



Power, Automation, Revolution, Technology

2017 General Catalog

Part Control
Power, Automation, Revolution, Technology

2017 General Catalog

Postal Code : 9139711956 , No 303 & 304,
Third Floor , Sobhan Building , Saheb Alzaman TM Sq
Sanaei St , Mashhad , IRI
Tel : +98 51 37279258 (19 Lines)
Fax : +98 51 37243508
Web Site : www.partcontrol.ir
Email : info@partcontrol.ir



Part control



Part Control Co.
Power, Automation, Revolution, Technology



In the name of God

Part Control Co. is a leading company with more than two decades of activity in the field of electricity and industrial automation and control. The policy adopted by the management is the development in line with advancements in global technology, and pursues an important approach that is entrepreneurship, technology localization, automation and a development based on knowledge and supporting clients and craftsmen.

In this regard, plus taking advantage of comments and ideas of young and creative members of the company, the experiences and consults of professionals active in this filed is also used to further achieve the company's goals.

The company has three active departments: Commerce Department, Technology and Engineering Department, and Training Department. Part Control Co. takes part in professional associations and communities as an official member. These include but are not limited to Power Industry Syndicate, Association of Iranian Automation Companies, Room of Commerce, Industry, and Business, and The Union of Electricity and Industry and Panel Builders of Khorasan.

The effective and constructive relationship of the company in its professional field of activity with other industries has caused the company to appear in the vendor list of these industries, including:

- Oil, gas and petrochemical industry
- Water, waste water and related industries
- Cement and concrete
- Iron, steel, roller and process industries
- Food and medicine
- Flour, and animal poultry
- Tile and ceramic
- Carpet and rug industry
- Mines and minerals
- Automobile
- Machinery manufacturing, etc ...

The abilities of the company in above three departments are as follows:

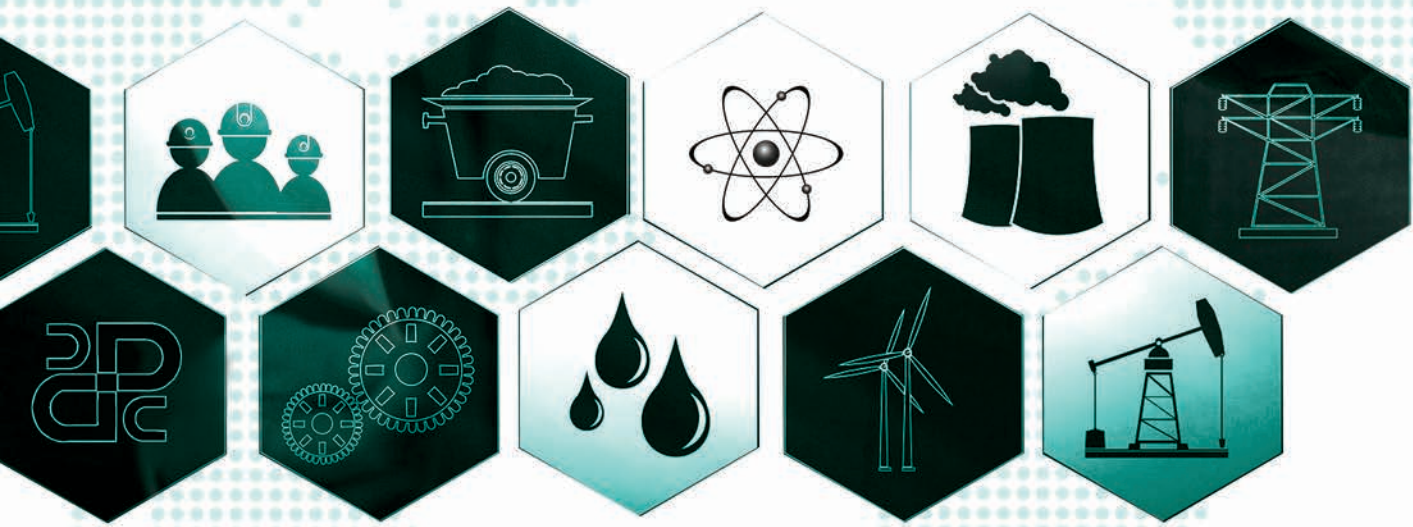
Technical and Engineering Department

In technical and engineering department, we are dealing with industrial and controlling processes in a scientific, updated, and precise manner, and while addressing clients' demands and considering customer orientation rules, we restrain wasting time and capital resources of the customers, and at the same time, a favorable quality of services is considered as the final goal. For this purpose, before doing the project or defining it, enough time is spent on designing and initial studies. In this department, the following services are provided:

- Consultation, design, and implementation of power and automation of production lines
- Consultation, design, and implementation of hardware and software Factory Automation & Process Automation projects (Programming based on PLC software, monitoring and industrial networks)
- Design and implementation of DCS and SCADA projects
- Design, manufacturing and production of driver panels
- Expert Repair of industrial automation equipment, HMI CPU & Modules, and drivers
- Localization of industrial automation in different industries



Part Control, A change in the automation technology



Commerce and Sales Department

- In this unit, the focus is on providing the best updates, hardware solutions, and original spare parts for clients. The role of industry support is always taken into consideration, and if necessary, the professionals in Engineering Department are consulted to provide clients with best possible solutions. Quality services are provided with timely delivery of original spare parts and real warranty. In this department, the following goods and services are provided:

- Low Voltage (LV) equipment sales, industrial automation and instrumentation, with Schneider and Siemens Brands, and providing after sales services
- Providing all kinds of sensors and instrumentation with SAMSUN, Fisher-Rosemount, WEGA, WIKA, Endress+Hauser Truck, Ifm, BALLUF, Microsonic, Pepperl&Fuchs, and Sick brands
- Configuration and eventually providing financial consultations in the fields of control projects, network communication, drives and soft drivers, sensors and instrumentation according to industrial processing requirements and standards
- Providing spare parts required for industrial automation equipment

Training Department

This is an important department of Part Control Company, highly valued by the company's management, because it aims localization of the knowledge. The goals and policy of the company is to update the knowledge of its experts and other colleagues inside the organization in the field of control and automation (in order to provide better services to industrial community), and by holding training programs in different levels for consulting engineers, executive experts and system operators in the field of control systems and related sciences, it provides valuable services. A brief explanation of the above services are given below:

- Providing professional training in the field of automation, monitoring, industrial automation, monitoring, industrial networks and instrumentation (in the form of holding training programs in different levels mentioned above)
- Design and manufacturing industrial automation, instrumentation and mechatronic training packages
- Holding professional seminars in the field of control
- Providing industrial automation professional software

In the end, we hope to be helpful and effective in attaining our country's strategic goals as a member of the industrial community of our country.

Mr. Reza Nakhavali - CEO



TECHNICAL DEPARTMENT

Technical and Engineering Department

Project Implementation Unit	1-1
Support, Technical, and Engineering Services Unit	1-2
Repair and After Sales Services Unit	1-3

A Background of Some implemented Projects

Oil Industry	1-5
Gas Industry	1-6
Petrochemical and conversion Industries	1-7
Food Industries	1-8
Machinery Manufacturing Industries	1-9
Water and Wastewater Industries	1-10
Water and Wastewater Industries	1-11
Rail Transportation Industries	1-12
Housing Industries	1-13
Flour and Animal Feed Industries	1-14
Flour and Animal Feed Industries	1-15
Flour and Animal Feed Industries	1-16
Automobile and Spare Part Industries	1-17
Mine and Cement Industries	1-18



COMMERCIAL DEPARTMENT

Commerce Department

Domestic Commerce Unit	2-1
Foreign Commerce Unit	2-2

Siemens Productions

About Siemens	2-4
SIMATIC Family of Processors	2-5
SIMATIC Family of Graphical Interface	2-6
Siemens Industrial Computers	2-7
SIMATIC Automation Software	2-8
Siemens Industrial Network Equipment	2-9
SINUMERIK Machinery Control Equipment	2-10
SIMOTICS Electromotor	2-11
Siemens Family of Drives	2-12
SIRUIS 3RW Soft Starter Series	2-13
SETRON Protective Products	2-15
SITOP Switching Power Supply	2-16



TRAINING DEPARTMENT

Training Department

Training Unit	
Automation Training Packages	3-1
Training Department Background	3-2
Automation Training Course Titles	3-3

1

Technical Department

Technical Department

Project Implementation Unit	1-1
Support and Technical Services Unit	1-2
Repair and After Sale Services Unit	1-3

A Background of Some Implemented Projects

Oil Industry	1-5
Gas Industry	1-6
Petrochemical and conversion Industries	1-7
Food Industries	1-8
Machinery Manufacturing Industries	1-9
Water and Wastewater Industries	1-10
Water and Wastewater Industries	1-11
Rail Transportation Industries	1-12
Housing Industries	1-13
Flour and Animal Feed Industries	1-14
Flour and Animal Feed Industries	1-15
Flour and Animal Feed Industries	1-16
Automobile and Spare Part Industries	1-17
Mining and Cement Industries	1-18



Part Control Co. Technical Department consists of the following three units.

- Project Implementation Unit
- Support and Technical Services Unit
- Repair and After Sales Services Unit

Each unit covers part of customers' needs, and the unit tries to obviate all the needs of domestic clients and industries with the latest technological achievement of the world.

1. Project Implementation Unit

This part of technical Department is active in the field of Industrial Automation Projects in different industries and some of the tasks of the unit include:

- Consultation and providing design and engineering solutions for automation and mechanization of factories and industrial procedures
- Providing services to consultative companies and governmental organizations for preparation and codification of tenders documents
- Preparation and codification of engineering proposals
- High power and low voltage system, and instrumentation instrumentation, control and automation design
- Implementation of EPC and industrial automation projects in the form of ready to use
- Design and manufacturing of electrical, control and PLC panels, according to the latest international standards
- Installation and commissioning industrial factories' control systems
- Supervising true implementation of control projects performed by foreign contractors
- Renovation and updating currently installed control systems
- Providing As-built documents and design maps

(For more information on projects implemented by Project Implementation Unit, please see pages 1-5 to 1-18)

Support and Technical Service Unit



1

Technical & Engineering Department

2. This unit is responsible for technical support of clients and industries and with the help of experienced experts solves the problems in the least possible time. Some of the tasks of this unit include:

- Dispatch of experts for fault detection and troubleshooting of automation systems
- Regular repair and maintenance and troubleshooting of automation systems
- Regular repair and maintenance of factory control systems under PM contracts
- Instrumentation test and calibration
- PLCs, HMIs and other industrial automation password remove
- Minor changes in control system programs on-site
- Installation and commissioning of drives, soft starters, servomotors, etc.
- Creating backup of industrial equipment programs (Including PLCs, HMIs, Drives and servo drives, etc.)
- Small machinery manufacturing and procedures programming
- Phone support for customers and helping them to solve their problems
- Providing services and software troubleshooting online and through internet or other communication networks



Repair and after sales services Unit

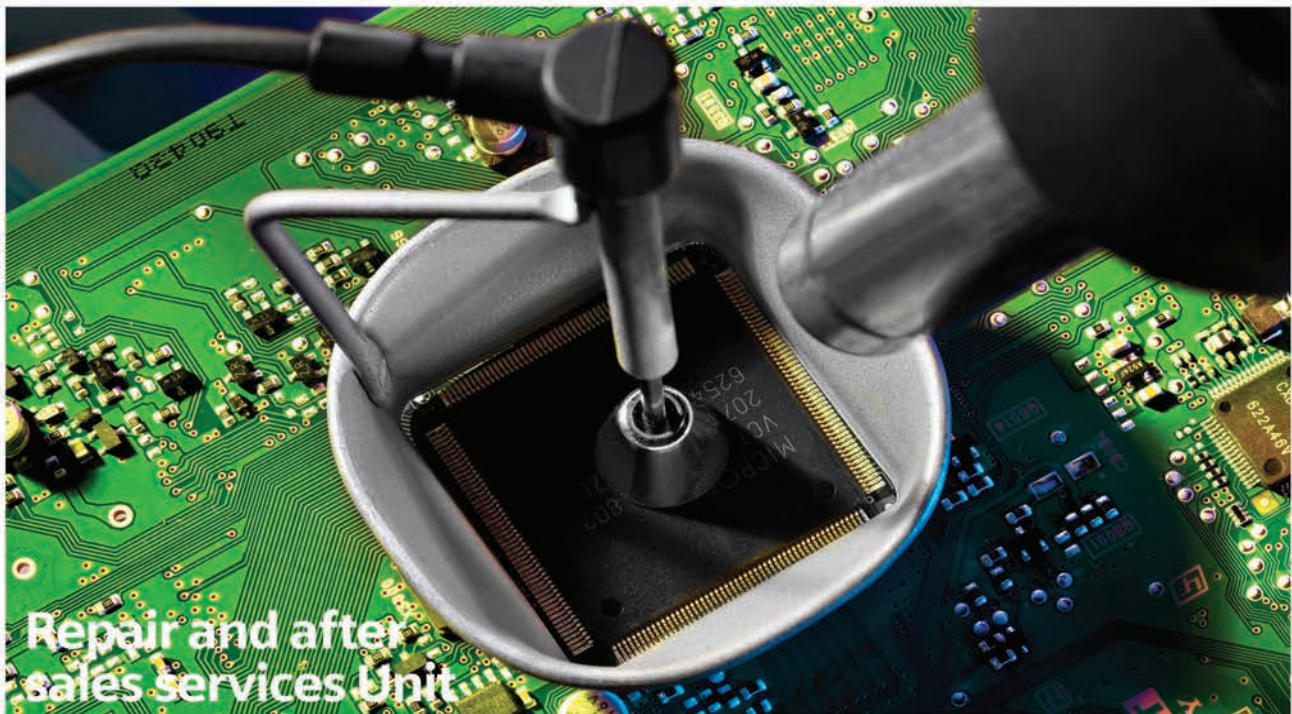
3. Since many power, control and instrumentation producer have no representative in Iran, after sale services becomes a problem for Iranian users.

One of the most important problems in industry is repairing malfunction equipment that causes a lot of loss in production lines and income of firms.

On the other hand, considering rapid changes in technology, replacing control equipment and electronic parts is problematic due to some reasons such as high costs of equipment, the old part becoming obsolete, unavailability of the new part and the need to be imported from overseas, and so on.

Unit of the repair and after sales services of Part Control Co. Technical Department is a professional center to meet the requirements of the industrialists. This unit provides the following services:

- A reliable source for many hardware problems and faults of automation equipment
- Providing services by experienced and trained experts
- Providing quick response to customers
- Providing quality guaranteed services
- Possibility to make a contract for repair and maintenance of power and instrumentation of production lines for simplification and acceleration of production process



Considering Part Control Commerce department provides goods and equipment for the customers, Repair and Support Unit of the company provides services both during warranty period and afterwards. In addition, because of expertise in the field of electronics, power and control in the field of repair, it is possible to repair all equipment and devices whether it is Siemens or not. Professional services of this unit include:

- professional repairs of CPU, digital and analog input and output modules, industrial network modulus
- professional repairs of different brands of HMI
- professional repair of different sensors, instrumentation and transmitters
- professional repair of soft starters, AC, DC and Servo drives with a wide range of power
- professional repair of instrumentation

By using authoritative experts and the latest fault diagnosis and repair of electronic parts, the unit has been able to make big money and time saving for customers and preventing foreign currency expenditure for the country.

Oil Industry



Project: Fault Diagnosis, trouble shooting and commissioning synchronous electric motor in G series of Kranj CS500 Unit
Employer: Aghajari Oil and Gas Production Co.



One of the most prevalent problems for major industries when giving their projects to foreigner contractors is the lack of proper support by most contractors, because of sanctions and other excuses. The 11 KW compressors of G series in CS500 site of Kranj region, despite huge investment and having updated control system was not utilized after more than five years. Aghajari Oil and Gas Production Company defined a project in two phases of fault diagnosis of control system for the first phase and troubleshooting and full utilization of the system for the second phase.

For implementing fault diagnosis, a software were developed for logging and monitoring control signals using WinCC software. After a tedious and very sensitive and precise work on the reports obtained from the software, the faults were detected and eventually corrected.

After successful implementation of the Phase I of this project and by creating technical documents and analyzing its software programs by the Company, Phase I finished, and in the Phase II, the system was commissioned and was delivered to the end user.

Year: 2012
 PLC: C7
 CPU & HMI: C7-613
 SoftWare: WinCC
 Network: ProfiBus



Gas Industry

1

Technical & Engineering Department resume



Project: Designing and manufacturing SIVACON Panels for Gas Compressors in Aghajari Gas Fields

Employer: Aghajari Oil and Gas Production Co.

In order to decrease mechanical and electrical stress in exploiting gas exploitation by Aghajari filed compressors, a project was defined by Aghajari Oil and Gas Production Co. for equipping the compressors with soft starters. After acquiring the technical and commercial abilities of Part Control Company, the contract was awarded to the company for implementation.

In design and manufacturing of nine 200 KW soft starter panels, SIVACON Siemens designs were used, and 3RW40 soft starter series were used in this project.

Project: Designing and implementation of automation and monitoring of exhaust gas temperature of gas control in refining unit

Employer: Shahid Hasheminejad Gas Processing Company

The project contract of automation, monitoring, and revolution control of Gas Turbine Units 2 (GTU-2) and water and steam units (boiler) and cooling Tower of Shahid Hasheminejad Gas Processing Company, was awarded to Part Control Co. after accepting financial and technical offers through tendering.

In this project, after sampling the temperature of the refined exhaust gas, controlling signals are sent to fan drives of this unit, so that by implementing this project, big saving in energy consumption in winter is achieved.

Year: 2010

PLC: S7-300

CPU: 315-2DP

SCADA: WinCC

HMI: WinCC Flexible

Drive: MicroMaster 430

Network: ProfiBus & Profinet



1

Polyester Industries

Technical & Engineering Department resume



Project: Procuring equipment, design and implementation of control and monitoring of Polyester factory

Employer: Lorestan Polyester Industry Co.

Through a contract, all phases of design, extracting logic and programming of control and monitoring systems of the factory was awarded to Part Control Co., and then, procuring control and monitoring system equipment of Lorestan Polyester Industry Co. production line was done by Part Control Commerce department, based on Siemens equipment.

In polyester production process, multiple control loops for controlling two reactors and two mixers as well as oven and cooling tower temperature had to be considered. Implementing control tasks was done by CPU 313C-2DP, and monitoring tasks was done using WinCC software.



Year: 2011

PLC: S7-300

CPU: 313C-2DP

SCADA: WinCC

Network: Ethernet & Profibus





Project: Design and change in control and monitoring system of Debel Khazaei Sugar Refinery Factory

In order to renovation and optimization of central control system of Debel Khazaei Sugar Refinery Factory, a project contract was defined as upgrading control system of sugar refinery unit from old Hartman Brown system to Siemens using PCS7 V7.1 software, which was awarded to part Control Co. by tendering. In this project, the process logic extraction, redesigning new monitoring screens, PLC programming and client and server configuration had to be implemented. Control system had the redundancy capability and operators were able to supervise the whole project through 9 clients.



Year:2013

PLC:S7-400H

CPU: 417-4H

DCS: PCS7 V7.1

Server station: redundancy server

Client station: 9 Client

Remote IO: ET-200 Redundant

Network: Profinet & Profibus





Machinery Manufacturing Industries

Project: Providing Automation equipment and control system programming and monitoring of machines making Transmission Tower spare parts

Employer: Pishgaman Sanat Abivard Machinery Manufacturing Co.

The project was ordered by Pishgaman Sanat Abivard Machinery Manufacturing Co. and in this project, control and monitoring system of automatic machinery manufacturer, that produced transmission tower spare parts was designed and implemented. Among remarkable points in implementing the project, was a high instrumentation required for manufacturing numerous parts of a transmission tower, so that such a instrumentation can only be satisfied by using a control system. Another point required for design and implementing of this control system, was rapid implementation of the process, making production line justifiable. In this project, a great deal of capabilities of a PLC in S7-200 series was used.

Year: 2011

PLC: S7-200

CPU: 224

HMI: TP 170 micro

Network: RS-485

Drive: ServoDrive





Water and Wastewater Industries

Project: Procurement, installation and commissioning of 315 KW drives of Zahak drinking water pump station

Employer: Rural water and waste water organization of Sistan & Baluchestan Province

Among benefits of using drives (motor revolution control) in pump stations, are full control over startup behavior and stop of electric pump, preventing water-hammering phenomenon, full protection of electric motor and saving energy.

Considering the properties required for starting electric motors of Zahak city pump station, the contact of procuring, installation and commissioning of eight 315 KW Schneider Electric drives was awarded to Part Control Company.

Procurement of the required equipment of the project was done in Commerce department of Part Control Co. in the least possible time, and after old system removal, six drives was installed in Zahak drinking water purification plant by Technical and Engineering Unit of Part Control Co. Among characteristics of this projects, equipping all drives with ProfiBus network modules and communication with WinCC monitoring system can be mentioned.



Year: 2010

Drive: ATV61-315 kw

Network: ProfiBus





Project: Procurement, installation, and commissioning of drinking water purification pump station in cities of Kermanshah Province

Employer: Kermanshah Province water and waste water organization

Using soft starter in pump station has led to increasing productivity and service life of equipment and electro mechanic installations, and this is achieved by eliminating start and stop shocks using soft starter. Kermanshah Province Water and Waste Water Organization awarded the contract of procuring required equipment, design, manufacturing, and assembly of 17 soft starter panels up to 250 KW used for commissioning electric pumps of Sanghor, Eslam Abad and Sarpol Zahab water purification stations to Part Control Company. After design, manufacturing, and assembly of the mentioned panels, the old star-triangle system was removed and replaced with the new system in the least possible time. Among characteristics of the project, we can point out that beside soft start and stop, cascade and multiplex capacity is added too, and the capability of communication with the Kermanshah Province Water and Waste Water central control system was improvised by Modbus network protocol.

Year:2012

Softstarter:Donfoss

With Bypass contactor

Cascade and Multiplex Capability

Network:Modbus





Rail Transportation Industries

Project: Procuring automation equipment, design and manufacturing control panels and implementing monitoring automation system of concrete segments of line II of Mashhad Urban Railway

Employer: Mashhad Urban Railway

In September 2011, a contract was awarded to Part Control Co. by Mashhad Urban Railway, on procuring equipment and implementing temperature control system of concrete segment molds in Razavi concrete segment mold factory. This factory will produce concrete segments for Line II of Mashhad Urban Railway after commissioning.

Razavi concrete segment factory production line includes 54 molds that produce three concrete rings, and in total, to control the temperature of these molds, 54 control loops was improvised. In addition to the main panel, which includes a S7-412 CPU and associated input/output cards, 27 local panels to collect temperature signals and displaying mold status was installed on-site. The project completed in less than 6 months, and in terms of software technology was equal with European samples.

Year: 2010

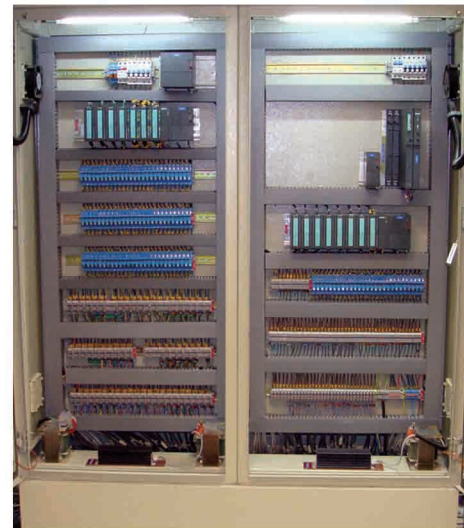
PLC: S7-400

CPU: 412-2DP

SCADA: WinCC,

HMI: WinCC flexible (MP377)

NetWork: Profibus & Profinet



Construction Industries



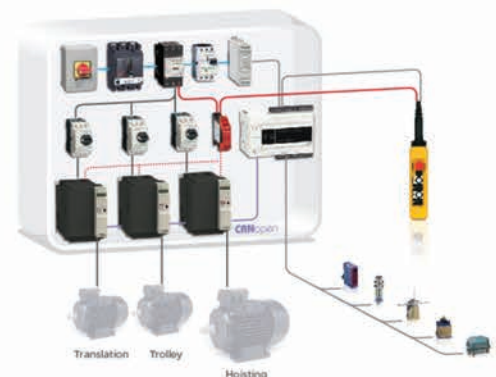
Project: Procuring power and automation equipment, logic extraction and design and implementation of power and control system of 12 ton tower crane

Employer: Yaghut Mosalla Project

Tower cranes have a very important role in construction industries. Although it seems they have a simple structure, they have a complex control system regarding the structure and the dangers in lifting, moving, and dropping loads.

The project of design and implementation of power and control system of Potain tower crane was performed for a tower crane that was made about forty years ago. Extracting logic from the process and old cards and boards was done through reverse engineering. The problem was that not only there were no documents in domestic scientific literatures and journals, but also foreign documents had no adequate information, and in a way, the monopoly of this technology made the work even harder. All steps for designing power and control panels, manufacturing and system test was done in one month. In this project, three Schneider ATV 71 drive were used to control shariot, hook and wheel were used.

Year:2012
PLC:S7-200
CPU: 224
Drive: Altivar71





Flour and Animal Feed Industry

Project: Consultation, design, procurement of parts and implementation of automation and system control change of animal feed production line

Employer: Gohardaneh Shargh Animal feed factory

Because of low efficiency in production process and numerous problems in previous power and control system that was done by a foreign contractor and machinery manufacturing company, the project was done with complete change in monitoring and control system and doing fundamental reforms in main and local panels in a four months period, so that the employer expressed much satisfaction with the project. The capabilities added to the project, in addition to full control over production line, includes: Redundancy in monitoring servers, full reporting of the total raw materials and weekly and monthly production, pellet and mill current curves, precise weighting using Siemens Siwarex hardware, and recording and displaying the alarms.

Year:2015

PLC: S7-300

CPU:317-2PN/DP

SCADA: WinCC

2 Station server & 3 station client

HMI: KTP 1000 (5 Local Panel)

Network: Ethernet, ModBus, ProfiBus

Drive:Micro master 420,430,440



Flour and Animal Feed Industry



Project: Consultation, equipment procurement, design and implementation of power and automation systems of raw material storage silos

Employer: Kimiadan Torbat Heydarieh Animal feed factory

One the basic parts of animal feed factories are the raw material silos that should be checked and analyzed regularly in terms of storage conditions, the volume of storage, temperature, and humidity, as well as the period of stored materials, in order to prevent high humidity and molding or high temperature and firing or explosion of silos.

In this project, design and manufacturing of power and control panels and PLC programming and monitoring process of this project was done by Part Control engineers. To control the process, the Siemens S7-200 PLC series was used and the capability of remote communication with central DSC system of the factory became possible through Ethernet protocol.



Year:2012

PLC:S7-200

CPU: 224

HMI: KingView 7"

Network:Rs-485 Modbus

Drive: ATV312





Flour and Animal Feed Industry

Project: Consultation, equipment procurement, design and implementation of power and automation systems of animal feed production line

Employer: Kimiadan Torbat Heydarieh Animal feed factory

Animal feed production line is a material transmit process that includes procedures such as batching, milling, mixing, cooking, cooling, and packaging. High quality machinery does not necessarily guarantee high quality of final product. For this reason, the factory full automation in the form of EPC including design, manufacturing control panels, programming of control, and monitoring system of the animal feed factory was awarded to Part Control Company.

In this project, everything from design and locating power and control room to full software implementation was done by Part Control engineers. Of remarkable characteristics of the project, displaying the process on four monitors, monitoring and archive on two servers capable of producing daily and monthly reports and precise weighting and batching of raw material, and energy consumption management can be mentioned.

Year: 2012

PLC: S7-300

CPU: 317-2PN/DP

HMI: WinCC (3 station)

NetWorks: Ethernet, ModBus, ProfiBus

Drive: MicroMaster 430 & 440

Sinamics G120





Project: Design and manufacturing 1600-ton and 2500-ton drive press panels

Employer: Forge Part Sazan Co.

Because of the specific working conditions of Forge factory, choosing the drive and design and manufacturing the panel implied special requirements:

- Continual and heavy duty working of press
- Polluted environment
- Drive ventilation being sensitive

These conditioned made us choose Schneider ATV71 drive with 315 and 160 KW power in the project of building the press panel. In addition, to provide proper ventilation for the drive, and preventing contamination, a unique design was employed in building the panel. In this panel, the cooling paths of power and control compartments are separated, and the panel was built according to the latest European standards.



Mining and Cement Industry



Project: Providing logic and programming of control and monitoring of Gypsum factory
Employer: Gach Doust Aryan Khavar Gypsum Processing Factory

The process of producing building materials from minerals is an irreversible one, and any error in control system could lead to huge economic losses in terms of wasting raw materials and the chemicals used in the process. Gach Doust Aryan Khavar Gypsum Processing Factory is a multinational company established in Sarakhs Special Economic Zone for micronized gypsum production. The project contract of control system and monitoring programming of the factory was awarded to Part Control Company. PLC programming was performed for Siemens 300 series hardware and monitoring was implemented using WinCC software.



Year:2013
PLC:S7-300
CPU:315-2DP
HMI: WinCC
NetWorks: Profibus

2

Commercial Department

Commerce Department

Domestic Commerce Department	2-1
Foreign Commerce Department	2-2

Introducing Siemens products

About Siemens	2-4
SIMATIC family of controllers	2-5
SIMATIC family of graphical interface	2-6
Siemens industrial computers	2-7
SIMATIC Automation software	2-8
Siemens Industrial Network Equipment	2-9
SINUMERIK Machinery control equipment	2-10
SIMOTICS Electric motors	2-11
Siemens drives family	2-12
SIRIUS 3RW series soft starters	2-13
SIRIUS industrial control products	2-14
SENTRON protective production	2-15
SITOP switching power supplies	2-16



Commerce Department

Part Control co. Commerce Department with more than two decades of activity in the field of power and industrial automation and taking advantage of experts is known as one of the main providers of industrial automation equipment in our country. The department has two main units of domestic and foreign commerce, and its goal is to achieve customers' satisfaction by providing them with equipment they need.

Domestic Commerce Unit:

Domestic Commerce Unit of the company established in 1994 with the purpose of providing Siemens electrical and automation equipment, and began its activity under the name of 'Siemen Iran Institute of Electricity and Industrial Automation', and in 2004, by changing its business policy and field of activity, changed its legal nature and transformed into Part Control Company. In 2008, Part Control Co. elected as sale representative of industrial automation equipment from Siemens representative in Iran. In addition, during 2009 and 2012, the Company was elected as official representative of Schneider Electric –Telemecanic Iran-.

Domestic Commerce Unit by having three sections, including Sales Engineering of Low Voltage (LV) Equipment, Industrial Automation, and Instrumentation, provides services to customers and industrialists, and obtain their required equipment among three leading brands of Schneider Electric, SIEMENS and Endress+Hauser.

SIEMENS

www.partcontrol.ir/commerce-department.aspx



Note 2:



www.partcontrol.ir

SIEMENS

About Siemens

Siemens is a German multinational conglomerate company, established in 1847 by Ernest von Siemens in Berlin, Germany. Today, Siemens is active in producing equipment in the fields of telecommunication, lighting, home appliances, trains, electricity generators, automation, medical and fire alarm systems.

Siemens works in four basic fields of energy, industry, medical and urban infrastructure. Currently Siemens has 360,000 employees, working for the company in 190 countries. The company's headquarters is located in Munich, Germany.



Simatic Family Controllers

Intelligent selecting for Automation Projects



S7-1200

S7-1200 Modular and compact, for independent and discrete automation solutions



S7-300

S7-300 Modular for production lines automation in average applications



S7-400

S7-400 Modular for production lines automation and process control in average to advanced applications



S7-1500

S7-1500 Modular for production lines automation in average to advanced applications



WINAC RTX

WINAC RTX S7 software controllers, PC-based solution



LOGO! Logic Module

LOGO! Logic Module Compact and economic for simple applications



SIMATIC Controllers at a glance

Siemens offers a wise and economic solution for your control projects by introducing SIMATIC family of controllers. Using these products, one can find solutions for many automation problems in industry.

Each process has a unique requirement regarding the function and complexity of the machine or production line. Siemens provides suitable control solution by providing a wide range of products, S7-1200 controllers for simple and independent applications, S7-300, S7-400, and S7-1500 for average to advanced applications. In this field, ET-200SP distributed controllers are designed for decentralized applications and software controllers are designed for PC based applications. In addition, all of the general, advanced, and distributed controllers are designed with Fail-Safe capability for safe application against any failure.

Benefits: High quality and durability, high availability, working under harsh environments, modular and updatable, resistance against shocks, maintenance free

Applications: Centralized and decentralized control systems, advanced control system implementation, Fault-tolerant control, fail-safe control implementation

www.partcontrol.ir/siemens-simatic-plc-technical-data-&-price.aspx





SIMATIC family of graphical interfaces

A premier choice for monitoring and operative systems implementation



SIMATIC HMI Comfort Panels

In 4 to 22 inch
Touchscreen or keyboard touch-screen
With number of communicating ports
Profinet switch more than 7 inch



SIMATIC HMI Basic Panels

In 4 to 12 inch
Touchscreen or keyboard touch-screen
Various PLC interfaces
Profibus or Profinet ports



SIMATIC HMI Mobile Panels

An ideal product for operators
Safe and connectivity to control system
Wireless



SIMATIC HMI Key Panels

Maximum flexibility
More than 60% saving in time
More than 60% saving in wiring and material saving
Integrated Profinet Switch



SIMATIC family of HMIs at a glance

SIMATIC graphical panels have been used for years in a wide range of applications and have creative design and excellent performance. The product's configuration is done through SIMATIC WinCC package in TIA Portal software, so that users will enjoy unprecedented engineering capacities.

Uniform capabilities in all monitor sizes: In each series, hardware capabilities is the same for all monitor sizes, and according to monitor size and other HMI parameters, the user can simply select the product functionality (keyboard or touchscreen). Since the software is scalable, you can start a small solution and develop it if necessary, for example add tags or variables.

Siemens new graphical panels create a new opportunity for implementing operative and monitoring systems.

Unique engineering performance: Siemens graphical panels' configuration can be done easily and schematically in TIA Portal software environment through SIMATIC WinCC package. This capability facilitates engineering performance in defining and implementing procedure of the project. WinCC and STEP 7 integration leads full interaction of these two software packages and guarantees maximum compatibility.

www.partcontrol.ir/siemens-simatic-hmi-technical-data-&-price.aspx



2

SIMATIC IPCs from Siemens



Siemens Industrial Computers

Powerful, Firm & Reliable



Rack PCs

SIMATIC IPC347D
SIMATIC IPC547E
SIMATIC IPC647D
SIMATIC IPC847D



Box PCs

SIMATIC IPC227D
SIMATIC IPC427D
SIMATIC IPC627D
SIMATIC IPC827D



Panel PC

SIMATIC IPC277D
SIMATIC IPC477D
SIMATIC IPC677D
SIMATIC HMI Panel PC Ex



Industrial monitors

SCD Monitors
SIMATIC Flat Panel Monitors
SIMATIC Industrial Flat Panels



Industrial Thin Client



Siemens Industrial Computers at a glance

SIMATIC IPCs are available in a wide variety of types and distinctive features. You can configure more than 90 million technical codes directly through our catalogue, and extract your equipment unique code.

In addition, it is possible to build IPCs based on SIMATIC standard systems with special capabilities and according to your specific needs custom-made.

Selecting a system simply and quickly via TIA Selection Tool
TIA Selection Tool enables selection and configuration of the main CPU, memory, drives, add-in cards, and pre-installed operating system. Consequently, the wizard enables you to select your equipment based on technical requirements and type of application, and obtain the resulted configuration directly from Industry Mail website or CA 01 catalogue.

www.partcontrol.ir/siemens-simatic-ipc-technical-data-&-price.aspx



**TIA Portal Software**

Engineering Framework
Controller Software
HMI Software
Drives Software
Motor Management Software

**SIMATIC Controllers Software**

STEP 7 Engineering Software
• Options for Programming and Design
• Options for Diagnostics and Service
• Options for Technology and Drives

**SIMATIC HMI Software**

SIMATIC WinCC
SIMATIC WinCC Open Architecture
SIMATIC WinCC Flexible

**SIMATIC PCS 7 Software**

Software for Process automation

**Energy Management Software**

SIMATIC B.data
SIMATIC Powerrate



SIMATIC Family of Automation Software products at a glance:

SIMATIC Family of Automation Software products, while maintaining full compatibility with industrial hardware and software solutions, cover all software activities required in the field of industrial solutions in an optimum way. SIMATIC software group address a wide range of areas from filed activities to high levels of management with a very precise design and noticing all related details. Suitable functions and high capabilities of software products of the company ensure highest efficiency in a wide range of commercial activities.

Totally Integrated Automation Portal:

TIA Portal is the key point to access all capabilities of a fully integrated automation system. The software optimizes design and programming of machinery and processes through a pioneer engineering procedure, and set a new standard by integrating software solutions. In this framework, controller software solutions, distributed I/Os, drives, HMIs, position controllers, and motor management systems are all integrated into a unique engineering environment.

www.partcontrol.ir/siemens-software-technical-data-&-price.aspx





Siemens Industrial network equipment
Safe & Fast communicating



Industrial Ethernet



PROFINET



PROFIBUS



AS-Interface



I/O-Link



Industrial Wireless Communication



Siemens Industrial network equipment at a glance

Communication networks are considered as a substantial element of modern industrial automation projects. These networks must have specific characteristics in order to be able to address industrial requirements. Among them, the following characteristics can be mentioned:

- Connectivity to automation systems as well as sensors, operators and computers
- Timely data transfer and fidelity in transmission
- Electrical noise resistance, mechanical stresses and leaking of material
- Flexibility and compatibility with industrial environment requirements
- Communication with other industrial networks
- Communication with Local Area Networks

Higher productivity based on approved standards

Industrial communication has higher efficiency and reliability using Siemens equipment and systems. High products such as SIMATIC equipment are made under standards that guarantee reliability of network data transmission in future world.

Communication, from a simple sensor to data transmission in a large site using Siemens equipment and integrated solution in industrial networks has led to creation of an integrated and coherent system that enjoys satisfactory quality and speed.

www.partcontrol.ir/siemens-industrial-network-technical-data-&-price.aspx



**SINUMERIK 808**

SINUMERIK 808D on PC
SINUMERIK 808D
SINUMERIK 808D ADVANCED

**SINUMERIK 802**

SINUMERIK 802D sl

**SINUMERIK 828**

SINUMERIK 828D
SINUMERIK 828D BASIC

**SINUMERIK 840**

SINUMERIK 840D
SINUMERIK 840D sl



SINUMERIK Machinery control equipment at a glance:

Siemens provides invaluable solutions for small machinery, machinery manufacturing as well as complex and huge applications by introducing SINUMERIK CNC Control Equipment.

SINUMERIKs are able to produce any part whether simple or complex in small or large quantities. In many cases, SINUMERIK CNC Control equipment are the best choice and are widely used. For example, when you want to implement a new idea, or need maximum productivity, equipment and applications for a given machinery, these equipment are of great help.

SINUMERIK 808D Controllers

SINUMERIK 808D Controllers are Siemens new generation of controllers and replaced with 802C series. This controller is designed in compact and user friendly type for simple applications up to four axes. This equipment is ideal and economic choice for controlling small CNC and CNC-milling.

SINUMERIK 802D Controllers

SINUMERIK 802D Controllers are compact and user friendly for simple applications up to four axes. This equipment is suitable for controlling small CNC and CNC-milling.

SINUMERIK 828D Controllers

SINUMERIK 828D Controllers are compact and user friendly for general applications up to eight axes. This equipment is suitable for controlling for mass production advanced CNC and CNC-milling.

SINUMERIK 840D Controllers

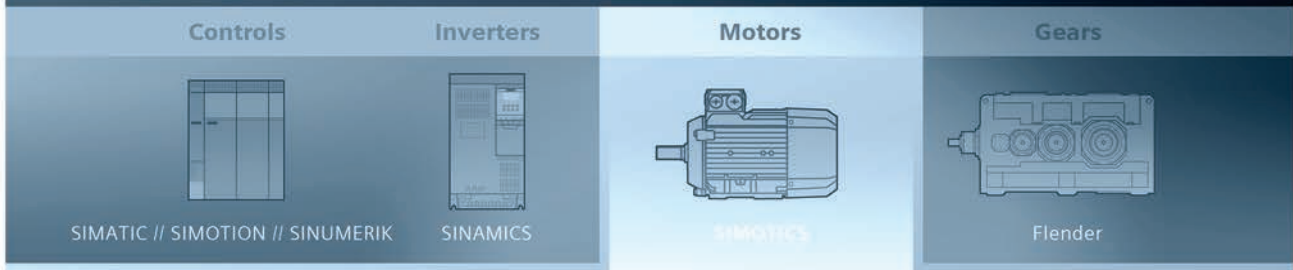
SINUMERIK 840D Controllers are designed as modular for complex applications up to 93 axes. This equipment is suitable for controlling very advanced machines.

www.partcontrol.ir/siemens-sinumerik-technical-data-&-price.aspx



SIMOTIC Electro Motors

The spread range of production for all application



Low-voltage motors for line and inverter operation					Motors for motion control				DC motors	High-voltage motors
General Purpose	Severe Duty	Trans standard	Definite Purpose	Explosion-protected	Servo	Main	Linear	Torque		
GP	SD	TN	DP	XP	S	M	L	T	DC	



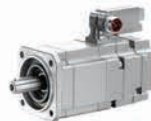
LOW POWER MOTORS

IEC Motors
High-Torque Motors
NEMA Motors
Explosion-Proof Motors
LOHER Motors



POSITIONING MOTORS

SIMOTICS S Servomotors
SIMOTICS M Main Motors
SIMOTICS L Linear Motors
SIMOTICS T Torque Motors
Spindles Motors



HIGH VOLTAGE MOTORS

Asynchronous Motors
Synchronous Machines
Above NEMA Motors
LOHER Motors



DC MOTORS

SIMOTICS DC



Siemens Electric Motors at a glance

Whatever requirement you need an electric motor, Siemens has the right motor for you. Nowhere in the world can you find such a wide range of choices for single phase, three phase or DC motors, except under Siemens brand.

SIMOTICS electric motors in different working class and with unique design will satisfy your electric motor requirements completely. These electric motors, in a wide range of powers from 0.06 Kw to 100 Mw are produced and supplied globally by Siemens higher technology.

Excellent for all applications

With Siemens electric motors, you can always achieve highest productivity. Our productions cover a wide range of synchronous and asynchronous system requirements, including standard motors, position-controlling servomotors, MV and HV motors, DC motors and special motors with different protection ratings (IP) and different standards. To start and use these motors, suitable and unique drives for all applications in all working classes are produced.

Considering more than 150 years of Siemens experience in design and manufacturing electric motors, SIMOTIC electric motors are unique in terms of performance and reliability.

www.partcontrol.ir/siemens-electric-motor-technical-data-&-price.aspx





Low Voltage Converters

SINAMICS V-basic drivers
SINAMICS G-general drivers
SINAMICS S-heavy duty drivers
MICROMASTER-group drivers
SIMODRIVE-machine specific drivers



Medium Voltage Converters

SINAMICS PERFECT HARMONY
SINAMICS GM150
SINAMICS SM120,150
SINAMICS GL150
SINAMICS SL150



DC Converters

SINAMICS DCM
SINAMICS DCP
SIMOREG DC-MASTER
SIMOREG CM



Servo Drive

SINAMICS V60,V90
SINAMICS S110 Basic



Siemens drives at a glance: Siemens has provided suitable frequency converters for all drive applications by innovative design. The company's productions are in a wide range of applications from general, dynamic servo drives (to control position) to a range of intermediate voltage drives for various applications. SINAMIX productions are the largest family of frequency converters in the world and are considered as a backbone of Siemens drives. Other drives include MICROMASTER family of drives.

Drive, a solution for saving energy consumption

More than 70 percent of power electronic technology is dedicated to design and making of variable frequency drives. These devices have special uses in all industrial processes and are effective in saving energy consumption and system stability.

Cascade drives

In applications such as pump, fan, and compressor, especially at high powers, multiple electric motors can be started by a single variable frequency drive using cascade control technic.

In this configuration, the drive increases efficiency and decreases initial costs and energy consumption by optimum management of electric motors.

www.partcontrol.ir/siemens-drive-technical-data-&-price.aspx



SIRIUS 3RW Series of Soft Starters

A Unique and ideal starter



SIRIUS 3RW30

Analogue soft starter for standards applications in 1.5W - 55W range
Control over two phases
With internal bypass



SIRIUS 3RW40

Analogue soft starter for standards applications up to 250 KW
Control over two phases
With internal bypass



SIRIUS 3RW44

Analogue soft starter for high performance applications up to 1200 KW
Control over two phases
With internal bypass
Connectivity to PROFIBUS



Siemens Soft starters at a glance

3RW Series of Siemens Soft Starters are an economic alternative for direct or star/triangle connections for 3 phase motors. These varieties of equipment prevent harmful side effects such as mechanical problems in machinery and voltage drop on the network. These products cover all starting requirements of motors from simple to complex applications.

Benefits of using soft starters at a glance

- Soft start up and stop of electric motors
- Gentle and uniform start up (no stepping)
- Decreasing starting current and decreasing electricity network load
- Preventing line voltage swings during startup process
- Reducing mechanical strain on machine
- Preventing hammering in water pumps
- Noticeable decrease in device volume and wiring, compared to other starters
- Contacts are maintenance free
- Portability
- Full compatibility with other SIRIUS types of equipment in control panel
- Remarkable reduction in wiring

www.partcontrol.ir/siemens-soft-start-technical-data-&-price.aspx





SIRIUS Industrial Control products

Comprehensive and Exclusive



Switching

Controls Contactor
3RT, 3RA13-14, 3RH, 3TX
Controls SolidState 3RF20, 21, 23, 29



Protecting

3RV, 3RB, 3RU



Starting

3RW, 3RA, 3RA71, 3RE, ET200S, ET20
0PRO, ET200X



Monitoring & Control

3UF, 3RP, 7PV, 3UG, 3RS, 3RN, 3TK



Detection

3SE2, 3SE3, 3SF3, 3SE6



What you should know about SIRIUS:

In SIRIUS family, keying, protection and startup of motors and other loads are widely developed. Standard and modular parts of these products can make simple and matching complexes that lead to simplicity of implementation.

Using SIROUS, all your needs are met separately and economically. Unique parts of these types of equipment are provided with distinctive space saving and flexibility characteristics. Design, installation, assembly, wiring, repair, and maintenance of SIRIUS products are very simple, which leads to saving in time, too.

Unique design

Obviously, users love the technology and high quality of SIRIUS products. However, it did not cause the Siemens to neglect the appearance. Evolved ergonomics and appealing design of these products, received the top design award from iF DESIGN AWARD in Germany.

Maximum Flexibility

In SIRIUS products, circuit breakers, connectors, soft starters, and overload relays can simply become combined. These products can meet your requirements in 6 groups and 7 sizes, with powers up to 250 kW, and can be installed on DIN Rails

www.partcontrol.ir/siemens-motor-component-technical-data-&-price.aspx





SENTRON Protection Products

Integrated and coordinated for secure and intelligent Power Distribution



Air Circuit Breakers

3WL Air Circuit Breakers



Molded Case Circuit Breakers

3VA, 3VL, 3VF



Miniature Circuit Breakers

5SL, 5SY, 5SP, 5SJ



Residual Current Protective Devices



Fuse Systems

3NA, 3ND LV HRC Fuse
SITOR Semiconductor Fuses
Photovoltaic Fuses



Overvoltage Protection

Surge Arresters Type 1, Type 2,
Type 3
Lightning Arresters



With a wide range for various applications

Using SENTRON Family of equipment in industrial and infrastructure applications, protection of your devices and machinery can be done thoroughly and correctly. These varieties of equipment conform to standards and are modular, which facilitates design and installation of panels in LV networks. In addition, update and maintenance of SENTRON products is very simple considering their variation and wide range of spare parts.

Secure and flexible

These products protect humans, production lines, and devices against over voltage, over current, short circuit, thunder and other types of electrical shock, and prevent loss of life and property resulted from damaged devices.

www.partcontrol.ir/siemens-sentron-protection-device-technical-data-&-price.aspx



**SITOP compact**

1.3 to 4 Amps range
More than %28 energy saving
Suitable for local boxes

**LOGO! Power**

1.3 to 4 Amps range
Very small dimensions

**SITOP lite**

2.5 to 10 Amps range
All functionalities with low price

**SITOP smart**

2.5 to 40 Amps range
Single and three phase input
Intelligent functionality

**SITOP modular**

2.5 to 40 Amps range
Single, two and three phases input
Maximum reliability



What you should know about SITOP Switching Power Supplies: SITOP defines a new set of standards so that power supplies are part of integrated automation system and are configurable in TIA Portal. SITOPs save time and costs and provide fail-safe capability along with simplicity throughout engineering procedure. In addition, product selection engineering tools are provided for SITOP family of power supplies.

SITOPs are designed to provide high quality DC current. These power supplies provide safe self-protection against network faults that can take place even in most advanced power networks. In addition, for specific faults that may happen in some power networks, some special modules can be used for better protection and hence higher reliability.

Optimization of Energy consumption

Increasing energy prices has a direct effect on manufacturing companies. This makes companies to consider energy saving even in small loads such as control panels. Power supplies in control panels are providers of energy for DC loads, and considering high efficiency of SITOP family of products, they can be excellent choices for energy saving.

www.partcontrol.ir/siemens-sitop-technical-data-&-price.aspx



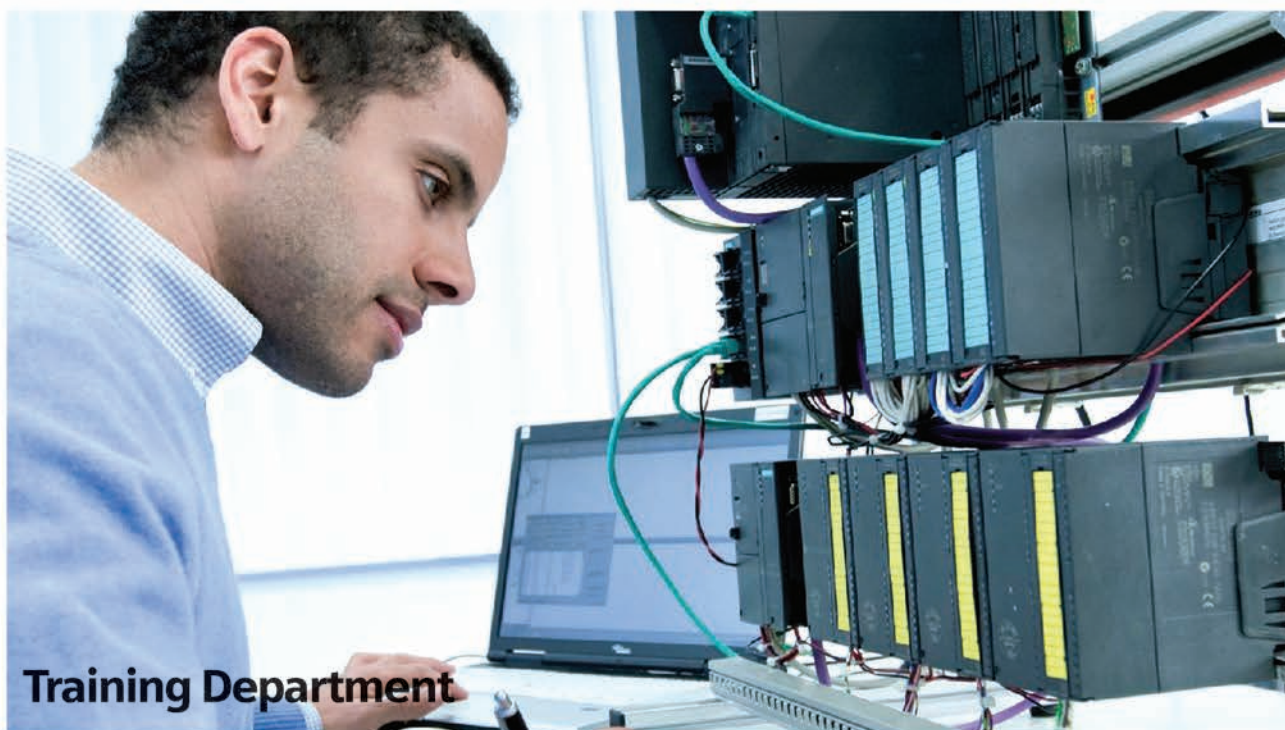
Training Department

Training Unit

Automation training packages	3-1
Training Department resumes	3-2
Titles of Automation courses	3-3

3

Training Department



Training Department

Industrial
Automation
Educational set



Educational set
s7-400H
Redundant



Industrial
Automation
Educational
Package



Automation
& Drive
Educational
Package



One of the fields of activity of education department is design and making industrial automation training sets for industries and organizations.

Some completed projects are as follows:

- Designing and making training sets for industrial PLC workshops, and Automation courses held in Center No. 2 of Iran Technical & Vocational Training Organization (Shahid Nemati Center)
- ☒ Training packages: Drive Sensor, Controller S7-200, Conveyor Simulator, Process Simulators & Rotating disc
- Designing and making 12 training sets of industrial automation for Organization for Development, Renovation and Equipping Schools of Iran, Khorasan Razavi province,
- ☒ Package components: PLC LOGO!, HMI, ET-200 (Interface Module), PLC (S7-300), Temp. & Sensor, I/O simulator, Pneumatic, SINAMICS G110 Motor and Controller
- Designing and making industrial automation, monitoring and network training packages for Gachsaran Gas and Oil Production (Department of education)
- ☒ Package components: PID, Monitor, Motor & MM420, CP 343-1, CPU 314C-2DP, I/O Simulator, Temp
- Designing and making S7-400 H Redundant for Maroon Petrochemical Company
- ☒ Package components: CP 443-1 & CP Communication, HMI (TP 177A), CPU 414H, I/O Simulation, ET-200 (red bundle), 1613
- Design and making 10 automation training sets, Part control Training department
- ☒ Training Packages: Drive, Drive MM420, Pneumatic, CPU 314, CPU 313C, S7-200, S7-1200, LOGO!, Drive Sinamics S120, Sinamics G110



Topic of Training Courses

Providing professional training courses in the field of industrial electricity and automation is one of the most important activities of the Training Department. Since the establishment of the Department, training services are provided for industrial experts as well as students and applicants wishing to work in this industry, according to Siemens topics.

Here are some companies who received training in our department:

Gachsaran Gas and Oil Production Company, Foulad Gharb Asia Co., Sangan Iron Ore Co., Hafari Shomal Co., Siman Shargh Co., Aghajari Gas and Oil Production Co., Samen Pharmaceutical Co., Sepideh Jam Toos Co., Chenaran Sugar Co., Furge Part Sazan, Multi Coffee Co., Nan Ghods Razavi Co., Mashhad Zomorrod Dyeing Co., Mashhad Animal Feed Co., Mashhad Zomorrod Carpet Co., North Khorasan Rural Water and Waste water Co., North Khorasan Regional Water Co., Mashhad Water and Waste water Co., Pishro Khorasan Co., Khorasan Electric Industrial Co., etc.

For more information on Part Control training courses, in the following the topics of these courses along with their prerequisite are provided:

WinCC
Monitoring
course

Course Duration: 24 Hours
Purpose: Understanding industrial monitoring concept and using WinCC software
Prerequisite: Understanding Windows® OS, industrial processes and basic S7-300
Main topics: WinCC installation and startup, creating project and defining a tag, configuring communication and introducing drivers, configuring process display, archiving and displaying values, creating report from archive, messages configuration, creating practical projects and connection to S7-300 PLC

S7-1500 Course



Course Duration: 25 Hours
Purpose: Understanding the hardware and its configuration, and developing skills in programming by STEP 7 TIA software
Prerequisite: Basic understanding of TIA software
Main topics: Main engineering tools in TIA Portal package, S7-1500 hardware components, S7-1500 hardware and network configuration in TIA software, diagnostic tools in TIA software and by using S7-1500 display

WinCC flexible
Monitoring courses

Course Duration: 24 Hours
Prerequisite: Understanding digital logics and operands and programming variables
Purpose: Mastering WinCC Flexible capabilities, uses and programming variables
Main Topics: Introducing responsibilities of an HMI system and its role in industry, a full explanation on WinCC Flexible and comparing it with WinCC, understanding different parts of WinCC Flexible, working with editors in WinCC Flexible, introducing Text list, Object list, working with tags and processing tags, configuring communication between PLC and HMI device, configuring and working with faceplate, configuring security levels, creating and dynamic controlling of faceplate, creating a script



**S7-300-III
Course
(Beginners)**

Course Duration: 25 Hours
Purpose: Introduction to the hardware and its configuration
Programming by SIMATIC Manager
Prerequisite: Introduction to basic PLC, or S7-200 course
Main Subjects: Using PLC in industrial automation and control, PLC components, An introduction to Siemens PLCs, Siemens S7-300 hardware and software configuration, Introduction to programming techniques, Introduction to Sequence control and its programming strategies, programming in LAD, STL and FBD languages
Working with Step7 software: PLC basic syntaxes, different timers in industrial applications, types of counters, working with Functions and using them in control algorithms, electro pneumatic and industrial circuits for practical used of the written programs



S7-1200 Course

Course duration: 16 hours
Purpose: Introduction to S7-1200 and TIA-STEP7 software and its programming
Prerequisite: Introduction to logical circuits and basic PLC
Main titles: Introduction to Totally Integrated Automation, introduction to S7-1200 software and its difference with S7-200, introduction to STEP 7 Basic software, main software components, programming components, programming tools, programming and solving examples, definition and creation of hardware communication (Profinet)



**Beginners
Automation
Course (LOGO!)**

Course period: 14 Hours
Purpose: Introduction to LOGO hardware and LOGO!SoftComfort and its programming
Prerequisite: Introduction to logical circuits
Main topics: Brief introduction to industrial automation, hardware introduction, and modulus configuration, introduction to the software, introduction to main and specific functions, programming, Ethernet configuration



**Industrial
Networks
Course**

Course period: 24 Hours
Purpose: Introduction to industrial networks, ProfiBus, MPI and Ethernet configuration
Prerequisite: S7-300-I or S7-200
Main topics: Introduction to ProfiBus, ProfiBus network architecture, ProfiBus network topology, ProfiBus-DP network configuration in STEP 7, diagnostic and error management in ProfiBus, introduction to industrial networks including Ethernet, MPI, ModBus



**S7-300-I Course
(Graduate Course)**

Prerequisite: Advanced S7-300
Course duration: 25 Hours
Main topics: Programming and practice with analogue outputs, configuration, and working with High Speed (High frequency) from Shaft Encoder and practice with associated SFB, introduction and work with popular SFBs in PLC S7-300 (Counters, Timers, Function IEC, etc.), introduction to PID Controller's software blocks, industrial circuits for testing the programs



**S7-300-II
Course
(Advanced)**

Prerequisite: S7-300 (Beginners) or S7-1200
Course period: 25 Hours
Main articles: Programming with Siemens S7-300 PLCs, working with SIMATIC Manager and reviewing basic PLC subjects, programming with calculation syntaxes, status bits, converter, shift, compare, etc. in three LAD, STL and FBD languages, working with Function blocks and data blocks, introduction to analogue input/output, introduction to Time of Day interrupt, industrial electro pneumatic and other industrial devices for testing the programs



**SIMOREG
Drive Course**

Course period: 24 Hours

Prerequisite: Introduction to inductive motor drives
Purpose: Introduction to the hardware, software and how to choose and configure SIMOREG drives and configuring parameters

Main topics: An overview of DC motors and their performance, DC and AC motor differences, different types of speed control, SIMOREG Master DC Drives, an overview of SIMOREG drives, drive parameter types, SIMOREG drives hardware components, drive installation and commissioning, communications, Drive Monitor software



**Sinamics S120
Drive Course**

Course period: 24 Hours

Prerequisite: Introduction to inductive motor drives
Purpose: Introduction to the hardware, software and how to choose and configure Sinamics S120 drives and configuring parameters

Main topics: An overview of SINAMICS family structures and its drives, explanation of main components and modulus of power section, explanation of components and modulus of drive and communication, CliQ Drive, explanation of creation and implementation of the project using STARTER software, communication with the drive and becoming online to the drive using software, parameter types in Sinamics drive, basics of fault detection and troubleshooting, speed control methods in Sinamics drives, explanation of additive components and optional hardware



**Micromaster
Drive and Soft Starter
Course**

Course period: 24 Hours

Purpose: Introduction to basic principles of soft starters and speed controller and Siemens drive configuration

Prerequisite: Introduction to Asynchronous machines and electric and electromagnetic laws S7-200

Main topics: Basics of asynchronous machines, speed control laws and a description of main parameters, criteria of motor speed selection, installation and startup of speed controllers, commissioning and operation, introduction and explanation of STARTER software, introducing error created in speed controls, explanation of main parameters of soft starter



**Sensors and
Instrumentation
Course**

Course Duration: 24 Hours

Purpose: Obtaining skills in the field of instrumentation and industrial sensors

Prerequisite: Basic understanding of control systems and sensors and instrumentation

Main topics: measurement, what is instrumentation, flow and how to measure it, selecting a method, installation and repair and maintenance, pressure and its measurement methods, selecting a method, installation and repair and maintenance, temperature and its measurement methods, selecting a method, installation and repair and maintenance, requirements and precautions in attaching instrumentation to control system



ePLAN Course

Course period: 24 Hours

Prerequisite: Understanding electricity and working with graphical environment in computer

Purpose: Understanding how to create control maps and creating detailed map of industrial automation project

Main topics: Introduction and understanding ePLAN P8 software environment, creation and management of the project, macros and symbols (creation and edition), working with graphical editors and drawing parts, parts management and panel installation, creating pages index and part list, creation and edition of PLC, creation and edition of terminals and cables, cable numbering, creating output forms, data support



**Diagnostics of PLC
based control systems
course**

Course duration: 10 Hours

Purpose: Introducing methods of fault detection of PLC based control systems (especially Siemens) for automation experts

Prerequisite: Understanding industrial processes and basic S7-300

Main topics: A general overview of fault detection systems, understanding faults that leads to PLC halt, introducing logical errors, use of Module Information tool, using diagnosis buffer, reviewing error messages, diagnostics using stacks, getting help from cross tables and data resources, comparing program and online contact



