

**KOREK
ENGINEERING
SYSTEMS**
General Trading Co. Ltd



Company Profile

TABLE CONTENTS

| | |
|-----------|-------------------------------|
| 1. | Introduction |
| 1.1. | Overview |
| 1.2. | Core Business |
| 1.3. | Mission |
| 1.4. | Vision |
| 2. | KES Partners |
| 2.1. | Schneider Electric |
| 2.2. | Honeywell/ Alerton |
| 2.3. | AVEVA |
| 2.4. | Omron |
| 2.5. | Siemens |
| 3. | Engineering Services |
| 3.1. | System Design & Engineering |
| 3.2. | System Development & Assembly |
| 3.3. | Field Work Services |
| 3.4. | System Testing |
| 3.5. | System Commissioning |
| 3.6. | Warrantees |
| 3.7. | Site Support Services |
| 3.8. | Training |
| 4 | KES Projects |

1. INTRODUCTION



1.1. Overview

KES “Korek Engineering Systems” is specialized engineering company was established to offer reliable and cost-effective engineering solutions and products covering a wide range of applications in the fields of industrial plants, electricity, water & sewage, food & beverages, oil & gas, and Building Management Systems.



KES objective is to understand and satisfy the customer requirements by using industrially proved DCS, PLC, SCADA, BMS and BAS systems from well-known control and automation system vendors. In its policy, the company assumes the highest standards of work quality that fulfill customer requirements throughout the use of up-to-date technologies.

KES power comes from the power of its expert staff that has the expertise and capability to provide specialized control and automation solutions starting from measuring equipment and field instrumentations up to the HMI and managerial level applications. New system installations as well as rehabilitation, replacement, and upgrading of existing systems are all within the scope of KES services.

KES provides its clients with additional consultancy and training services regarding the general terms concepts, and definitions of process control and automation. The main objective of these additional services are to help the clients as decision makers to select the appropriate control system by understanding the precise differences between different products such as (DCS, PLC, RTU, Traditional (r · -ε) field devices, and field bus technology).

1.2. CORE BUSINESS

KES core business is the design, development, assembly, integration, testing, and supply of full functioning control, monitoring, and/or safety system solution to the clients. We customize and optimize the supplied solutions according to the client specifications and requirements. In the tailor-made system production chain, we are the tailor that have professional experience in the following fields:

- Process Control and Automation Systems Solutions.
- Telemetry and SCADA Systems Solutions.
- Safety PLC Systems Solutions.
- Building Management Systems Solutions.
- Smart Buildings Products
- Field Instruments and Fieldbus Technology Solutions.
- Low Voltage Panel Builder Solutions.
- Fire Alarm & Fire Suppression.
- Industrial Fire Alarm (Oil & Gas & hazardous Location).
- Safety and Monitoring System

Engineering Services

- Design, Engineering, and Consultancy Services.
- Project Management Services.
- Site Services and Installation
- Testing and Commissioning Services.
- Training Services.
- Maintenance Services
- After Sales and Technical Support Services



1.3. MISSION

KES mission is to provide cost-effective, modern, and up to date control and automation solutions to all sectors of industry, power, oil & gas, water & sewage, food & beverage, and commercial buildings; and to adopt worldwide standards and professional staff to guarantee the success and on time delivery.



1.4. VISION

KES vision is to be the leading CONTROL & AUTOMATION System solution provider and system integrator for all sectors in Iraq and the Middle East.



2. PARTNERS

2.1. Schneider Electric

KES has become the system integrator of Schneider-Electric for industrial Automation & Process control systems since 23/11/2012. KES has been appointed by Schneider-Electric as the certified channel system integration to do all marketing, design, engineering, programming, assembly, integration, installation, testing, commissioning, and after sale services.

The logo for Schneider Electric, featuring the word "Schneider" in a large, white, sans-serif font above the word "Electric" in a smaller, white, sans-serif font. A stylized white symbol, resembling a lowercase 'e' with a horizontal bar, is positioned between the two words.

2.2. Honeywell/ ALerton

KES has become the Associate Dealer Honeywell/ Alerton BMS & Building Automation since 2/2/2011. KES has been appointed by Honeywell/ Alerton as the certified channel system integration to do all marketing, design, engineering, programming, assembly, integration, installation, testing, commissioning, and after sale services.

The logo for ALERTON, consisting of the word "ALERTON" in a bold, white, sans-serif font centered on a blue rectangular background.

2.3. AVEVA

KES has become the System Integrator of Wonderware software products since 1/5/2017. Wonderware is ranked one of the best Control System software in the world.

The logo for AVEVA, consisting of the word "AVEVA" in a white, sans-serif font centered on a dark purple rectangular background.

2.4. Honeywell

KES has become the System Integrator of Honeywell Industrial Fire Solutions since 2019.

Honeywell

2.5. Siemens

KES has become the system integrator of Siemens for Fire Systems and Lighting Systems since 1/2/2020.

SIEMENS
Ingenuity for life



3. KES ENGINEERING SERVICES

3.1. System Design & Engineering

KES provide the client and end users with a standard design and engineering services, which covers all the aspects from basic system design and components selections and up to the as-built design documents. The standard output of this service is any or all of the following documents:

- ◆ 1. System Block Diagrams: Covers all main system components and provide an overview of system functional description.
- ◆ 2. System Communication Diagram: Covers all computers, logic controllers, and communication devices with respect to locations, device addresses, & communication media.
- ◆ 3. Panel Wiring Diagram: Covers all logic controller panels' layouts, internal wiring up to the terminal block, and external wiring up to the field device including cable size, type and field point connections. Also covers the configuration of the logic controllers IO points and field devices.
- ◆ 4. Interconnection Diagrams: Covers all the cable and wire interconnections inside a marshalling cabinet or junction box.
- ◆ 5. Loop Diagrams: Covers all input/output signal grouped according to the field device for easy commissioning and functional testing.
- ◆ 6. Cable Shop Drawings: Covers all cable routes, cable types, cable quantities, and junction boxes from the logic controllers and up to the field devices.
- ◆ 7. Bill of Material: Covers all types, references, quantities, and data sheets of all system components.
- ◆ 8. System Tag List: Covers all the field IO point tags as well as the internal tags with detailed description of each point tag name, location, type, configuration, logic address, and HMI address.
- ◆ 9. Process and Instruments Diagrams "P&ID": Covers all field mounted devices with respect to mounting location on the target unit or the mechanical equipment, along with the field device type, field device model, & field device tag.
- ◆ 10. Control Narratives: Covers the detailed description of all the sequences of operation, automation, and control provided in the control system solution.
- ◆ 11. Cause & Effects Diagrams: Covers all the trip and shutdown conditions.
- ◆ 12. Timing Diagrams: Covers all the sequencing and timing activities of the system.
- ◆ 13. User Operation Manual: Covers all the information and instruction that the operator needs to operate the system properly.
- ◆ 14. Troubleshooting & Maintenance Manual: Covers all the information and instruction that the operator needs to do emergency or regular preventive system maintenance.

3.2. System Development & Assembly

KES provide the client and end users with a standard application development and hardware assembly services. The standard output of this service is to provide the client with the following:

- ◆ 1. Logic Application: This include the logic application development for all types of logic controllers "PLC, PAC, DDC ... etc."
- ◆ 2. Operator Interface and Database Applications: This include the graphical operator interfaces "HMI, SCADA, DCS, BMS ...etc." application development along with the associated database creation and linking.
- ◆ 3. Hardware Assembly: This includes the overall assembly of the proposed controller system and HMI system into system cabinets including terminal blocks, cabinet, power supply termination, communication termination.

3.3. Field Work Services

KES is available to provide skilled personnel to execute or to supervise the execution of the system installation activities at the client site. On-site services include the following activities:

- ◆ 1. Control System Installation: Installation or supervision on installation of the control system components including server stations, operator stations, UPS racks, printers, communication devices, and logic controller panels. This shall include the proper erection of the components and/or cable fixing, pulling, tagging, termination, and testing.
- ◆ 2. Field Device & Cable Work: Installation or supervision on installation of the field devices and the associated cable work. This shall include the proper erection of the field device and/or the cable fixing, pulling, tagging, termination, and testing.



3.4. System Testing

KES provides standard testing procedures that demonstrate to the client engineers that the system fulfills the requirements of the standard system product and system functional specifications.

Factory Acceptance Test “FAT”: This is a client-witnessed test held at KES facilities according to a FAT test program issued by KES and approved by client. The FAT test shall include the following:

- Scope of Supply check.
- Visual inspection
- Dimensional check.
- Power ON/OFF check.
- CPU, Power Supply, and Communication Redundancy check if exists.
- System Performance Check.
- Software configuration check.
- Various display check.
- IO Level-1 “Panel Terminal to HMI Continuity” Check.

Integrated Factory Acceptance Test “IFAT”: The IFAT procedure is used whenever KES scope include the supply of more than one sub-system that must be integrated together to form the final system solution. After the completion of all individual sub-systems FATs, KES will use the IFAT procedure to test the final system and document the results to facilitate acceptance of the full system functionality.

Site Acceptance Test “SAT”: This is a client-witnessed test held at the client’s site according to a SAT test program issued by KES and approved by client. The SAT test shall include the following:

- Visual inspection check.
- Proper Erection Check.
- Proper Earth Check.
- IO Termination cold Check “to assure no wrong voltage coming from the field”.
- Main power and ON/OFF check.
- CPU, Power Supply, and Communication Redundancy check if exists.
- IO Level-2 “Field to HMI Continuity” check.
- Loop function test.

System Integration Test “SIT”: After successful completion of all sub-systems SAT, interconnection among different sub-systems will be checked to start a full functional check of the integrated system. The SIT also includes confirmation of all installed wiring between the Sub-systems.



3.5. System Commissioning

This is an engineering service to tune and test all functions of the installed process control and plant automation system and to verify that the system meets its application specifications. Commissioning of a system for which KES has contracted application responsibility includes verification that the system meets the functional acceptance criteria, mutually agreed between client/licenser and KES. Well-trained, skilled KES engineers who are thoroughly familiar with the system conduct the commissioning procedure.



3.6. Warrantees

KES provides its clients with a standard one-year warrantee statement. Any problem that occurs in the provided system after its commissioning will be fixed free of charge under this warrantee.

In addition, the client and/or end-users can optionally extend the standard warrantee to cover two or more years and according to KES standard warrantee statement.

3.7. Site Support Services

KES can provide the client and/or end users with optional site support services to supervise and/or participate in different site activities such as installation, maintenance, operation, and documentation. KES can be provide expert staff on the MPD “Man per Day” or MPM “Man per Month” charging basis.

3.8. Training Services

Standard Basic Training: KES provides standard basic training at site mainly dedicated for the system operators. The standard training course shall include but not limited to the following items:

Hardware: Installation, Troubleshooting and Maintenance for:

- Power Supplies
- Logic Controllers
- Communication Devices

Logic Application:

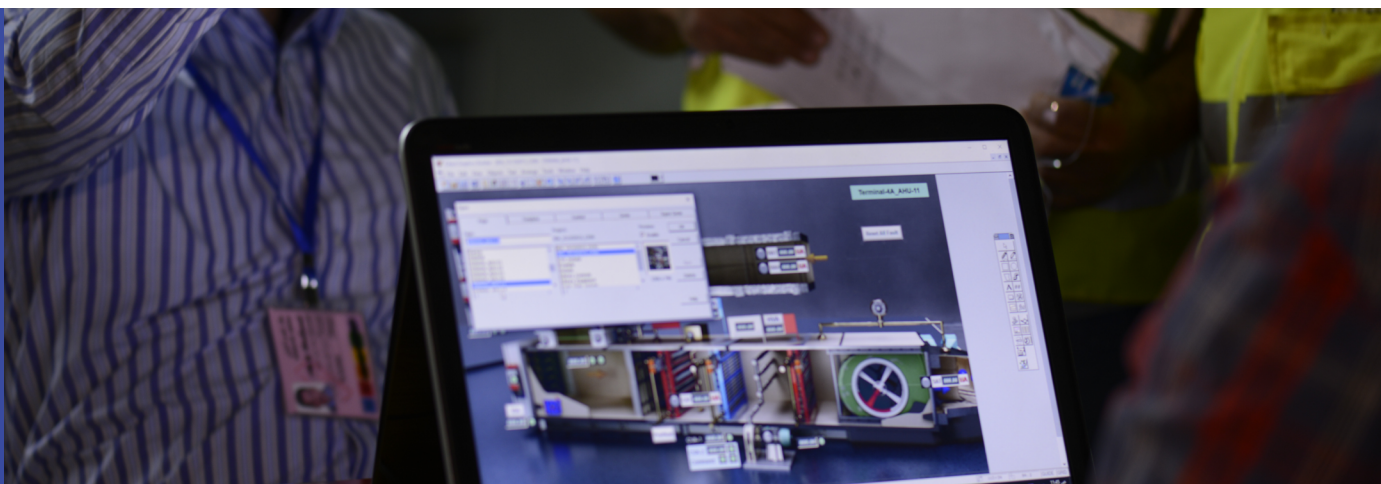
- Connecting to logic controller.
- Monitoring and forcing variables.
- Downloading, uploading and backups

DCS/SCADA/HMI/BMS Application:

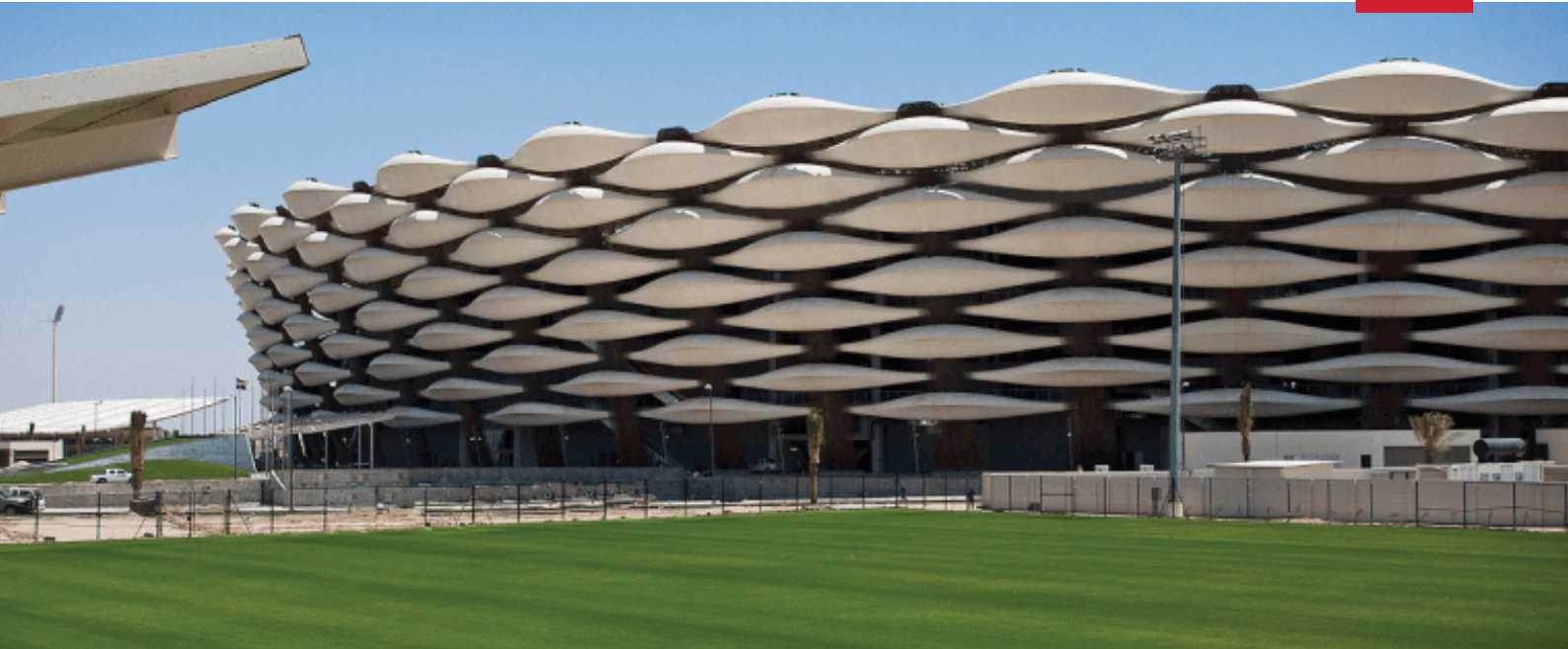
- Start-up & Shutdown
- Login and Logout
- Navigation and basic configuration
- Monitoring & commanding
- Supervisory control
- Alarms & Trends
- Reports & Printing

Advanced Training: KES can provide the client and/or end users with optional advanced training mainly dedicated for the system engineers and system administrators. KES can provide the advanced training course at KES facilities and/or the main vendor facility depending on the project and the client selection. Besides the basic training course material, the advanced training course shall include but not limited to the following items:

- Hardware Design, selection, and configuration.
- Logic Application Development.
- DCS/SCADA/HMI/BMS Application Development.



4. KES PROJECTS



1

AWARD WINNING BMS FOR BASRA SPORT CITY

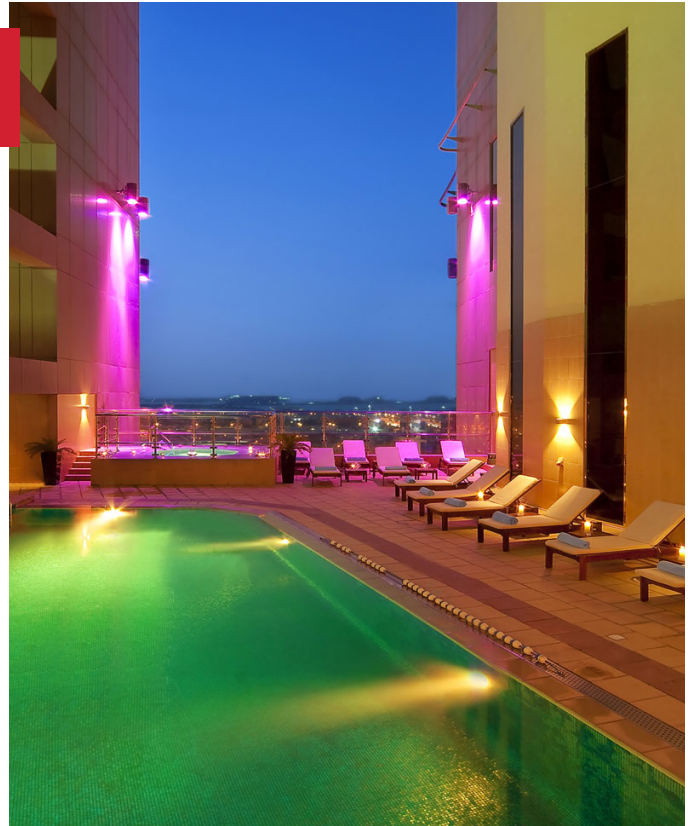


- **KES Scope of Service:** Full scope including basic & detailed design, components selection & procurements, assembly & development, installation, testing, and commissioning.
- **KES Scope of Supply:** Full scope including field instruments, field devices, signal cables & accessories, communication cables & accessories, DDC panels, BMS server & Client stations.

2

BMS FOR GRAND MILLENNIUM FIVE STARS HOTEL

- KES Scope of Service: The scope includes basic & detailed design, components selection & procurements, assembly & development, testing, and commissioning.
- KES Scope of Supply: Full scope including field instruments, field devices, signal cables & accessories, communication cables & accessories, DDC panels, BMS server & Client stations.



3

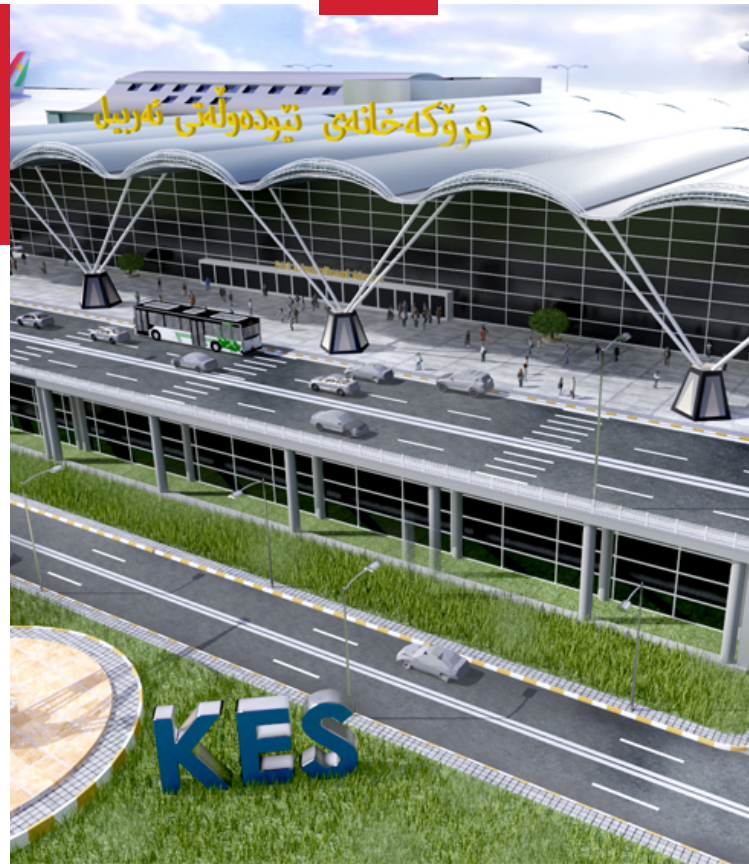
SCADA SYSTEM FOR BASRAH INTERNATIONAL AIRPORT

- KES Scope of Service: Full scope including basic & detailed design, components selection & procurements, assembly & development, MCC rehabilitation, installation, testing, and commissioning.
- KES Scope of Supply: Full scope including field instruments, field devices, signal cables & accessories, communication cables & accessories, PLC panels, SCADA server & Client stations.

4

SCADA SYSTEM FOR ERBIL INTERNATIONAL AIRPORT PHASE I

- KES Scope of Service: The scope of work included upgrade the control system of (Nine MV/ LV power distribution substation, and Radar System) using Schneider/ Quantum PLC and supervise these systems by SCADA system including: SCADA System Hardware and Software, HMI hardware and Software for substations and Radar Station, Communication Network, SCADA Servers, Engineering, Configuration and programming of the system, Technical Documentation, Commissioning and Site Acceptance Testing (SAT), Staff Training, and Startup..
- KES Scope of Supply: PLC CPUs, SCADA server & Client stations.



5

SCADA SYSTEM FOR ERBIL INTERNATIONAL AIRPORT PHASE II

- KES Scope of Service: The scope of work included upgrade the control system of (Nine MV/ LV power distribution substation, and Radar System) using Schneider/ Quantum PLC and supervise these systems by SCADA system including: SCADA System Hardware and Software, HMI hardware and Software for substations and Radar Station, Communication Network, SCADA Servers, Engineering, Configuration and programming of the system, Technical Documentation, Commissioning and Site Acceptance Testing (SAT), Staff Training, and Startup..
- KES Scope of Supply: PLC CPUs, SCADA server & Client stations.



6

RUMAILA CPS SYSTEM UPGRADE

The scope of this project is performing of Design, engineering, material procurement, integration, assembly, programming, installation, commissioning, and start up for upgrading of CPS control systems in Rumaila. The scope of work included: Replacement of the existing Concept PLC Systems in (CPS1, CPS2, CPS3, CPS4, and CPS5 _41ations). by new Unity Hot Standby Quantum PLC System, replacement of PLC modules and adding the necessary 10 modules to interface a 4Th pump with the PLC system in each Station, adding the necessary wireless communication modules to interface between new PLC system in each CPS with the existing Central SCADA in ROO HQ Also the scope included the Supply, Installation, commissioning, interfacing, and integration of Bently Nevada3500 Vibration Monitoring Systems with all the necessary horizontal, vertical vibration and shaft axial movements sensors at each CPS station.



7

KURDISTAN WATER SUPPLY IMPROVEMENT

Kurdistan Water Supply Improvement
The scope of this project is performing of Design, engineering, material procurement, integration, assembly, programming, installation, commissioning, and start up control systems SCADA in KWAS. Which also include: Control Room Design and installation. Remote Terminal Units (RTUs) for remote control Stations,

8

LOW CURRENT SYSTEMS FOR GARRAF CENTRAL CONTROL BUILDING

Kurdistan Water Supply Improvement
The scope of this project is performing of Design, engineering, material procurement, integration, assembly, programming, installation, commissioning, and start up control systems SCADA in KWAS. Which also include: Control Room Design and installation. Remote Terminal Units (RTUs) for remote control Stations,



9

AL MAHMODIA WTP SCADA

The scope of this project is performing of system design, procurement, engineering, programming, development, delivery, commissioning, test-ing “SAT”, and startup of one SCADA commanding and monitoring center, and 11 local SCADA commanding and monitoring stations, complete with all required software licenses, SCADA applications, and communication modules. The SCADA system is required to monitor and command the 16 pump stations in Al- Mahmodia by industrial wireless communications.



10

KIRKUK AIRPORT RUNWAY LIGHTING CONTROL & MONITORING

KES Scope of Service: The scope of this project is performing of system design, procurement, engineering, programming, development, delivery, commissioning, test-ing “SAT”, and startup of the control system for Kirkuk Airport Runway Light using Schneider Electric solutions.



11

POULTRY FARM CONTROL

KES Scope of Service: The scope of this project is performing of system design, procurement, engineering, programming, development, delivery, commissioning, test-ing “SAT”, and startup of the control system for Poultry Farm using Schneider Electric solutions



12

HVAC CONTROL PLC BASED REDUNDANT – GARRAF OIL FIELD

KES Scope of Service: Supply, Assembly, Development, Commissioning, and Start up seven hot redundant PLCs along with local HMI to control and monitor the HVAC system in Garraf oil Field.

13

POWER MONITORING SCADA SYSTEM FOR JUICE FACTORY

KES Scope of Service: Development, Commissioning, and Startup SCADA and Monitoring System for the Power Meters LV Factory.





14

SAMARA POWER PLANT

KES duty was the supervision on installation, commissioning and Startup of a (Modicon/Schneider) control system and field instrument for 340 MVA Diesel Power Plant in Samara with Wartsila Company. The system was to control the operation of 20 engines and all auxiliaries units, also to collect and monitor data by using WONDORWARE InTouch software.

15

TAJI POWER PLANT

KES duty was the supervision on installation, commissioning and Startup of a (Modicon/Schneider) control system and field instrument for 60 MVA Diesel Power Plant in Taji with Wartsila Company. The system was to control the operation of 5 engines and all auxiliaries units, also to collect and monitor data by using WONDORWARE InTouch software.

16

SNOW & RAIN GAUGE STATIONS

KES duty was the supply and installation of meteorological network consisting 15 snow and rain gauge automatic Stations for the benefit of the ministry of transportation Kurdistan - Iraq. The main contractor was Alwahaj Engineering and Industrial systems.

17

COPTHORN HOTEL BMS

Cophorn Hotel BMS Installation Project Client: Power Iraq MEP Contractor (Year 2012)





Sum Many Assets Integrate One Solution.

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