400	346	3000	A50-AC.2D	2006
<u>Temelín</u>	CZ	TG1	1111	7120	505	3000	DCP-AAP.AD	2004
	CZ	TG2	1111	7120	505	3000	DCP-AAP.AD	2005
	CZ	DG1-8	7,9	280	145	600	DCP-SAN.2D	under realization
	CZ	DG1-8	7,9	280	145	600	DCP-SAN.2D	2006

Thermal Power Plants	Country	Generator	Sn (MVA)	lfn (A)	Ufn (V)	Nn (1/min)	AVR Type	Start of operation
<u>Abou Kourkas</u>	EG	G1	7,5	528	60	1500	DCP 5101	1997
<u>Acerra</u>	IT	TG1	141,177	1038	298	3000	MBS 120	2003
<u>Amager</u>	DK	G1	100	1584	159	3000	A50-SB.2C	2007
<u>Atherinolakkos</u>	GR	G3	62,5	946	240	3000	A50-SA.2C	2006
	GR	G4	62,5	946	240	3000	A50-SB.2C	2007
<u>Bistrica</u>	AL	G1,G2,G3	9,38				MBS 625M	2003
<u>Bohumín</u>	CZ	G1	6,25	469	50	1500	MBS 110	2000
<u>Budapest</u>	HU	G1	31,25	660	164	3000	DCP 1610.03	2000
<u>Cadiz</u>	ES	G1	3,51	417	35	1500	DCP 5101	1996
<u>Cerceda</u>	ES	G1	55,77	527	227	3000	MBS	1999
<u>Dětmarovice</u>	CZ	G1	235	2300	325	3000	DCP 1608.12	1998
	CZ	G2	235	2300	325	3000	DCP 1608.12	1999
	CZ	G4	235	2300	325	3000	DCP 1608.12	2001
	CZ	G3	235	2300	325	3000	DCP 1608.12	2002
<u>Dunamenti</u>	HU	G1	35	507	197	3000	DCP 1607.15	1997
	HU	G2	80	670	273	3000	DCP 1607.15	1997
<u>Energzet</u>	CZ		15	394	154	3000	DCP 5301	1998
<u>Enquri</u>	GE	G1,G2,G3,G4	260				DCP1610	2005
<u>Felton</u>	CU	G1,G2	294,12	2880	264	3600	DCP 1608.14	1999
<u>Gardabani</u>	GE	G10	376	3500	340	3000	DCP 1609.11	1996
<u>Hamawdia</u>	EG	G1	20	772	66	1500	DCP 5101	1997
<u>Hazira</u>	IN	G1	51,87	779	209	3000	DCP 1101	1995
<u>Hodonín</u>	CZ	G3	62,5	605	328	3000	RBA 1613	1995
<u>Chittagong</u>	BD	TG1	75	1085	260	3000	DCP-SA.2D	2004
<u>Chvaletice</u>	CZ	G3	235	2300	325	3000	DCP 1608.12	1996
	CZ	G4	235	2300	325	3000	DCP 1608.12	1997
	CZ	G2	235	2300	325	3000	DCP 1608.12	1998
	CZ	G1	235	2300	325	3000	A50-A refurb	2007
<u>Iranshahr</u>	IR	TG4	80	705	290	3000	DCP-AA.AD	2004

Thermal Power Plants	Country	Generator	Sn (MVA)	I _{fn} (A)	U _{fn} (V)	Nn (1/min)	AVR Type	Start of operation
<u>Jeddah</u>	SA	G1	73	486	250	3600	MBS-S6.2C	2004
<u>Kafr el Dawar</u>	EG	TG3	137,5	1335	348	3000	MBS 110	2002
<u>Kaohsiung</u>	TW	G1	36,7	548	231	3600	DCP 1102.11	1997
<u>Karviná</u>	CZ	G1	50	753	198	3000	DCP 1102.11	1997
<u>Katowice</u>	PL	G1	169,37	955	316	3000	DCP 1607.15	1999
<u>Khulna</u>	BD	TG1	137,5	1325	346	3000	DCP-SB.2D	2005
<u>Kladno</u>	CZ	G1	8,62	458	49	1500	DCP 5102	1998
	CZ	G2	40	685	188	3000	MBS 110	1999
<u>Komořany</u>	CZ	G1	42,5	582	254	3000	DCP 1102.11	1996
<u>Kralupy</u>	CZ	TG2	41,25	672	174	3000	A50-S7.2C	2005
<u>Ledvice</u>	CZ	G2	137,5	1200	305	3000	DCP 1501	1995
	CZ	G24	137,5	1200	305	3000	DCP 1608.12	1997
	CZ	G1/G2/G3	137,5	1200	305	3000	MBS 110	2001
	CZ	B3	137,5	1320	350	3000	A50-A refurb	2006
	CZ	B2	137,5	1320	350	3000	A50-A refurb	2007
<u>Litvínov</u>	CZ	G1	35	706	186	3000	DCP 1607.11	1997
<u>Malešice</u>	CZ	G3,G4	68,75	650	280	3000	DCP 5102	1998
<u>Melfi</u>	IT	G1	11	640	37	1500	DCP 5103.11	1997
<u>Mělník</u>	CZ	B9/B10	137	1390	360	3000	A50-synchro.	2006
<u>Mělník I.</u>	CZ	G1	4,2	187	166	3000	DCP 1607.13	1996
	CZ	G1,G2	62,5	643	305	3000	MBS 110	1999
	CZ	G1,2	62,5	643	305	3000	MBS 110	2000
<u>Mělník II.</u>	CZ	B9	137	1390	360	3000	A50-SA.AC	2006
	CZ	B9/B10	137	1390	360	3000	A50.D1.1C	2006
<u>Nová Hut' Ostrava</u>	CZ	G1	31,25	650	167	3000	RBA 1613.1	1995
<u>Olomouc</u>	CZ	G1	52	775	208	3000	DCP 5102	1998
<u>Opatovice</u>	CZ	G1-G6	62,5	625	280	3000	DCP 5301	1997
	CZ	TG5	71,25	765	373	3000	A50-S7.2C	2006
	CZ	TG2	71,25	765	373	3000	A50-S7.2C	2007
<u>Otrokovice</u>	CZ	TG1	31,25	630	150	3000	A50-S7.2C	2005
<u>Parry</u>	IN	G1	37,5	533	210	3000	DCP 5101	1996
<u>Paskov</u>	CZ	TG1,TG2	25,375	531	103	1500	MBS 110	2002

Thermal Power Plants	Country	Generator	Sn (MVA)	lfn (A)	Ufn (V)	Nn (1/min)	AVR Type	Start of operation
<u>Plzeň</u>	CZ	G1	68,75	867	213	3000	DCP 5103	1997
	CZ	G3	80	726	338	3000	DCP 1607.12	1998
<u>Počerady</u>	CZ	G4	235	2200	316	3000	RBA 1612.11	1995
	CZ	G5	235	2200	316	3000	DCP 1608.12	1998
	CZ	G6	235	2200	316	3000	DCP 1608.12	1999
	CZ	G2	235	2420	350	3000	A50-A refurb	2006
	CZ	G3	235	2420	350	3000	A50-A refurb	2006
	CZ	G4	235	2420	350	3000	A50-A refurb	2006
<u>Pruněfov II.</u>	CZ	TG22	253	3090	330	3000	DCP 1605	1995
	CZ	TG24	253	2790	330	3000	DCP 1608.11	1996
	CZ	TG25	253	2790	330	3000	DCP 1608.11	1997
	CZ	TG23	253	2790	330	3000	DCP 1608.11	1998
	CZ	TG21	253	2790	330	3000	DCP 1608.11	1999
<u>Přerov</u>	CZ	G1	51,25	576	286	3000	RBA 1613	1995
	CZ	G1	28,95	695	187	3000	MBS 110	2000
<u>Rajashree</u>	IN	G1	25	538	184	3000	RBA 5101.1	1995
<u>Riga</u>	LV	G1	187,5	1013	380	3000	A50-SA.2C	2007
<u>Russe</u>	BG	G3	137,5	1188	350	3000	DCP 1301	1995
	BG	G1,2	40	685	189	3000	DCP 5303	1997
	BG	G4	137,5	1150	296	3000	A50-D1.2P	2007
<u>Seinajoki</u>	FI	TG1	140	1154	347	3000	A50-SA.2C	under realization
	FI	TG1	140	1154	347	3000	A50-SA.2C	2006
<u>Shen Tou</u>	CN	TG3,TG4	588,235	3677	447	3000	DCP 1611	2003
<u>Skikda</u>	DZ	G1	171,25	1492	508	3000	DCP 1609.12	1999
	DZ	G2	171,25	1492	508	3000	DCP 1610.02	2001
<u>Slovnaft</u>	SK	G1	40	555	250	3000	RBA 1613	1995
<u>Strakonice</u>	CZ	G1	10	309	180	3000	RBA 5601	1996
	CZ	G2	25,37	493	215	3000	DCP 1609.13	1999
<u>Sugar Cane</u>	IR	G1,G2	6	427	63	1500	DCP 5103	1998
	IR	G3,G4	6	427	63	1500	MBS	1999
	IR	G5-G10	6	427	63	1500	MBS 110	2000
	IR	G11-G14	6	427	63	1500	MBS 110	2001
<u>Svanemolle</u>	DK	G1	31,25	384	227	3000	A50-S6.1C	2007
<u>Sevo</u>	FI							2006
<u>Škoda ELU III</u>	CZ	G1	44	550	272	3000	DCP 1603	1995
<u>ELU 3 Plzeň</u>	CZ	TG8	35	740	201	3000	A50-B1.2C	2006

Thermal Power Plants	Country	Generator	Sn (MVA)	lfn (A)	Ufn (V)	Nn (1/min)	AVR Type	Start of operation
<u>Talkha</u>	EG	TG1	277	2706	370	3000	A50-AC.2D	under realization
<u>Tábor</u>	CZ	G1	10,9	868	41	1500	DCP 5103	1998
<u>Tisová</u>	CZ	TG5	16	439	158	3000	MBS-S6.2C	2005
	CZ	TG6	140	1190	310	3000	A50-SA.2C	2005
<u>Trmice</u>	CZ	G1,G2	25	538	182	3000	DCP 1607.14	1996
<u>Třebovice</u>	CZ	G1	90,03	774	312	3000	DCP 1102.11	1998
	CZ	G16	90	744	312	3000	A50-B1.2C	2004
<u>Tychy</u>	PL	G1	50	568	277	3000	DCP 5102	1998
<u>Újpest</u>	HU	G1	46,36	542	261	3000	MBS 120	2000
<u>Velká Bíteš</u>	CZ	G1	2	169	67	3000	MBS 110	2000
<u>Vitkovice</u>	CZ	TG7	20	487	147	3000	MBS 616	2002
	CZ	G1,G2	68,75	235	81	3000	MBS 120	2002
	CZ	TG3,TG4	68,75	235	81	3000	MBS 120	2003
<u>Zlín</u>	CZ	G1	31,25	680	175	3000	DCP 1604	1995
	CZ	G2	41,25	893	87	1500	MBS 120	2000
<u>Zvolen</u>	SK	G1	11,25	892	42	1500	DCP 5101	1996

Hydroelectric Power Plants	Country	Generator	Sn (MVA)	lfn (A)	Ufn (V)	Nn (1/min)	AVR Type	Start of operation
<u>Awash II.</u>	ET	G1,G2	20	570	135	300	DCP 1609.11	1999
<u>Awash III.</u>	ET	G1,G2	20	570	135	300	DCP 1609.11	1999
<u>Baqlihar</u>	IN	TG1,2,3	168	981	463	187,5	DCP 1610.02	2003
<u>Curumuy</u>	PE	G1,G2	7,5	358	84	450	DCP 1607.11	1996
<u>Enguri</u>	GE	G3	306	2177	276	250	DCP-SC.2D	2004
	GE	G1	306	2177	276	250	DCP-SC.2D	2005
	GE	G2	306	2177	276	250	DCP-SC.2D	2005
	GE						DCP-SC.2D	2006
<u>Kadaň</u>	CZ	G1	1,7	163	139	166,7	DCP 5603	1998
<u>Karanjawan</u>	IN	G1	3,75	82	221	375	RBA 5601.11	1996
<u>Kroměříž</u>	CZ	G1	1.125	170	115	214	A50-S5.1C	2006
	CZ	G2	1.125	170	115	214	A50-S5.1C	2006
	CZ	G3	1.25	305	125	166	A50-S5.1C	2006
<u>Kundah</u>	IN	G1	33,3	577	239	500	DCP 1607.12	1996

Hydroelectric Power Plants	Country	Generator	Sn (MVA)	lfn (A)	Ufn (V)	Nn (1/min)	AVR Type	Start of operation
<u>Libčice</u>	CZ	G1,G2	2,76	273	43	750	DCP 5101	1997
<u>Lylianovo</u>	BG	G1	11,8	330	117	428	A50-S6.1C	2004
	BG	G1	11,8	330	117	428	A50-S6.1C	2005
<u>Orlík</u>	CZ	TG1,TG2	100	830	240	187,5	MBS	1999
	CZ	TG3,TG4	100	830	240	187,5	MBS 110	1999
<u>Popina Laka</u>	BG	G2	12,3	360	120	600	DCP 5101	2002
	BG	G2	12,3	360	120	600	A50-S6.1C	2004
	BG	G1	12,3	360	120	600	A50-S6.1C	2005
<u>Ružín II</u>	SK	G1	2,25	182	135	250	MBS 616	2002
<u>Sandanski</u>	BG	G2	8,9	390	115	375	A50-S6.1C	2004
	BG	G1	8,9	400	140	375	A50-S6.1C	2005
<u>Sathanur Dam</u>	IN	G1	8,3	275	154	333,3	RBA 5601	1995
<u>Slapy</u>	CZ	G1,2,3	63	844	188	230,8	DCP 1610.03	2000
	CZ	PG1,2,3	1,25	265	90	230,8	MBS 110	2000
<u>Solina</u>	PL	G1,2	52	1150	190	136,5	DCP 1610.04	2000
<u>Spálov</u>	CZ	G1,G2	1,5	206	52	600	DCP 5603	1998
<u>Střekov</u>	CZ	TG1,2,3	8,7	410	230	375	MBS 616	2003
	CZ							2006
<u>Sultartangi</u>	IS	G1,G2	70	1049	243	136,7	DCP 1607.15	1999
<u>Tis Abbay</u>	ET	G1,2,3	4,8	315	105	375	MBS 616	2000
<u>Tkibuli</u>	GE	G1	25	506	160	600	DCP 1610.03	1999
<u>Vír</u>	CZ	G1	7,5	436	92	500	MBS 110	2000
<u>Vrané</u>	CZ	TG2	10,7	296	204	150	A50-D0.1C	2006
<u>Vranov</u>	CZ	G1	7	360	70	300	MBS 110	2000
	CZ	G2	7	414	72	300	MBS 110	2001
	CZ	G1	7	414	72	300	MBS 110	2003
<u>Žilina</u>	SK	TG3	31	660	156	3000	A50-S7.1C	2005
	SK	TG3	31	660	156	3000	A50-S7.1C	2006
<u>Znojmo</u>	CZ	G1,2	0,75	166	54	500	MBS 110	2000

<u>Transfer</u>	Country	Generator	Sn (MVA)	I _{fn} (A)	U _{fn} (V)	Nn (1/min)	AVR Type	Start of operation
<u>Sandanski</u>	BG	G2	8,9	390	115	375	A50-S6.1C	2004
	BG	G1	8,9	400	140	375	A50-S6.1C	2005
<u>Short-circuit testing station</u>	Country	Generator	Sn (MVA)	I _{fn} (A)	U _{fn} (V)	Nn (1/min)	AVR Type	Start of operation
<u>Ormazabal</u>	E	G1	N/A (SCG)	1780	115	3000	A50-SD.1D	under realization

Control and Information Systems for Nuclear Power Plants

ZAT a.s. has developed and delivered electronic equipment for control of regulating units of nuclear reactors, VVER type since 1988.

Under realization of „Overhaul of I&C systems for nuclear power plants“ ZAT a.s. performs a substitution of checking and control systems of M1 module (RRCS – control of HRK drives and SGPS control – steam generator protection system) and M2 module (IN-CORE system of control and PCS = computerized information system).

Delivery of Control System:

Jaslovské Bohunice Nuclear Power Plant - Slovakia

Information systems for blocks 3. and 4.

Supply of solution SCADA for information systems of Units 3 and 4

RVLIS – System of in-core metering

Start of operation: 2005 - 2008

ZAT-Plant Suite MP
ZAT-Plant Suite MP
PRIMIS

Dukovany Nuclear Power Plant

Organizer of output control of Units B1-B4 (OVR)

Start of operation: Stage I - 2001, Stage II - 2002

ZAT-Plant Suite MP

Unit 3 start-up and start of trial run:

M1 module (a part): SGPS – steam generator protection system

RRCS – control of HRK drives

M2 module: PCS – computerized information system

IN-CORE – system of in-core protection

PAMS – system of H₂-EDU monitoring

Start of operation: Unit 3 - 2005

Unit 1 - 2007

Unit 2 - 2008

Unit 4 - under realization

ZAT-Plant Suite MP
ZAT PRIMIS
ZAT-Plant Suite MP
ZAT-Plant Suite MP

Resumption SKŘ M3, 4, 5

Start of operation: 2009 -2015, under realization

Khmelnitski Nuclear Power Plant - Ukraine

Unit 1: Measuring and diagnostic system for automated tests performance of control mechanisms of nuclear reactor after shut-down or after revisions

Start of operation: 1996 – 97

Unit 1 - Control system of group and individual control for regulating units (rods) of VVER1000 nuclear reactor

Start of operation: 1998

ZAT PRIMIS

Unit 2 - Control system of group and individual control for regulating units (rods) of VVER1000 nuclear reactor

Start of operation: 2004

ZAT PRIMIS

South Ukraine Nuclear Power Plant - Ukraine

Unit 1 - Control system of group and individual control for regulating units (rods) of VVER1000 nuclear reactor

Start of operation: 1996

ZAT PRIMIS

Unit 1 - Measuring and diagnostic system for automated tests performance of control mechanisms of nuclear reactor after shut-down or after revisions

Start of operation: 1996 – 97

	Delivery of Control System:
<u>Unit 2 - Control system of group and individual control for regulating units (rods) of VVER1000 nuclear reactor</u> Start of operation: 1997	ZAT PRIMIS
<u>Unit 2 - Control system of group and individual control for regulating units (rods) of VVER1000 nuclear reactor</u> Start of operation: 2004	ZAT PRIMIS
<u>Unit 3 - Control system of group and individual control for regulating units (rods) of VVER1000 nuclear reactor</u> Start of operation: 2005	ZAT PRIMIS
<u>Mochovce Nuclear Power Plant - Slovakia</u> Communication terminal between information system of MADAM-S unit and diagnostics systems - KUS, SUS and FAMOS Start of operation: 1998	Windows NT(server)
<u>Rovno Nuclear Power Plant – Ukraine</u>	
<u>Unit 4 - Control system of group and individual control for regulating units (rods) of VVER1000 nuclear reactor</u> Start of operation: 2004	ZAT PRIMIS
<u>Unit 4 - Measuring and diagnostic system for automated tests performance of control mechanisms of nuclear reactor after shut-down or after revisions</u> Start of operation: 1996 – 97	ENERGY and ŠEM
<u>Temelín Nuclear Power Plant</u>	
Control system for testing of 1000 MW turbine operation for turbine manufacturer – Škoda Turbíny, Plzeň, s. r. o. Start of operation: 1997	ProConT
Force control of linear step drives of VVER1000 reactor of Units B1 and B2	ZAT PRIMIS
Acquisition, archiving and statistical evaluation of data from secondary circuit Start of operation: 2002	Windows NT, Advantech
Diagnostic of 1000 MW turbo-generator Start of operation: 2004	Windows NT
Auxiliary plants – Control system of bituminous plant Start of operation: 2004	ZAT-Plant Suite MP
Digitalization of TG1 exciting set Start of operation: 2004	ZAT PRIMIS
Auxiliary plants - Control system of gas-fired boiler room Start of operation: Stage I - 2004, Stage II - 2005, Stage III - 2006	ZAT-Plant Suite MP
Digitalization of TG2 exciting set Start of operation: 2005	ZAT PRIMIS
Diagnostics system of inactive zone Start of operation: 2005	PRIMIS

Replacement of force control panels of Units 1 & 2 Start of operation: 2005	Delivery of Control System: ZAT PRIMIS
Upgrade ASPPD SO JETE Start of operation: 2006	PRIMIS
<u>Zaporozhe Nuclear Power Plant - Ukraine</u> <u>Unit 3 - Control system of group and individual control for regulating units (rods) of VVER1000 nuclear reactor</u> Start of operation: 2002	ZAT PRIMIS
<u>Unit 4 - Control system of group and individual control for regulating units (rods) of VVER1000 nuclear reactor</u> Start of operation: 2003	ZAT PRIMIS
<u>Unit 3 – Training simulator</u> Start of operation: 2004	PRIMIS
<u>Unit 5 - Control system of group and individual control for regulating units (rods) of VVER1000 nuclear reactor</u> Start of operation: 2006	ZAT PRIMIS
<u>ČVUT, FJFI Prague (Czech Technical University, Faculty of Nuclear Sciences and Physical Engineering, Prague)</u> Information system of school training reactor VR-1 incl. web services Start of operation: 2002	ZAT-Plant Suite MP

Control Systems for Transformer Stations and High and Very High Voltage Electric Substations

Delivery of Control System:

Felton Power Plant - Cuba

Control system for 6 kV, 110 kV, and 220 kV electric substations

Start of operation: 1999

ZAT-Plant Suite MP

Foxconn Pardubice

Control system for 22/6 kV electric substations

Start of operation: 2001

ZAT-Plant Suite MP

Lovochemie Lovosice

Control and information system for 6 kV R11 and R19 electric substations

Start of operation: 1998

ZAT-Plant Suite MP

Scanning of transformer temperature signals

Start of operation: 2002

ZAT-2000 MP

Overhaul of TG5 and TG6 electric substation

Start of operation: 2005

ZAT-Plant Suite MP

Overhaul of Electric Substation 110 kV

Start of operation: 2004

ZAT-Plant Suite MP

Replacement of monitoring system for electric substations, Stage I

Start of operation: 2004

ZAT-Plant Suite MP

Náchod Heating Plant

Control system for 6 kV electric substations, Stage I

Start of operation: 2005

ZAT-Plant Suite MP

Písek Cogeneration Plant

Control system for 6 kV electric substations

Start of operation: 1998

ZAT-Plant Suite MP

ECS Cogeneration Plant in Planá nad Lužnicí

Control system for 0.4 kV, 6 kV, and 110 kV electric substations

Start of operation: 1998

ZAT-Plant Suite MP

Remote control with microwave communication of TSN XR 55 22/6 kV electric substation

Start of operation: 1998

ZAT-Plant Suite MP

Overhaul of control system of Lipnice electric substation

Start of operation: 1998

ZAT- Plant Suite MP

Control Systems for Hydroelectric Power Plants

	Delivery of Control System:
<u>Dlouhé Stráně</u> Diagnostics system of motor-generators Start of operation: 1996	ProConT
Off-line diagnostics system for generator cooling Start of operation: 2003	ProConT/WIN
<u>Dalešice</u> Overhaul of control system for TG1 Overhaul of TG4 Turbine governors of TG1-TG4 Start of operation: 2003 (2006–modifications)	ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP
<u>Lipno – Povodí Vltavy</u> Improvement of HPP control system Start of operation: 2005	ZAT-Plant Suite MP
<u>Kořensko</u> Overhaul of HPP control system Start of operation: 2002	ZAT-Plant Suite MP
<u>Mohelno</u> Overhaul of control system Start of operation: 2000 (2008–modifications)	ZAT-Plant Suite MP
<u>Strakonice</u> Overhaul of weir control system Start of operation: 2002	ZAT-Plant Suite MP

Control and Information Systems for Distribution of Heat and Energy

Příbramská Cogeneration Plant

Control system for 42 exchange stations

Start of operation: 1999

Delivery of Control System:

ZAT-Plant Suite MP

Tušimice II Power Plant

Control system for hot-water exchange station

Start of operation: 2001

ZAT-Plant Suite MP

Control Systems for Building Air-Conditioning

Litoměřice Commercial Bank

Control system of cascade regulation of 3 gas boilers, equitherm control of heating water, operation of air-conditioning equipment

Start of operation: 1995

Delivery of Control System:

ProConT

Plzeň Great Synagogue

Control and monitoring system for air-conditioning unit regulation and converter start-up by program

Start of operation: 1997 - 1998

ProConT

Control of Boilers and Boiler Rooms, Heating Plants

	Delivery of Control System:
<u>Dvůr Králové nad Labem Heating Plant</u> I&C system - ecologization of boiler K2 operation I&C system - ecologization of boiler K3 operation Start of operation: 1996 (2005–modifications)	ZAT-Plant Suite MP ZAT-Plant Suite MP
Internal and external coal handling systems Boiler K1 – 75 t/h; NO_x reduction plant (DENOX) and overhaul of I&C system Start of operation: 1997	ZAT-Plant Suite MP ZAT-Plant Suite MP
Overhaul of TG control system Steam reduction and cooling station Start of operation: 2001	ZAT-Plant Suite MP ZAT-Plant Suite MP
EN1-EN5 electrical feed pumps Start of operation: 2004	ZAT-Plant Suite MP
Manipulation of biomass Start of operation: 2008	ZAT-Plant Suite MP
<u>ELU III Heating Plant, TG9</u> TG: P (MW): 28; controlled technology (turbine): extraction Start of operation: 1995	ZAT PRIMIS, K+S+OCH+ST + OP, SIEMENS – SIMATIC
Boiler K3 160t/h, TG9, P (MW): 28; Steam feed pump, TN Start of operation: 1998	SIEMENS – SIMATIC SIEMENS – SIMATIC
<u>LOVOCHEMIE Heating Plant, Lovosice</u> Boilers K6, K7 – 2xOKP 25t/h, fuel – natural gas Overhaul of I&C system for distribution of technological water Start of operation: 1995	ZAT-Plant Suite MP ZAT-Plant Suite MP
Boiler K4 – 50t/h Start of operation: 1997	ZAT-Plant Suite MP
<u>Náchod Cogeneration Plant</u> Overhaul of control system of boiler K4 – 75 t/h and No_x reduction plant (DENOX) control Start of operation: 1995	ZAT-Plant Suite MP
Boilers K5, K6 Start of operation: 1996	ZAT-Plant Suite MP
Boiler K12 – 16t/h Start of operation: 1997	ZAT-Plant Suite MP
Treatment of water temperature Start of operation: 2000	ZAT-Plant Suite MP
Overhaul of water chemical treatment plant Steam pressure reduction station	ZAT-Plant Suite MP ZAT-Plant Suite MP

Overhaul of control system Start of operation: 2001	Delivery of Control System: ZAT-Plant Suite MP
Overhaul of I&C system of TG2 and TG4 Start of operation: 2003	ZAT-Plant Suite MP
Coal handling system Start of operation: 2004	ZAT-Plant Suite MP
<u>Písek Cogeneration Plant</u> Coal handling system Start of operation: 1998	ZAT-Plant Suite MP
Boilers K11, K12 – 35 t/h Start of operation: 1999	ZAT-Plant Suite MP
Turbo-generators TG1 (6 MW) and TG2 (1,8 MW) Start of operation: 2000	ZAT-Plant Suite MP
Water chemical treatment plant Start of operation: 2001	ZAT-Plant Suite MP
Combustion control system of boilers K11 and K12 Start of operation: 2005	ZAT-Plant Suite MP
<u>ECS Cogeneration Plant in Planá nad Lužnicí Teplárna</u> Boiler K2 – 65 t/h Start of operation: 1997	ZAT-Plant Suite MP
Boiler K1 – 65 t/h	ZAT-Plant Suite MP
Boiler K3 – 65 t/h	ZAT-Plant Suite MP
Hot-water station Start of operation: 1998	ZAT-Plant Suite MP
Water chemical treatment plant	ZAT-Plant Suite MP
Turbo-generator TG3 – 50 MW	ZAT-Plant Suite MP
Cooling towers	ZAT-Plant Suite MP
Fuel oil system	ZAT-Plant Suite MP
Electric feed pumps control	ZAT-Plant Suite MP
Coal handling system	ZAT-Plant Suite MP
Hot-water station Start of operation: 1999	ZAT-Plant Suite MP
<u>Teplárna Příbram</u> Connection to boiler control systems and overhaul of control rooms	ZAT-Plant Suite MP
Replacement of SCADA for boiler control systems station, main exchange stations (HVS), interconnection pipelines and electrical substations	ZAT-Plant Suite MP
TG 40 MW Start of operation: 1996	ZAT-Plant Suite MP
TG 4 MW, overhaul of exchange stations Start of operation: 2004	ZAT-Plant Suite MP

Strakonice Cogeneration Plant

TG, P (MW): 6; controlled technology (turbine):

Start of operation: 1997

**Control and information system for whole cogeneration plant
(including 3 boilers, 2 TG and FGD)**

Start of operation: 2001

Water chemical treatment plant

Start of operation: 2005

Tábor Cogeneration Plant

Boiler 100 t/hr

Start of operation: 1999

Třebovice Cogeneration Plant

TG16, P (MW): 40; controlled technology (turbine): condensing

Start of operation: 2004

Delivery of Control System:

SIMADYN TELEPERM

TELEPERM XP

TELEPERM XP

GE FANUC 90-30

ZAT PRIMIS

Burner Management Systems (BMS)

Delivery of Control System:

<u>Kafr el Dakar - Egypt</u> BMS for Unit 4, 110MW (8 burners) Start of operation: 2000	ZAT-Plant Suite MP
<u>Opatovice Power Plant</u> BMS for boilers K1-K4 (4 x 2 burners) Start of operation: 2004	ZAT-Plant Suite MP
<u>Temelín Nuclear power Plant</u> Gas-fired boiler room, BMS for boilers K1, K2 (2 x 2 burners), startup boiler rooms Start of operation: 2004	ZAT-Plant Suite MP
Gas-fired boiler room, BMS for boilers K3, K4 (2 x 2 burners), startup boiler rooms Start of operation: 2004	ZAT-Plant Suite MP
Gas-fired boiler room, BMS for boilers K5 (1 x 2 burners), startup boiler rooms, exchange station Start of operation: under realization	ZAT-Plant Suite MP
<u>Chemopetrol Litvínov</u> BMS for boilers K17, K18 Process units for soot blowers and sprayers of boilers K15 and K16 Start of operation: 1997	ZAT-Plant Suite MP ZAT-Plant Suite MP
BMS for boilers K13, K14 Start of operation: 1998	ZAT-Plant Suite MP
Overhaul of flame monitors Start of operation: 2004	ZAT-Plant Suite MP
<u>Chotěbořské strojírny</u> BMS for boiler K1 (1 burner) Start of operation: 2003	ZAT-Plant Suite MP
<u>Náchod Cogeneration Plant</u> BMS for boiler K1 (2 burners) Start of operation: 2003	ZAT-Plant Suite MP
<u>Železářny a drátovny Bohumín</u> BMS for boiler K1 (4 burners) Start of operation: 2003	ZAT-Plant Suite MP

Control & Information System for Gas Industry

Delivery of Control System:

Prague Main Dispatch Centre of Trangas in Limuzská Street

Erection of Main Dispatch Centre

Start of operation: 1998

ZAT-Plant Suite MP

Gas Transfer Stations

Kolín gas transfer station

ZAT-2000 MP

Vřesová gas transfer station

ZAT-2000 MP

Kralupy gas transfer station

ZAT-2000 MP

Lodheřov gas transfer station

ZAT-2000 MP

Bukovany gas transfer station

ZAT-2000 MP

Start of operation: 1998

Data processing from gas flow computers (certified device) for measurement of flow and other gas - gas transfer stations in Brno-Podolí, Dolní Dunajovice, Barchov, Bukovany, Bělá nad Radbuzou, Sirejovice, Lodheřov, Zvěstov, Rybí, Doubravice, Makotřasy, Obříství, Lobodice, Kasejovice, Březnice, Milín, Kolín, and Dražkov

ProConT

Start of operation: 1997 – 2000

Bratčice gas transfer station

ZAT-Plant Suite MP

Děhylov gas transfer station

ZAT-Plant Suite MP

Strážovice gas transfer station

ZAT-Plant Suite MP

Start of operation: 2000

Brumovice gas transfer station

ZAT-Plant Suite MP

Černá za Bory gas transfer station

ZAT-Plant Suite MP

Start of operation: 2001

Měcholupy gas transfer station

ZAT-Plant Suite MP

Start of operation: 2004

Hospozín gas transfer station, Contract No. 6101 - Overhaul of technology and control system

ZAT-Plant Suite MP

Rozvadov-modifications

ZAT-Plant Suite MP

Bylany- translocation of telemetry system

ZAT-Plant Suite MP

Bělá nad Radbuzou gas transfer station - Improvement of control system PS018

ZAT-Plant Suite MP

Rozvadov, V. Nēmčice – Transmission of dewing points

ZAT-Plant Suite MP

Start of operation: 2006

Charvátce- break-down of communications ELKOR

ZAT-Plant Suite MP

TU 141 Křečhoř – Improvement of station

ZAT-Plant Suite MP

Start of operation: 2007

Gas Transfer & Pressure Reducing Stations

Bělá nad Radbuzou gas transfer & pressure reducing station

ZAT-2000 MP

Sirejovice gas transfer & pressure reducing station

ZAT-2000 MP

Doubravice gas transfer & pressure reducing station

ZAT-2000 MP

Zvěstov gas transfer & pressure reducing station

ZAT-2000 MP

Start of operation: 1998

Vrbice gas transfer & pressure reducing station

ZAT-Plant Suite MP

Březnice gas transfer & pressure reducing station

ZAT-Plant Suite MP

Křechoř gas transfer & pressure reducing station Start of operation: 2000	Delivery of Control System: ZAT-Plant Suite MP
Velké Němčice gas transfer & pressure reducing station	ZAT-Plant Suite MP
Zvěrkovice gas transfer & pressure reducing station	ZAT-Plant Suite MP
Drahelčice gas transfer & pressure reducing station Start of operation: 2001	ZAT-Plant Suite MP
Modification of Control system PS Dolní Dunajovice Bukovany - replacement of season ticket computers Start of operation: 2006	ZAT-Plant Suite MP ZAT-Plant Suite MP
V. Němčice Replacement of Control subsystem Alpha PZ Lovosice – Contract No. 3147 Start of operation: 2007	ZAT-Plant Suite MP ZAT-Plant Suite MP
<u>Gas Pressure Reducing Stations</u>	
Mstětice gas pressure reducing station Start of operation: 1998	ZAT-2000 MP
Remote data transmission from pressure and reducing stations, regulation of gas output temperature from stations, archiving of measured values per month at the PCMCIA board of the control system, and radio transmission of the measured data to the dispatch centre - Vřeskovice and Stará Voda gas pressure reducing stations Start of operation: 1999 – 2000	ProConT
Strážovice gas pressure reducing station - measurement of sold gas, remote control and data transmission	ZAT-2000 MP
Sviňomazy gas pressure reducing station - control system extension by remote control of gas pressure and flow rate	ZAT-2000 MP
Barrandov gas pressure reducing station - switching of measuring lines	ZAT-D Industrial
Březnice gas pressure reducing station - telemetry system	ZAT-2000 MP
Kolová gas pressure reducing station - remote control of flow rate and pressure	ZAT-2000 MP
Říčany - Bažantní gas pressure reducing station Start of operation: 2002	ZAT-2000 MP
Very high gas pressure reducing station – remote control Start of operation: 2003	ZAT-Plant Suite MP
Gas pressure reducing station VVTL - Telemetry Start of operation: 2006	ZAT-Plant Suite MP
Data transmission TG-SČP (6 stations)	ZAT-Plant Suite MP
Kolová – Improvement of control section	ZAT-Plant Suite MP
Mutěnice - Complex improvement of control subsystem Alpha	ZAT-Plant Suite MP
SvČP – modifications SW for 8 stations Start of operation: 2007	ZAT-Plant Suite MP
<u>Other important contracts</u>	
RWE Transgas, Contract No. 3010 – Connection of transfer stations to the dispatch centre, telemetric system Start of operation: 1999	ZAT-2000 MP

Delivery of Control System:

RWE Transgas, Contract No. 3039 - Connection of transfer stations to the dispatch centre, telemetric system Start of operation: 2000	ZAT-Plant Suite MP
Aš – Selb Very High Pressure Gas Pipeline Start of operation: 2000	ZAT-Plant Suite MP
RWE Transgas, Contract No. 3011 – Connection of transfer stations to the dispatch centre, telemetry system Start of operation: 2002	ZAT-Plant Suite MP
RWE Transgas, Contract No. 3070 – communication with Pressure Reducing Stations – radio communication of pressure reducing stations with the dispatch centre, telemetry system Start of operation: 2003 - 2004	ZAT-Plant Suite MP
RWE Transgas, Contract No. 3072 – communication with Pressure Reducing Stations – radio communication of pressure reducing stations with the dispatch centre, telemetry system Start of operation: 2005	ZAT-Plant Suite MP
Transgas, Contract No. 3072 - Innovation of telemetry „Southern branch“	ZAT-Plant Suite MP
Transgas, Contract No. 3103, 3104 – Overhaul of MŘS Start of operation: 2006	ZAT-Plant Suite MP
<u>PZP Štramberk</u>	
Overhaul of control machine	ZAT-Plant Suite MP
Ethernet Communication	ZAT-Plant Suite MP
Change of time zone Start of operation: 2006	ZAT-Plant Suite MP
Connection RACOM Start of operation: 2007	ZAT-Plant Suite MP

Control Systems for Open Cast Mines

	Delivery of Control System:
<u>Contracts for Bílina Mines, company Severočeské doly a.s</u>	
Control system of ZP 10000 spreader	ZAT-Plant Suite MP
TC 3 technological complex	ZAT-Plant Suite MP
Start of operation: 1995	
Control system of K10000 bucket-wheel excavator	ZAT-Plant Suite MP
Control centre of coal technology	ZAT-Plant Suite MP
Control system of ZP5500/5 spreader	ZAT-Plant Suite MP
Control and monitoring system for stacker/reclaimer of coal	ZAT-Plant Suite MP
Delivery of drive unit of coal conveyer	ZAT-Plant Suite MP
Control centre – North of overburden technology	ZAT-Plant Suite MP
Control centre – Middle of overburden technology	ZAT-Plant Suite MP
Start of operation: 1996	
Control centre – South of overburden technology	ZAT-Plant Suite MP
Control system of KU300/16 bucket-wheel excavator	ZAT-Plant Suite MP
Control centre of Ledvice coal cleaning plant	ZAT-Plant Suite MP
Dispatch centre of PT coal technology	ZAT-Plant Suite MP
Overhaul of 5th TC2 technological complex (6 belt conveyers)	ZAT-Plant Suite MP
Overhaul of 3rd TC2 Radovesice technological complex (8 belt conveyers)	ZAT-Plant Suite MP
Control system of K 2000 bucket-wheel excavator, control of selected drives	SIEMENS - SIMATIC S7-400, ZAT-M, V
Start of operation: 1997	
Overhaul of removable walking units – OKJ 1 and OKJ 2	ZAT-D, E
Ledvice coal cleaning plant – underground coal bunkers No. I, II	ZAT-Plant Suite MP
Start of operation: 1998	
Ledvice coal cleaning plant – coarse crushing plant	ZAT-Plant Suite MP
Technological complex, 7th TC2 – DPD 1800 mm	ZAT-E
Overhaul of ZP 6600.10 spreader	ZAT-E
Ledvice coal cleaning plant – Stage II: coal handling in coarse separation plant, coarse separation plant, Pb section, coal dust deposit, „a“ washing system	ZAT-Plant Suite MP
Overhaul of KU 800/19 bucket-wheel excavator	ZAT-Plant Suite MP
Control system of K2000 bucket-wheel excavator and belt conveyer system	SIEMENS - SIMATIC S7-400
Control system of PV 2400 belt conveyer wagon	ZAT-Plant Suite MP
Overhaul of technological complex, 3rd TC2 – Radovesice, overburden technology	ZAT-Plant Suite MP
Start of operation: 1999	
3rd coal technology	ZAT-Plant Suite MP
Ledvice coal cleaning plant – replacement of sorting machines	ZAT-Plant Suite MP
PD 500 belt conveyer	ZAT-Plant Suite MP
Control system of KU 800/17 bucket-wheel excavator	ZAT-Plant Suite MP
Start of operation: 2000	
Ledvice coal cleaning plant – Stage III	ZAT-Plant Suite MP
PD 501 belt conveyer	ZAT-Plant Suite MP
PD 301 belt conveyer	ZAT-Plant Suite MP
Start of operation: 2001	

Delivery of Control System:

Control system of bucket-wheel excavator	ZAT-Plant Suite MP
Control system modification of bucket-wheel excavator	ZAT-Plant Suite MP
Control system of U25, U29, U30, U53, and U80 belt conveyers	ZAT-Plant Suite MP
Control system of PD302, PD505, PD514, PD515, and PD801 belt conveyers	ZAT-Plant Suite MP
Control system of PD23 and PD34 belt conveyers	ZAT-Plant Suite MP
Control system of USS2 deposit bucket-wheel loader	ZAT-Plant Suite MP
Control system of belt spreader	ZAT-Plant Suite MP
Start of operation: 2002	
Control system of PD23, PD34, PD302, PD801, PD505, PD514, and PD515 belt conveyers	ZAT-Plant Suite MP
Start of operation: 2003	
Control system of 3rd coal conveyer system, stage III	ZAT-Plant Suite MP
Control system of K99	ZAT-Plant Suite MP
Overhaul of crushing machine	ZAT-Plant Suite MP
Overhaul of KU300/16/K83	ZAT-Plant Suite MP
Control system of PD Z6 and PD 57 belt conveyers	ZAT-Plant Suite MP
Overhaul of KU800/19 bucket-wheel excavator	ZAT-Plant Suite MP
Start of operation: 2004	
HZ1,2 continual level measurement	ZAT-Plant Suite MP
Ledvice coal cleaning plant – HZ1, HZ2 automatic coal handling systems	ZAT-Plant Suite MP
Ledvice coal cleaning plant - detail failure signalling	ZAT-Plant Suite MP
Extension of control system of S7/S8/S9 traffic node	ZAT-Plant Suite MP
Overhaul of PVZ 2500/2 mobile spreader	ZAT-Plant Suite MP
Ledvice coal cleaning plant – control of the 7th rail – coal class sorting plant	ZAT-Plant Suite MP
Control system of PD 711, 712 belt conveyers	ZAT-Plant Suite MP
Control system of TD 40, 41, 44 coal class sorting plants	ZAT-Plant Suite MP
Control system of ZPD 8000 spreader	ZAT-Plant Suite MP
Start of operation: 2005	
Control system KU 800/18/K99	ZAT-Plant Suite MP
Ayay of mining overburden on 4. cut	ZAT-Plant Suite MP
Overhaul on HZI, HZII	ZAT-Plant Suite MP
Control system for PS18,	ZAT-Plant Suite MP
Overhaul and upgrade of technological complex P1	ZAT-Plant Suite MP
Monitoring of sewerage waters – ÚUL	ZAT-Plant Suite MP
Jumper N1 on SM1	ZAT-Plant Suite MP
Traffic knot S6 on S4	ZAT-Plant Suite MP
Overhaul of coal-conveyer SM2-ÚUL	ZAT-Plant Suite MP
KU800/18 completion HW+instalation	ZAT-Plant Suite MP
Start of operation: 2006	
Replacement of control systemWSSB 5,6 and 7-10 track	ZAT-Plant Suite MP
Overhaul 1TC3, 5TC2	ZAT-Plant Suite MP
Overhaul of control system 4. overburden of cut	ZAT-Plant Suite MP
Overhaul HD, HT	ZAT-Plant Suite MP
Remote data transmission of calorimetry on ÚUL	ZAT-Plant Suite MP
GO ZP2500.7/Z92	ZAT-Plant Suite MP
Control system for coal-conveyer 52	ZAT-Plant Suite MP
Overhaul of Electrical part OKJ	ZAT-Plant Suite MP

Improvement of coal-conveyer 255	Delivery of Control System:
Remote data transmission of calorimetry - II.stage	ZAT-Plant Suite MP
Upgrade of reticle on coal-conveyer	ZAT-Plant Suite MP
coal-conveyer 1600mm	ZAT-Plant Suite MP
Control system for funicular shift: 5-10. track	ZAT-Plant Suite MP
Start of operation: 2007	
<u>Contracts for Nástup Mines – Tušimice (DNT), company Severočeské doly a.s.</u>	
Merkur Mine, Tušimice - L1, L2 technological complexes	ZAT-Plant Suite MP
Libouš Mine, Tušimice - L3, L4 technological complexes	ZAT-Plant Suite MP
Start of operation: 1995	
Control centre of coal technological complexes of Merkur and Libouš mines	ZAT-Plant Suite MP
Belt conveyer complex of coal technology (3 belt conveyers)	ZAT-Plant Suite MP
Belt conveyer complex of coal technology (6 belt conveyers)	ZAT-Plant Suite MP
Start of operation: 1996	
Belt conveyer complex of coal technology (7 belt conveyers)	ZAT-Plant Suite MP
Start of operation: 1997	
Long-distance belt conveyer system for Libouš II – South mine	ZAT-Plant Suite MP
Libouš II Mine	ZAT-Plant Suite MP
ZSML – belt conveyer and stacker systems	ZAT-Plant Suite MP
Start of operation: 2001	
Overhaul of DPD overburden technology No. 2	ZAT-Plant Suite MP
Start of operation: 2004	
DNT – technological complex – western technological line	ZAT-Plant Suite MP
DNT- control system for long-distance belt conveyer of overburden technology No. S2-2	ZAT-Plant Suite MP
Tušimice Power Plant – Modification of control system of Libouš hopper plant	ZAT-Plant Suite MP
DNT – data transmission of electricity of technological machines	ZAT-Plant Suite MP
DNT – inserting TUV Březno technology (coal technology control room)	ZAT-Plant Suite MP
Start of operation: 2005	
Improvement of large - scale - areal projector BARCO	ZAT-Plant Suite MP
Centre control of main heat exchange stations and boiler-rooms	ZAT-Plant Suite MP
Mofications of Control system (Březno) coal-conveyer 225 on 251	ZAT-Plant Suite MP
Start of operation: 2006	
Improvement and revisions of SW on control room	ZAT-Plant Suite MP
Southern wing	ZAT-Plant Suite MP
Coal-conveyer 222 instead of 258	ZAT-Plant Suite MP
Start of operation: 2007	
<u>Contracts for Company Sokolovská uhelná, Vřesová</u>	
Jiří Mine, control system of ZP 6600/12 spreader	ZAT-Plant Suite MP
Jiří Mine, TC 2/1 technological complex	ZAT-Plant Suite MP
Jiří Mine, control system of KU 800/12 bucket-wheel excavator	ZAT-Plant Suite MP
Start of operation: 1996	

Jiří Mine, central dispatching of whole mine	Delivery of Control System:
Jiří Mine, TC1-South technological complex (control room and 7 belt conveyers)	ZAT-Plant Suite MP
Jiří Mine, dewatering of the deepest place of mine	ZAT-Plant Suite MP
Start of operation: 1998	ZAT-E
Jiří Mine, overhaul of long-distance conveyer system of TC2/2 technological complex	ZAT-Plant Suite MP
Jiří Mine, overhaul of KU 800/16 bucket-wheel excavator	ZAT-Plant Suite MP
Jiří Mine, overhaul of ZP 6600.17 spreader	ZAT-E
Start of operation: 1999	
Jiří Mine, translocation of coal loading and unloading plant	ZAT-Plant Suite MP
Jiří Mine, coal deposit	ZAT-Plant Suite MP
Jiří Mine, firefighting pumping station	ZAT-Plant Suite MP
Jiří Mine, mine dewatering system – operation set No. 103	ZAT-Plant Suite MP
Jiří Mine, measuring of water quality for mine dewatering system	ZAT-Plant Suite MP
Start of operation: 2001	
Coal handling of Tisová Power Plant	ZAT-Plant Suite MP
Start of operation: 2002	
Control system of KU 800/12 bucket-wheel excavator	ZAT-Plant Suite MP
Control system of PVZ 2500/215/8 mobile spreader	ZAT-Plant Suite MP
Control system of PVZ 1800/202 mobile spreader	ZAT-Plant Suite MP
Control system of PD64 and PD501 belt conveyers	ZAT-Plant Suite MP
Control system of Družba pumping station	ZAT-Plant Suite MP
Control system of PVZ 2500/04 mobile spreader	ZAT-Plant Suite MP
Start of operation: 2003	
Relocation of dispatching TC1/South technological complex	ZAT-Plant Suite MP
Control system of PVZ 2500/214/7 mobile spreader	ZAT-Plant Suite MP
Information system for remote diagnostics, data acquisition and storage	ZAT-Plant Suite MP
Control system of PVZ 1800/107/10 mobile spreader	ZAT-Plant Suite MP
Start of operation: 2004	
Technological section – Crushing plant – Optimizing of coal storing	ZAT-Plant Suite MP
Control system of PVZ 1800/104 mobile spreader	ZAT-Plant Suite MP
Družba mine - Auxiliary exchange station	ZAT-Plant Suite MP
Start of operation: 2005	
Control system for coal-conveyer 15	ZAT-Plant Suite MP
Control system for PVZ 2500/600	ZAT-Plant Suite MP
Control system ZAT D,E for coal-conveyer 63	ZAT-Plant Suite MP
Control system ZAT-DV for coal-conveyer 243	ZAT-Plant Suite MP
Improvement DPD A9 and B9	ZAT-Plant Suite MP
Control system for ČS J8	ZAT-Plant Suite MP
Control system for ČS J3	ZAT-Plant Suite MP
Change of technology mining	ZAT-Plant Suite MP
Start of operation: 2006	

Solution for quality of leak waters - Jiří	Delivery of Control System:
Control system for PČS Družba, PS05	ZAT-Plant Suite MP
Control system for SV803	ZAT-Plant Suite MP
Control system for PVZ2500/603	ZAT-Plant Suite MP
Control system for SV803	ZAT-Plant Suite MP
Start of operation: 2007	
<u>Contracts for company - Mostecká uhelná společnost</u>	
Komořany coal cleaning plant, homogenizing crushing plant	ZAT-Plant Suite MP
Hrabák Mine, Vršany, drive unit of coal conveyer	ZAT-Plant Suite MP
Komořany coal cleaning plant, control of production line of rough dross	ZAT-Plant Suite MP
Start of operation: 1995	
Čs. Armáda Mine, Komořany, Coal technological complex	ZAT-Plant Suite MP
Čs. Armáda Mine, Komořany, control centre of 1/TC2 coal technological complex	ZAT-Plant Suite MP
Komořany coal cleaning plant, control of homogenizing of rough dross loading	ZAT-Plant Suite MP
Hrabák Mine, Vršany, overhaul of control room for TC2/1 and TC2/2 technological complexes	ZAT-Plant Suite MP
Hrabák Mine, Vršany, VH220, PD224, and PD211 belt conveyers	ZAT-Plant Suite MP
Hrabák Mine, Vršany, control system of KU 300/26 bucket-wheel excavator	ZAT-Plant Suite MP
Start of operation: 1996	
Čs. Armáda Mine, Komořany, control room of 2.TC2 overburden technological complex	ZAT-Plant Suite MP
Hrabák - Ležáky Mine, Most, TC2/15 technological complex	ZAT-Plant Suite MP
Čs. Armáda Mine, Komořany, PD772 and PD773 belt conveyers	ZAT-Plant Suite MP
Hrabák Mine, Vršany, control system of KU 800/14 bucket-wheel excavator	ZAT-Plant Suite MP
Čs. Armáda Mine, Komořany, control centre for coal technological complex	ZAT-Plant Suite MP
Hrabák Mine, Vršany, control centre of DPD 1200 long-distance belt conveyer system	ZAT-Plant Suite MP
Hrabák Mine, Vršany, drive units for 10x DPD 1200 long-distance belt conveyers	ZAT-Plant Suite MP
Start of operation: 1997	
Hrabák Mine, Vršany, DPD 1200 long-dist. belt conveyers – coal section C	ZAT-Plant Suite MP
Hrabák Mine, Vršany DPD 1200 long-dist. belt conveyers – coal section B	ZAT-Plant Suite MP
Hrabák Mine, Vršany, DPD 1200 long-dist. belt conveyers – coal section D	ZAT-Plant Suite MP
Čs. Armáda Mine, Komořany, control centre of whole mine	ZAT-Plant Suite MP
Čs. Armáda Mine, Komořany, control system of ZP 6600/16 spreader	ZAT-Plant Suite MP
Čs. Armáda Mine, Komořany, control system of KU 800/13 bucket-wheel excavator and conveyer system for coal technology (5x belt conveyer)	ZAT-Plant Suite MP
Čs. Armáda Mine, Komořany, Overhaul of 3.TC2(2 belt conveyers, 2 trippers/discharging ploughs) technological complex	ZAT-Plant Suite MP
Start of operation: 1998	
Čs. Armáda Mine, Komořany, PVZ 2500/2 mobile spreader	ZAT-Plant Suite MP
Hrabák Mine, Vršany, interconnection of Šverma – Vršany	ZAT-Plant Suite MP
Start of operation: 1999	

Čs. Armáda Mine, SV 773 tripper/discharging plough Start of operation: 2000	Delivery of Control System: ZAT-Plant Suite MP
Hrabák Mine, Vršany, Mine control system with microwave communication Hrabák Mine, Vršany, PD 116 belt conveyers Start of operation: 2001	ZAT-Plant Suite MP ZAT-Plant Suite MP
Control system of ZP6600.6 – Z82 spreader Overhaul of control system for 3.TC2 technological complex Overhaul of control system for 4.TC2 (RK5000) technological complex Start of operation: 2003	ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP
Overhaul of control system for 4.TC2 technological complex – stage I Control system of PD 24-27 belt conveyer system Control system of KU800/7 bucket-wheel excavator Control system of USSK No.1 Control system of Příkupy PD 1200mm belt conveyer system Control system of coal PD belt conveyer system Control system of „A“ line Control system of PVZ 2500 č.5 mobile spreader Control system of 2100-Z73 spreader Overhaul of K800/B/12-54 bucket-wheel excavator Pruněšov Power Plant, North mine Start of operation: 2004	ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP
Control and information system of RK 5000 – MUS spreader Control and information system of ZP6600.9 – MUS spreader Project of ZP6600.9 spreader Control system of KU 800/7 bucket-wheel excavator (ABB protection) Upgrade of control system of KU800/13 bucket-wheel excavator Control system of PD 117 (from 2004) belt conveyer Control system of PD 251-253 belt conveyer Control system of 4 x PD (belt conveyers), 1 reclaiming scraper Start of operation: 2005	ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP
Control system for 4x PD, 1x VH Upgrade control system PD27 Control system ZAT-E SV PD882,992 Control system for PD222-225 Control system for PD127 Optical line – B Econom.start PD212-232 Optical line Příkupy Interpretation of breakdown belt DPD Control system for PD254 Overhaul of dispatching site COAL Overhaul of dispatching site OVERBURDEN TECHNOLOGY Protection ABB (SPABUS) Control system ZAT-E for PD 52 New coal lifts PS600 SW OS1 and OS2-Vršany Data transmission KU300 Start of operation: 2006	ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP

Supply for Training centre (VŠT) Optical line-Depo 1 Optical line -Depo 2 Upgrade of control system ZP 95 Data transmission KU800.11/K84 Supply of coal-conveyer CSA Upgrade of control section PVZ Supply of coal-conveyer - Overburden technology ČSA Supply of coal-conveyer - Overburden technology HR Start of operation: 2007	Delivery of Control System: ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP ZAT-Plant Suite MP
<u>Durdevik Mine, Bosnia and Herzegovina</u> Control room for 2 x PD belt conveyer system Start of operation: 2004	ZAT-Plant Suite MP
PD T4, T5 (belt conveyers), 4 crushers Start of operation: 2005	ZAT-Plant Suite MP
<u>MARICA Mine - Trojanovo South, Bulgaria</u> Full-scope control of two technological complexes Start of operation: 1996	DIAMO-S
Overhaul of Trojanovo 1 central room Start of operation: 2000	ZAT-Plant Suite MP
Overhaul of belt conveyer No. 6 and trippers/discharging ploughs Start of operation: 2002	ZAT-Plant Suite MP
Control system of 5 belt conveyers Start of operation: 2005	ZAT-Plant Suite MP
Overhaul of Control system -Trojanovo Control system for 5 pc PD Start of operation: 2006	ZAT-Plant Suite MP ZAT-Plant Suite MP
<u>Šikulje Mine, Bosnia and Herzegovina</u> PK belt conveyers 2 belt conveyers, 1 tripper/discharging plough, 1 spreader, KU300 bucket-wheel excavator Start of operation: 2001	ZAT-Plant Suite MP ZAT-Plant Suite MP
<u>Dubrave, Bosna a Hercegovina</u> Supply of control system – PK Dubrave ŘaMS-PK Dubrave Start of operation: 2007	ZAT-Plant Suite MP ZAT-Plant Suite MP

Control Systems for Underground Mines

OKD, a.s. Ostrava

Container exhaust station

Complex of monitoring and control systems in Jerementko water basin/pit

Monitoring system of water levels in ODP pits

Scanning of physical quantities in Šalamoun pit

Data transmission from water-management control centre within Povodí

Odry a.s.

Start of operation: 1996 - 98

Delivery of Control System:

ProConT

Control Systems for Environment Protection

	Delivery of Control System:
<u>Mělník I. Power Plant</u> Flue gas desulphurization plant for units 1 – 6 (6 x 60MW) Start of operation: 1997	ZAT-Plant Suite MP
<u>Mělník II. & III Power Plants</u> Flue gas desulphurization plant for units 9, 10, 11 (2 x 110 MW, 1 x 500 MW) Start of operation: 1997	ZAT-Plant Suite MP
Briquetting plant for flue gas desulphurization plant Start of operation: 1998	ZAT-Plant Suite MP
<u>Kaunas, Litva</u> Wastewater treatment plant Start of operation: 1997-98	ZAT-Plant Suite MP
<u>Bílina Mines, company Severočeské doly a.s.</u> Overhaul of mine water treatment plant - Emerán Start of operation: 2002	SIEMENS - SIMATIC 73-300
<u>Vřesová Power Plant, Sokolovská uhelná a.s.</u> Flue gas desulphurization plant for units 1 - 6 (5 x 60MW) Start of operation: 2002	GE FANUC, In Touch
<u>Velký Karlov</u> Biogas station Velký Karlov Start of operation: 2006	SIEMENS S7-400

Control Systems for Mechanical Engineering

Evobus Holýšov

Control system of acetylene regulation station

Start of operation: 2002

Delivery of Control System:

MicroView,
SIEMENS - SIMATIC S7-200

Škoda Auto a.s. Mladá Boleslav

Control system of lifted turntable and client centre of Škoda's car Museum

Start of operation: 1999

TU Chemnitz

Control system of vacuum kiln/furnace

Start of operation: 2002

ProConT, Advantech

Valores s.r.o.

Control system of screen printer

Start of operation: 2001

SAIA PCD-2

Control system of grinding machine of printing rubber

Start of operation: 2001

SAIA PCD-1

Control Systems for Cement Plants and Lime Plants

Control Systems for Cement Plants and Lime Plants

Control Systems for Cement Plants and Lime Plants

Control Systems for Cement
Plants and Lime Plants
Control Systems for Cement
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Control Systems for Cement Plants and Lime Plants

Vápenka Čertovy schody, Tmář u Berouna (lime production plant)
Control system of belt conveyers and monitoring of their loading at milled limestone transport
Start of operation: 1996 - 1997

Delivery of Control System:

ProConT

Control Systems for Smelting Plants, Rolling Mills and Ironworks

Kovohutě Břidličná a. s. (metallurgical works)
Computerized control system of smelting furnaces of continuous casting machines, control system of (9 ton and 15 ton) gas smelting furnaces for aluminium smelting. The fuzzy control was been implemented
Start of operation: continuous casting machines K5-1995, K1-1996, K4-1997, K3-1998

Delivery of Control System:

LFLC1.5, ProConT

Computerized monitoring system on quality evaluation of aluminium continuous casting
Start of operation: 1998

Genesis, ProConT- Lite

Kovohutě Mníšek a.s. (metallurgical works)
Control system for piling aluminium casts on palettes
Start of operation: 1995 - 1996

ProConT

Casting belt and folder for production of aluminium casts
Start of operation: 1996

ProConT

Vodohospodářské opravy a strojírna, a.s. Písek (machine plant)
Control and information system of pot-type furnace
Start of operation: 1996

ProConT

Control systems for Brickmaking and Ceramic Industries

Delivery of Control System:

<u>Cihelna CIDEM Hranice</u> (brickmaking) Implementation of Smith's predictor for brick-press control Start of operation: 1995 - 1998	ProConT
<u>Cihelna Mladá Boleslav - Řepov (WIENERBERGER a.s.)</u> (brickmaking) Control system of straightening machines Start of operation: 1995 - 1997	SAIA PCD-4
Implementation of Smith's predictor for brick-press control Start of operation: 1995 - 1998	ProConT
<u>Cihelny Kryry a.s.</u> (brickmaking) Control of drives of brick cutting & piling lines Start of operation: 2001	ProConT, Advantech, Lenze
Overhaul of control system of palettisation machine Start of operation: 2003	TECO
Control system with central monitoring for kiln and straightening machine Start of operation: 2005	SAIA
<u>Cihelna Osenice, CIOS HOLDING a. s.</u> (brickmaking) Implementation of Smith's predictor for brick-press control Start of operation: 1995 - 1998	ProConT
<u>Cihelna Osík, Later Chrudim a. s.</u> (brickmaking) Implementation of Smith's predictor for brick-press control Start of operation: 1995 - 1998	ProConT
<u>Cihelna Sedlčany</u> (brickmaking) Implementation of Smith's predictor for brick-press control Start of operation: 1995 - 1998	ProConT
<u>Hevlínské cihelny - Cihelna Osík, Later Chrudim a.s.</u> (brickmaking) Control and monitoring system of rotary mill Start of operation: 1998	ProConT
<u>Hevlínské cihelny - Cihelna Hevlín a.s.</u> (brickmaking) Implementation of Smith's predictor for brick-press control Start of operation: 1995 - 1998	ProConT
<u>HOB CerTec s.r.o. Horní Bříza</u> (ceramic plant) Control and monitoring system of kaolin/china clay sorting and milling Start of operation: 2003	SIEMENS - SIMATIC S5-95
<u>Lasselsberger a.s., Kaznějov plant</u> (ceramic plant) (former name: Keramika Horní Bříza a.s., HoB Kaolin Kaznějov division) Control and monitoring system of magnetic separator Start of operation: 1998	SIEMENS - SIMATIC S7-400

Control and monitoring system of kaolin/china clay sorting and milling Start of operation: 2001	Delivery of Control System: SIEMENS - SIMATIC S7-300
Upgrade of monitoring (visualization) system and extension of control system Start of operation: 2005	SIEMENS - SIMATIC S7-400
<u>Severočeské cihelny a. s., cihelna Kryry</u> (brickmaking) Control system with central monitoring for drying-plant and -kiln Start of operation: 1998	ZAT - D, ProConT

Control Systems for Chemical, Rubber and Paper Industries

	Delivery of Control System:
<u>Barum Continental spol. s r.o., Otokovice</u> Control and visualization system of vulcanizing press Start of operation: 1999	SIEMENS - SIMATIC S5-115
Control system of loading of an incinerator plant Control and monitoring system of cooling station Start of operation: 1998	ProConT ProConT
Control and monitoring system of trial reactor of polystyrene production Start of operation: 1999	ProConT, MICROMASTER
Information and balance system Start of operation: 2002	ProConT/WIN,PC server
<u>Linde Technoplyn a.s.</u> Delivery of mobile equipment with wireless communication for records of pressure cylinders Start of operation: 2003	Advantech
<u>MITAS a.s., Prague</u> Control and visualization system of vulcanizing press Start of operation: 1999	SIEMENS - SIMATIC S7-400
Control and visualization system of vulcanizing press Transmission of production data to plant information system Start of operation: 2001	SIEMENS - SIMATIC S7-400 SIEMENS - SIMATIC S7-400
<u>STIP Susse - Tunisia</u> Control and visualization system of vulcanizing press Start of operation: 1999	SIEMENS - SIMATIC S7-400

Control Systems for Brewery and Food-Processing Industry

Plzeňský Prazdroj, a. s.

Analysis of measuring and regulation system of CK tanks and alarm system of tank temperature control

Start of operation: 1996

Delivery of Control System:

SIEMENS - SIMATIC S155;
ProConT

Control Systems for Health Service

SPOFA DENTAL, a.s.

Temperature control system of kilns for medical instruments

Start of operation: 2003

Delivery of Control System:

PMA, ProConT

Control Systems for Theatres and TV studios

	Delivery of Control System:
<u>Archa Theatre, Prague</u> Full delivery of modernization scene flybars, tables and ceilings (heavy current device, controlled drives, control system) Start of operation: 2003	ProConT, EasyMon
<u>J. K. Tyl Theatre, Plzeň</u> Complete overhaul of scene flybars and stage ring (machinery, heavy current equipment and controlled drives, and control system) Start of operation: 2001	ProConT, Advantech, YASKAWA
<u>Congress Centre, Prague</u> Control system of special scene hydraulic flybars Start of operation: 1996	ProConT
<u>National Theatre, Prague</u> Overhaul of position indicators of scene flybars Start of operation: 1999 - 2002	
Overhaul of monitoring and diagnostics system of hydraulic station of stage equipment incl. remote control Overhaul of thyristor transducers for scene flybars and stage ring Start of operation: 2003	ProConT, EasyMon Frequency converters
<u>Stavovské Theatre, Prague</u> Control system of stage ring Start of operation: 1997	ProConT
<u>Švanda's Theatre, Prague</u> Control and monitoring system for 18 stage flybars Start of operation: 2002	ProCont-TaMon, Advantech, ArtDRIVE, SEI

Lighting Systems of Theatres and TV studios

J. K. Tyl Theatre, Plzeň
The National Moravian-Silesian Theatre, Ostrava
National Theatre, Prague
Most's City Theatre,
State Opera House, Prague
Control system of light sources, lighting consoles
Start of operation: 1998

Electrical Central Control Systems for Railway Service

	Delivery of Control System:
<u>České dráhy s.p., Central control in České Budějovice</u> Central control system for power supply of České Budějovice electrical railway Start of operation: 1996 - 1997	ProConT
<u>České dráhy s.p., Central control in Plzeň</u> Monitoring system for power take-off in supply substations. System of central remote control of supply stations at railway lines - Plzeň-Cheb, Plzeň-Horažďovice and Plzeň-Klatovy Start of operation: 1993 – 1996	ProConT
Remote control of lighting at the south railway station in Plzeň Start of operation: 1998	ProConT
<u>Elektrizace železnic Praha, a.s.</u> Electrification of České Budějovice – Horní Dvořiště line, control of supply substations in railway stations Start of operation: 2001	ProConT/WIN, Advantech, SAIA-PCD2
TT Nemanice - complete distributed control system with PLC SAIA Remote control system of SpS Milenovice Start of operation: 2003	ProConT, Advantech, SAIA ProConT, Advantech
Overhaul of dispatching site of SDC Plzeň Delivery of control and information system for electrification of Rybník - Lipno line Start of operation: 2004	ProConT, SAIA
<u>EMG ELEKTRO s.r.o.</u> TT Strakonice – complete distributed control system with PLC SAIA Start of operation: 2003	ProConT, Advantech, SAIA
<u>Jihočeská energetika a.s., Central control of JČE,</u> Data transmission from Czech railway's high voltage electric substations to regional central control of Southbohemian electrical company, remote control and monitoring system Start of operation: 1999	ProConT
<u>Elektrizace železnic</u> SW modifications Start of operation: 2006	

Printed Circuit Boards Production and Assembly of Components

Selected Customers:

MACH Konstruktionen, Stuttgart

ELME Elektromechanik GmbH, Augsburg

THORENS Laboratory GmbH, Berlin

BONNEL Technologie, Entwicklungs- und Vertriebs-GmbH, Schwarzenbruck

SOKRATEL Kommunikations-u.Datensysteme GmbH, Diedorf

Ingenieurburo Patzig, Industrie-Elektronik, Dresden

SWAC Schmitt-Walter Automation Consult GmbH, Oberhaching

FHK Didactic Systems, Bad Zell

Rosemarie Reupert Consulting, Weißbach

ŠKODA ELECTRIC s.r.o.

ŠKODA TRANSPORTATION s.r.o.

Third Party Cooperation with Foreign Companies

- with company Emerson (Emerson/Fisher-Rosemount/Westinghouse - USA)

Mělník II, III Power Plants

Overhaul of electrical control room

Assembly of control system cabinets

Start of operation: 1997

WDPF; ZAT- M

Temelín Nuclear Power Plant

Assembly of control system cabinets

Start of operation: 1995 -97

WDPF; ZAT-M

Kursk Power Plant, Unit 2 – SPDS

Assembly of control system cabinets

Start of operation: 1996

WDPF; ZAT-M

Pruněřov Power Plant - overhaul

Assembly of control system cabinets

Start of operation: 1995

WDPF; ZAT-M

Mělník Power Plant - overhaul

Assembly of control system cabinets

Start of operation: 1995

WDPF; ZAT-M

Ledvice Power Plant – Flue Gas Desulphurization Plant for Units 2 & 3

Assembly of control system cabinets

Start of operation: 1995

WDPF; ZAT-M

Ledvice Power Plant – Fly Ash Handling of Units 2 & 3

Assembly of control system cabinets

Start of operation: 1995

WDPF; ZAT-M

Pruněřov Power Plant – Overhaul of Unit 24

Assembly of control system cabinets

Start of operation: 1996

WDPF; ZAT-M

Pruněřov Power Plant – Overhaul of Unit 25

Assembly of control system cabinets

Start of operation: 05/ 1997

WDPF; ZAT-M

Mělník Power Plant – Control Room

Assembly of control system cabinets

Term of delivery: 02/ 1997

WDPF

Leningrad Power Plant, Unit 4 - SPDS

Assembly of control system cabinets

Term of delivery: 1997

WDPF; ZAT-M

Pruněřov Power Plant – Overhaul of Unit 23

Assembly of control system cabinets

Start of operation: 06/1998

WDPF, ZAT- M

Pruněřov Power Plant – Overhaul of Unit 21

Assembly of control system cabinets

Start of operation: 1999

WDPF; ZAT-M

Černobyl Power Plant, Unit 3

Control system cabinets and ZAT's components for WDPF

Start of operation: 1998

ZAT-M

Smolensk Power Plant, Unit 3

Control system cabinets and ZAT's components for WDPF

Start of operation: 1999

ZAT-M

Kursk Power Plant, Unit 3

Control system cabinets and ZAT's components for WDPF

Start of operation: 1999

ZAT-M

- with Company - Siemens, Austria

Long-Distance Pipeline Heating System Mělník - Prague

Control system:

Start of operation: 1995

SIEMENS - SIMATIC,
ZAT- V , M

Legend to Used Abbreviations:

1. To the Chapter „Control & Information Systems for Power Generation Units“

K	- boiler room
OCH	- turbine protection system
OP	- control (operator) workstation
OST	- other
PS	- pumping plant
S	- machine room
ST	- turbine machine room
T	- turbine
TN	- steam feed pump
TRV	- turbine output governor
TVER	- turbine output electronic governor
EHS	- electro-hydraulic system with analog governor and logic process unit PRIMIS
WDPF	- control system of WESTINGHOUSE company

2. To the Chapter „Exciting Sets“

TYPES OF POWER PLANTS:

The following abbreviations are used for types of power plants:

JE	... nuclear plant
PVE	... pumped-storage hydroelectric power plant
TE	... thermal power plant (coal-fired, oil-fired...)
VE	... hydroelectric power plant

COUNTRY CODES:

The following state codes are used:

AF	Afghanistan	DK	Denmark	MX	Mexico	TW	Taiwan
AL	Albania	DZ	Algeria	NL	the Netherlands	LK	Sri Lanka
AU	Australia	ES	Spain	PK	Pakistan	SU	countries of former the U.S.S.R.
BD	Bangladesh	EG	Egypt	PE	Peru	SY	Syria
BG	Bulgaria	ET	Ethiopia	PL	Poland	CN	China
BR	Brazil	GE	Greece	AR	Argentina	TR	Turkey
BUR	Myanmar / Burma	HU	Hungary	CL	Chile	UE	the United Arab Emirates
CU	Cuba	IT	Italy	ID	Indonesia	VN	Vietnam
CO	Colombia	IN	India	RO	Romania	YU	Yugoslavia
CZ	the Czech Republic	IR	Iran	SE	Sweden		
DE	Germany	IS	Iceland	FI	Finland		
		KP	Korea	SK	Slovakia		
		MA	Morocco				

GENERATOR PARAMETERS

Sn[MVA]	nominal apparent output rating of generator
Ifn[A]	nominal exciting current of generator
Ufn[V]	nominal exciting voltage of generator
Nn[/min]	rated speed of generator

GOVERNOR CODES ACCORDING TO ŠKODA'S MARKING

ANALOGUE GOVERNORS:

RBA ... electronic units based on transistors and integrated circuits

DIGITAL GOVERNORS:

DCP1 ... for middle and large generators

DCP5 ... for small and middle generators

MBS ... compact digital governors

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