



The list of projects realized by TeraWatt Group companies

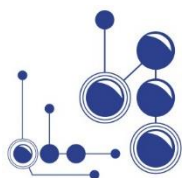
Customer	Object	Software/ Hardware used	Scope	Year
"AZOVSTAL IRON & STEEL WORKS" PJSC	Construction of the first stage of the complex for the preparation and injection of pulverized coal into the furnaces of blast furnaces. Pumping station of pulverized coal fuel fire extinguishing system. Development and commissioning of software.	Studio 5000 Logix Designer, FactoryTalk View Studio, SCADA FactoryTalk View Site Edition	Software development and commissioning.	2017
"Lengipromez – Dnipro" LLC	Reconstruction of gas purification of converters of oxygen-converter shop "EVRAZ -DMZ" PJSC. APCS.	Allen-Bradley Control Logix, FactoryTalk View Studio, SCADA FactoryTalk View Site Edition FactoryTalk Historian Site Edition - 250 tags FactoryTalk VantagePoint	Designing, equipment delivery, training, commissioning.	2017
"AZOVSTAL IRON & STEEL WORKS" PJSC	Reconstruction of the aspiration system for crushing of the section of the bulk and ferroalloy warehouse of the converter shop.		Project documentation development.	2017
"Zaporizhstal" PJSC	Agglomerate. Modernization of the sintering machine control system №6. Works on a turn-key basis.	Allen-Bradley Control Logix, SmartGuard 600, Power Flex	Designing, equipment delivery, training, commissioning.	2016



Customer	Object	Software/ Hardware used	Scope	Year
"Zaporizhstal" PJSC	Creation of a sintering plant CCP (control panel for gas cleaning and agglomeration). Turnkey work.	FactoryTalk View (Rockwell Automation), Simatic (Siemens), HP server part, Samsung video panels, Christie video serve.	Designing, delivery of equipment, installation, software development, commissioning.	2016
"AZOVSTAL IRON & STEEL WORKS" PJSC	Construction of the first stage of the complex for the preparation and injection of pulverized coal into the furnaces of blast furnaces. Oxygen shop. Nitrogen pressure stabilization system.	ET 200S (Siemens), Yokogawa sensors.	Designing, equipment delivery, installation, commissioning.	2016
"ArselorMittal Kryvyi Rih" PJSC	Coke production. Desulfurization shop. Replacement of the controller equipment of vacuum compressors №№ 1 – 4.	Allen-Bradley Control Logix,	Software adaptation, installation, commissioning.	2016
"Zaporizhstal" PJSC	Agglomerate. Modernization of the sintering machine control system №5. Works on a turn-key basis.	Allen-Bradley Control Logix, SmartGuard 600, Power Flex	Designing, delivery equipment, installation, commissioning.	2016
"Yenakieve Iron and Steel Works" PJSC	Reconstruction BF-5. Cooling system for refrigeration plates of shoulders, muzzle and mine with cold, chemically cleaned water in a closed loop.		Project documentation development.	2016
"PSK-KHARKOV" LLC	Reconstruction of water circulation cycles of the Eastern collector "EVRAZ - DMZ" PJSC I, II, III starting complexes. APCS.		Project documentation development.	2016



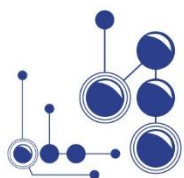
Customer	Object	Software/ Hardware used	Scope	Year
“Zaporizhstal” PJSC	Draft working documentation for the improvement of the cooling system with the modernization of the pumping station and the installation of 3 rows of copper refrigeration plates of BF-4.		Project documentation development.	2016
“Zaporizhstal” PJSC	Modernization of power supply systems for blast furnaces.		Project documentation development.	2016
“Magnitogorsk Iron and Steel Works” OJSC	The aspiration system of the BF-10 foundry yard.		Project documentation development.	2016
“ArselorMittal Kryvyi Rih” PJSC	General technical solutions. New combined compressor station construction for nitrogen and compressed air.		Project documentation development.	2016
“ArselorMittal Kryvyi Rih” PJSC	General technical solutions. Modernization of the existing "dirty" cycle of gas cleaning of the blast furnace.		Project documentation development.	2015
"Zaporizhstal" PJSC	APCS of cooling BF#3 and consolidate pumping station	Allen-Bradley ControlLogix, FTView SE, Stratix	Project documentation development, PLC and HMI elaboration	2015
"Zaporizhstal" PJSC	Central Control Room modernization of BF#3.	FTView SE, Cisco	Project documentation development, HMI elaboration	2015
“EVRAZ-DMZ Petrovskogo” PJSC	Reconstruction of LD plant’s heat convector degassing. APSC	Allen-Bradley Compact Logix	Project documentation development	2015



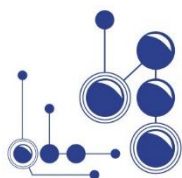
Customer	Object	Software/ Hardware used	Scope	Year
“Evrotsement-Ukraina” PJSC, Balakleya	Engineering solution development for the reconstruction of degassing cement mill #10		Project documentation development	2015
“ArcelorMittal Kryvyi Rih” PJSC	General design solution of Blast furnace shop #2. Reconstruction of BF#9		Project documentation development	2015
“Zaporizhstal” PJSC	Project and working documentation development of the BF# 3 cooling system		Project documentation development	2015
“ArcelorMittal Kryvyi Rih” PJSC	Project and working documentation of hot-blast stove №2 replacement of BF#9		Project documentation development	2015
“Ilyich Iron & Steel Works” PJSC	Development of the project of the 2nd category repair of the BF#4			2015
Aralskiy distric, Kyzylordinskiy region, Republic of Kazakhstan	Thermal electric power station. Water-treatment system			2015
“Zaporizhstal” PJSC	Improvement of the cooling system of BF#4 bosh, belly and shaft			2015
“Dneprohydromach” PJSC	Reconstruction of BF#6 cast house machines at "ArcelorMittal Kryvyi Rih" PJSC	PLC ControlLogix, SCADA FT View SE	Control system commissioning	2015



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"Zaporizhstal" PJSC	Reconstruction of BF#2 cooling system	PLC CompactLogix, SCADA FT View SE, Frequency drives PowerFlex 400, Condition monitoring: XM-161, MCC: power supply	Design and commissioning of the control system including instrumentation, software and electrical parts, instrumentation, electrical, control cabinets supply	2014-2015
"ArselorMittal Kryvyi Rih" PJSC	Reconstruction of BF#6		Process design and commissioning of evaporation cooling system with forced water circulation	2014
"Zaporizhstal" PJSC	Reconstruction of BF#2			2014-2015
	Reconstruction of BF#4			2014
"Alchevsk Iron & Steel Works", PJSC	Reconstruction of BF#1, Central Control Room	PLC CotrolLogix, SCADA FT View SE	Design, supply of equipment, reconstruction, renovation of BF central control room including installation and commissioning of new control panels, BF monitoring video-wall	2014
	Reconstruction of cooling and lining system of BF#1	PLC CompactLogix, System SCADA FT View SE	Supply of control cabinets, installation of instrumentation equipment, cabling and commissioning of control system of BF cooling system	2014
"EVRAZ-DMZ Petrovskogo" PJSC	Implementation of BF#2, BF#3 process parameters' archive and reporting system	SCADA FT View SE, RSVIEW32, Data logging FT Historian SE, Web-portal FT Vantage Point	Software design and commissioning	2014



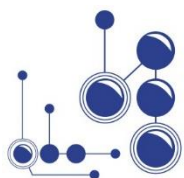
Customer	Object	Software/ Hardware used	Scope	Year
“Dneprovsky Integrated Iron&Steel Works named after Dzershinsky” PJSC	Construction of PCI shop for BF#1,8,9,12	PLC ControlLogix	Assembling and supply of control cabinets	2014
“Novokramatorsky Mashinostroitelny Zavod” PJSC	Reconstruction of BF#4 cast house at “Azovstal Iron&Steel Works” PJSC	PLC ControlLogix, SCADA FT View SE	Control system design and commissioning, supply of control cabinets	2014
“Azovstal Iron&Steel Works” PJSC	Reconstruction of BF#4	PLC ControlLogix, SCADA FT View SE, instrumentation Yokogawa, Elemer, Ergomera	Supply of control and instrumentation cabinets	2014
“Alchevsk Iron & Steel Works”, PJSC	Reconstruction of cooling and lining system of BF#1	PLC CompactLogix, SCADA FT View SE	Control system design	2013 – 2014
“Konstantinovskiy plant of mechanical equipment” PJSC	Software correction of rotary extrusion machine RX-320	PLC SLC-500, S7-300	Commissioning	2013 2014
“Ilyich Iron & Steel Works” PJSC	Vibration monitoring system of sinter plant exhausters	Sensors IFM Electronics, SCADA FT View ME	Supply of control cabinets, software design, commissioning	2013
“Energoprylad-Ukraine” PJSC	Frequency motor control of dust feeder power units #1,3,4 of Pridneprovskaya TPP	Frequency drives PowerFlex	Supply of control cabinets	2013
“EMV-Energo”, PJSC	Frequency motor control of dust feeder power units #1,3,4 of Uglegorskaya TPP	Frequency drives PowerFlex		2013
“Azovstal Iron&Steel Works” PJSC	Construction of boiler-utilizer unit # 5	PLC ControlLogix, SCADA FT View SE	Supply of control cabinets, commissioning	2012, 2013



Customer	Object	Software/ Hardware used	Scope	Year
“Alchevsk Iron & Steel Works”, PJSC	Reconstruction of BF#1 cast house machines	PLC CompactLogix, SCADA FT View SE	Control system design and commissioning, supply of control cabinets	2012 - 2014
“Azovstal Iron&Steel Works” PJSC	Implementation of the CO afterburning feature of BF#4 stoves	PLC ControlLogix, SCADA FT View SE	Control system design	2012
	Reconstruction of BF#4 cast house aspiration equipment			2012
“EVRAZ-DMZ Petrovskogo” PJSC	Correction of BF#2 control system	PLC ControlLogix SCADA RSView32	Inspection of the existing control system, software and network topology corrections, commissioning	2012
	Automated weighing and accounting system of scale cars of blast-furnace shop	PLC ControlLogix, CompactLogix, SCADA FT ViewSE Reporting FT Historian Classic	Control cabinets assembling and supply, equipment supply, installation and construction works, commissioning	2012
“Trade House Russia-Ukraine” LLC, Mariupol	Construction of TVD-ZN CHPP-1 of PJSC “MMP named after Illich”	PLC S7-300 IT equipment Hewlett Packard	Supply of control cabinets	2012
	Reconstruction of nitrogen compressor station of BOF shop at “MMP named after Illich” PJSC			2011
“LvovOrgres” OJSC, Lvov	Reconstruction of the station block #1 of Zaporozhskaya CHPP	Frequency drives PoweFlex	Supply of control cabinets	2011



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“Azovstal Iron&Steel Works” PJSC	Implementation of BOF shop process parameters archive	PLC S7-300 SCADA WinCC	Control system design (instrumentation, cabling), control cabinets supply	2011
“Alchevsk Iron and Steel Works” PJSC	Automated weighing and accounting system of scale cars of blast-furnace shop	PLC CompactLogix, SCADA FT View SE	Control system design, supply of control cabinets	2011
“EVRAZ-DMZ Petrovskogo” PJSC	Automated weighing and accounting system of scale cars of blast-furnace shop	PLC ControlLogix, CompactLogix,S CADA FT View SE Reporting FT Historian Classic	Control system design	2011
“Azovstal Iron&Steel Works” PJSC	Construction of boiler-utilizer unit # 5	PLC ControlLogix, SCADA FT View SE		2011
“Dneprohydromach” PJSC	Reconstruction of BF#6 cast house machines at "ArcelorMittal Kryvyi Rih" PJSC	PLC ControlLogix, SCADA FT View SE	Control system design and control cabinets supply	2010
“Northern Iron Ore Enrichment Works” PJSC	Ore Crusher MR-800	PLC CompactLogix, Micrologix, SLC. Frequency Drives PowerFlex700 HMI PV Plus	Software correction and commissioning	2010
“EVRAZ-DMZ Petrovskogo” PJSC	Implementation of BF#2 automation equipment’s diagnostic system	PLC ControlLogix, Dalalogging FactoryTalk Transaction Manager, Reporting RSBizWare Historian		2010
“Dneprohydromach” PJSC	Reconstruction of BF cast house machines at “Tulachermet” OJSC	PLC S7-300, SCADA WinCC	Control system design and commissioning, control cabinets supply	2010



Customer	Object	Software/ Hardware used	Scope	Year
“EVRAZ-DMZ Petrovskogo” PJSC	Implementation of BF-2, BF-3 process parameters’ archive and reporting system	SCADA FT View SE, RSView32, Data logging FT Transaction manager, Web-portal FT Historian Classic`	Software design and commissioning	2010
“EVRAZ-DMZ Petrovskogo” PJSC	Implementation of diagnostic system of BF loading mechanisms	PLC ControlLogix SCADA FT View SE	Control system design and commissioning	2010
“Dneprohydromach” PJSC	Line of FBO horizontal snap-flask moulding	HMI PanelView 600	Software correction and commissioning	2009
“Interpipe Niko Tube”, Nikopol	Rolling Train	HMI Versa View		2009
“Dneprohydromach” PJSC	Reconstruction of BF cast house machines at “Kosaya Gora Iron Works” OJSC	PLC ControlLogix, SCADA FT View SE	Control system design and control cabinets supply	2009
“Modul” Kamenets OJSC -Podilsky	Implementation of Galvanizing Line process parameters’ archive and reporting system	SCADA RSView32, Data logging FT Transaction manager, Web-portal FT Historian Classic`	Software design and commissioning	2009
“Northern Iron Ore Enrichment Works” PJSC	Ore Crusher MR-800	PLC CompactLogix, Micrologix, SLC. Frequency Drives PowerFlex700 HMI PV Plus		2008
“Azovstal Iron&Steel Works” PJSC	Reconstruction of BF#6 cast house machines	PLC SLC500, SCADA RSView32	Control system design	2008
“Dnepropromlit” JSC	Line of FBO horizontal snap-flask moulding	PLC CompactLogix, HMI: PV Plus	Software correction and commissioning	2008



Customer	Object	Software/ Hardware used	Scope	Year
“EVRAZ-DMZ Petrovskogo” PJSC	Reconstruction of BF#2	PLC ControlLogix, SCADA: FT View SE	Control cabinets assembling	2008
“EVRAZ-DMZ Petrovskogo” PJSC	Reconstruction of BF-2	PLC ControlLogix, SCADA: FT View SE	Software design and commissioning	2008
“Modul”Kamenet” OJSC -Podilsy	Construction of Galvanizing Line	PLC ControlLogix, SCADA RSView32	Control system commissioning	2007, 2008
“Avdiivka Coke Plant” PJSC	Sulfur and acid shop	DCS ProcessLogix	Technical support contract	2007
“Alchevsk Iron and Steel Works” PJSC	Reconstruction of BF#1	PLC ControlLogix, SCADA RSVIEW SE	SCADA application design and commissioning	2007



Chemical and petrochemical industry				
Customer	Object	Software/ Hardware used	Scope	Year
P&G, Port Qasim, Karachi, Pakistan	Proficy System	PLC ControlLogix	Development the Allen-Bradley controllers programming procedure for their integration into Proficy system	2010-2014
P&G Manufacturing, Ordzhonikidze, Ukraine	Wash powder workshop	Variable speed controller PowerFlex700S	Support manning	2011 - 2013
P&G Manufacturing, Ordzhonikidze, Ukraine	Powder pre-packing train	Controllogix, CompactLogix controllers, Digital operator PanelViewPlus1000 PanelView1000	Technical support by relocation of train in the new workshop building	2011
P&G Manufacturing, Ordzhonikidze, Ukraine	Automatic system of household products manufacturing	Variable speed controller PowerFlex700	Support manning	2013
P&G, Port Qasim, Karachi, Pakistan	Proficy system	PLC ControlLogix	Development the Allen-Bradley controllers programming procedure for their integration into Proficy system	2010
P&G Tambrands Borispol, Ukraine	Air conditioning system	ControlLogix controllers, digital operator PanelView Plus1000,	Technical support of software and equipment produced by Allen-Bradley, control cabinets occasional assembling	2010
P&G Manufacturing, Ordzhonikidze, Ukraine	Pre-packing trains	Controllogix, CompactLogix controllers, digital operator PanelView Plus1000 PanelView1000	Development and setting to work filing system of wash powder pre-packing train idle time	2010



Chemical and petrochemical industry				
Customer	Object	Software/ Hardware used	Scope	Year
P&G Manufacturing, Ordzhonikidze, Ukraine	Automatic system of household products manufacturing	CompactLogix controllers, digital operator PanelView Plus 600	Product documentation development, pre-commissioning activities, technical support, cabinets adjustment, maintenance services of Allen-Bradley equipment	2010 - 2011
P&G Manufacturing, Ordzhonikidze, Ukraine	Packing lines	Controllogix, CompactLogix controllers, digital operator PanelView Plus1000 PanelView1000	Programmable controllers software upgrading	2010
P&G Tambrands Borispol, Ukraine	Air conditioning system	ControlLogix controllers, digital operator PanelView Plus1000	Product documentation development, cabinets adjustment, pre-commissioning activities	2009
P&G Manufacturing, Ordzhonikidze, Ukraine	Soap production line	Servo drive produced by SERCOS	Diagnostic operations and reconfiguration of the SERCOS module	2009
P&G Manufacturing, Ordzhonikidze, Ukraine	RONCHI line	ControlLogix controllers, digital operator PanelView Plus1000	Partial calculation system of the line hitching amount	2009
P&G Manufacturing, Ordzhonikidze, Ukraine	ACMA-1, ACMA-2, ACMA-3 lines	CompactLogix PanelView Plus 1000, Ethernet, ControlNet, DeviceNet	Development and setting to work idle time filing system	2009



Chemical and petrochemical industry				
Customer	Object	Software/ Hardware used	Scope	Year
P&G Manufacturing, Ordzhonikidze, Ukraine	Automatic system of household products manufacturing	Ultra3000, ControlLogix, CompactLogix, Micrologix, SLC, PowerFlex700, PanelView, PanelViewPlus, Ethernet, ControlNet,	Maintenance service of Allen-Bradley's equipment	2008 - 2009



Paper and cartonnage manufacture, printed industry				
Customer	Object	Software/ Hardware used	Scope	Year
“Grand – Afisha” PJSC, Kiev	Servo motor MPL	MPL- B 540 SJ 22 AA	Circuiting switch services on the replacement and adjustment of the servomotor series MPL	2014
“Rohanska board mill” PJSC, Rohan	Packing line	PowerFlex 700S	Maintenance service	2009 - 2010
“Rubezhanskyi card-board mill” PJSC, Rubezhnoe	Bench of cardboard tube conversion	PLC-5, PanelView 1000	Pre-commissioning activities	2009
	DRS-1 servo drive	1771-HSN	Software development for the servo controller	2009
	JV-64 line	PLC-5, PanelView 1000	Pre-commissioning activities, maintenance service	2008

Food manufacturing industry				
Customer	Object	Software/ Hardware used	Scope	Year
“Kharkiv Biscuit Factory” CJSC, Kharkiv	Heating of the GFS tank	PLC OBEH, IFM sensors	Development of the tankage heating system	2014
“Poltavapivo” PJSC, Poltava	CIP-washing station	PLC Siemens 2013	Pre-commissioning activities on the CIP-washing station	2013
“OVOSTAR” Ltd, Kiev	Poultry factory	SLC-500 controller, RSVIEW32 software	Software modernization, reshaping APCS system	2011
“Kononovsky elevator” LLC, Poltava	Elevator	Software RSVIEW32	Maintenance service	2009
“Xleb” PJSC, Yubyleinoe	Line of the bakery goods bake	Контроллеры Micrologix 1200	Maintenance service	2009
“Landgut broiler” PJLC, Rozivka	Pressure pastry tube RVF-50	SLC-500 controllers	Software development, pre-commissioning activities, Maintenance service	2009
“PRODUCTION ASSOCIATION” KONTI”, PJSC	Compressor station	Micrologix 1100 controllers	Maintenance service of Allen-Bradley controllers	2008
“Maryupolskaia confectionary factory” LLC, Mariupol	Biscuits manufacture line	ControlLogix controllers, Kinetix 6000, digital operator PanelView	Equipment supply. Implementation. Service and technical support	2006



Motor Vehicle Industry				
Customer	Object	Software/ Hardware used	Scope	Year
“AvtoKRAZ” PJSC	Automotive frame production line	Pilz PNOZ PSS 3000	Installation and adjustment of safety relaysPILZ	2015
“AvtoKRAZ” PJSC	Rolling-and- bending machine “Amada”	PLC Pilz 2015	Modernization of the rolling-and-bending machine “Amada”	2015
Automobile factory “PSARus”, Kaluga	Body paining shop	Encoders 825, Software Point View, variable frequency drive PowerFlex 40	Network DeviceNet check-out	2013
“AvtoKRAZ” PJSC	Resurfacing of the line LK 003 «Running gear» workshop	ControllersSLC	Pre-commissioning activities	2008

Building activity				
Customer	Object	Software/ Hardware used	Scope	Year
“Zorja” LLC, Kobeliaky	Woodworking line	Variable speed driver PowerFlex 40	Variable frequency driver configuration	2009
“Donbassantehmo ntazh” LLC, Mariupol	CAU filling apparatus ПК-150	SLC-500 controller	Maintenance service	2008