



Process Design Engineers

EPC in Oil, Gas, Petrochemical & Wastewater



Introduction

KIA Process Design Engineers was established in order to perform EPC projects in Oil, Gas, Petrochemical, Steel, Chemical, Food, Water & Wastewater Industries.

KIA engineers obtained valuable experiences during many projects and it is ready for implementation various services such as Detail Engineering, Installation, Start-up, Consulting, Inspection, Maintenance and so on, based on it's academic & industrial expert personnel.



Business Fields

Services

Feasibility Study

Basic Design

Detail Design

Mechanical Equipment Supply

**Electrical & Instrument
Equipment Supply**

Construction

Supervision and Management

Assistance for Commissioning

Maintenance Service

Industrial

Oil & Gas Plant

Chemical Plant

Petrochemical Plant

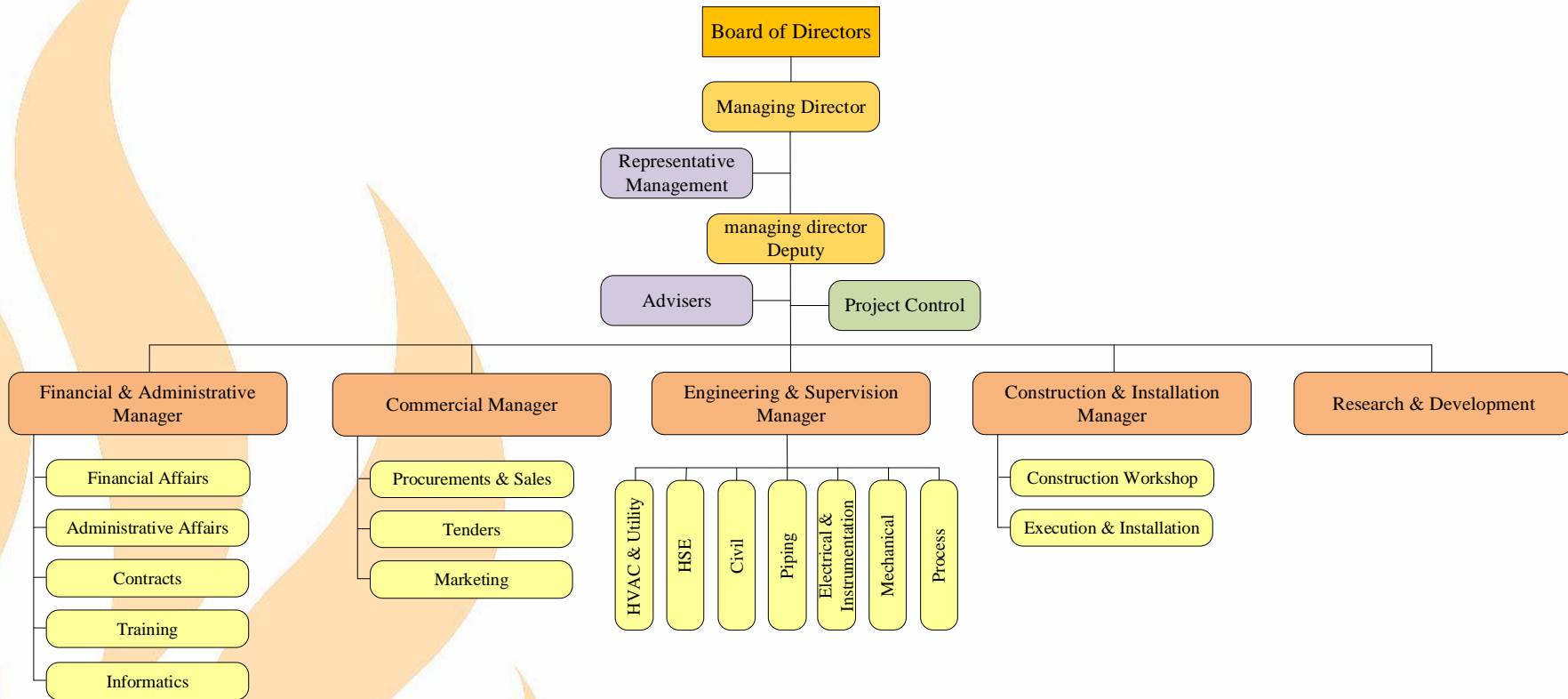
Off-Site & Utility

Water & Wastewater

Steel Industries

Industrial Greenhouse

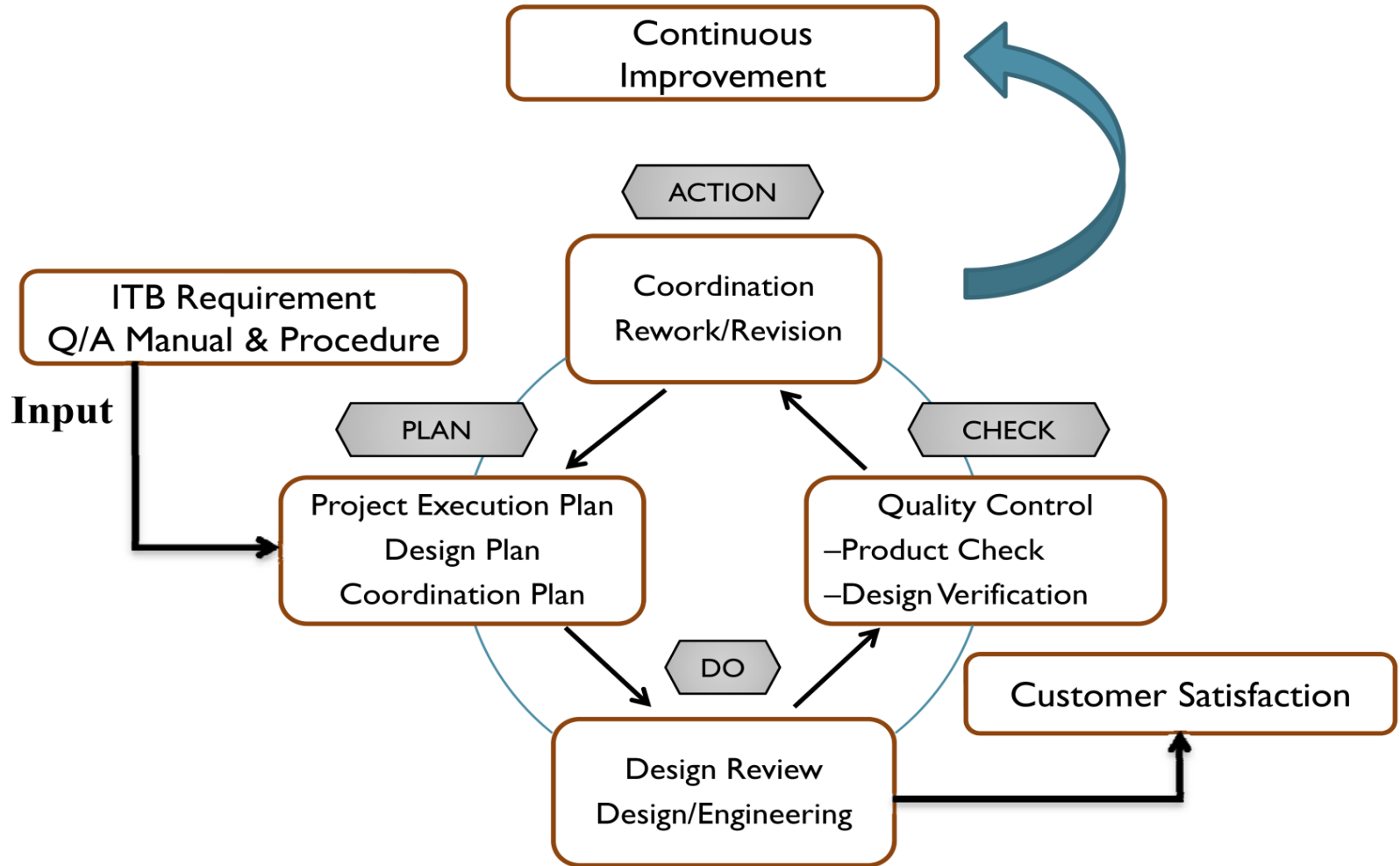
Organization Chart



Engineering Man Power

NO	Discipline	Special-Grade	High-Grade	Middle-Grade	Total
1	Process	1	1	2	4
2	Mechanical	1	1	2	4
3	Electrical	1	1	3	5
4	Instrument	1	1	2	4
5	Piping	1	1	1	3
6	Civil & Architecture	1	1	1	3
7	HVAC & Utility	1	1	-	2
8	HSE	1	1	-	2
9	Material	1	-	-	1

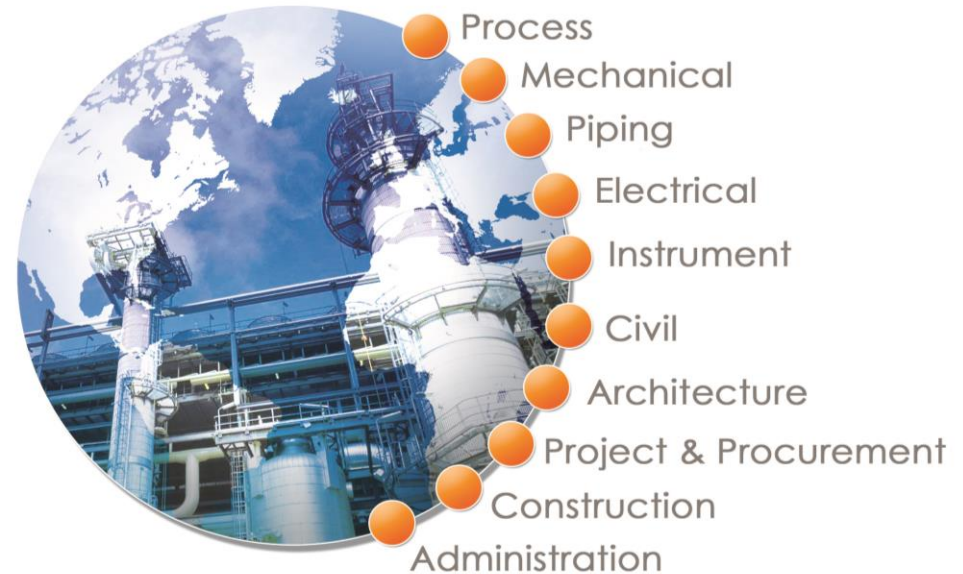
Quality Control Program



What We Do

1- Engineering Design

1. Process
2. Mechanical
3. Piping
4. Electrical
5. Instrumentation
6. Civil
7. Water & Wastewater
8. HSE
9. Planning



2- Executive Management

1. Equipment Installation
2. Execution of Industrial Piping
3. Installation of Electrical & Instrument Elements
4. Commissioning & Startup
5. Welding & Installation of Storage Tank
6. Utility Equipment Installation
7. Painting & Sand Blast

3- Management of Contracting (MC)

The engineering department of KIA is organized to perform all engineering service in oil, gas, petrochemical, steel and down stream industries according to international standards.

1- Process

- **Plant Feasibility Study**
- **Conceptual Design**
- **Basic Engineering**
- **Detail Engineering**
- **Simulation & Optimization of the Processes**
- **HAZOP Study**
- **Consulting**

Some of the important activities & Documents in process are:

- **PFD & P&ID Design**
- **Design of Equipment Arrangement**
- **Hydraulic Calculation**
- **Flare Load Calculation**
- **Interlock Description**
- **Trouble Shooting**
- **Equipment Datasheet Preparation**
- **Tender Document Preparation**
- **Process Instrumentation Datasheet**
- **Supervision & Cooperation in Startup, Commissioning and Over-Hall**
- **Quantitative Risk Assessment**
- **HAZOP Study Report**
- **Design & Consulting in Waste Water Treatment**
- **Consulting in Air Pollution Control**
- **Perform the Economic Study**
- **Economic Evaluation for Industrial Projects**

2- Mechanical

- **Mechanical Design According to ASME, API, TEMA , ... Using PV-Elit, B-Jac, Tank, ...**
- **Pressure Vessel & Atmospheric Storage Tank Design**
- **Completion of Mechanical Datasheet**
- **Welding Procedure Schedule (WPS)**
- **Test & Inspection Procedure**
- **Tender Document**
- **Material Requisition (MR)**
- **Installation Procedure**
- **Painting & Insulation Specification**
- **Spare Part List Preparation**
- **Maintenance Procedure for Rotary Equipment.**
- **Material Test Analysis**
- **Perform the Maintenance**
- **Supervision on Manufacturing**

3- Piping

- **3D Model of Units (Equipment, Buildings, Pipes , ...) by CADWorx Plant, PDMS & Auto Plant Software**
- **Coordination of Executive Drawings Based on Vendor's Drawings**
- **Consultation, Design, Supervision & Procurement of Piping System**
- **Preparation of all Procedure According to ASME & ANSI**
- **Preparation of Piping Classification/Specification**
- **Design & Preparation of UG/AG Piping Plan drawings**
- **Stress Analysis Calculation by**
- **Preparation of Material Take Off (MTO)**
- **Insulation Specification Preparation**
- **Preparation of Isometric drawings**
- **Support List Preparation**
- **Pipes Thickness Calculation**
- **Painting Specification**
- **Piping Test Procedure**

4- Electrical

- Design of LV & MV Protective Circuit According to Basic Design
- Design & Calculation of Earthing, Instrument and Lightning Protection
- Calculation of Load Flow, Short Circuit & Transformer Tap Settings
- Design of Indoor-Outdoor Electrical Post and drawings Preparation
- Drawings Preparation of Conduit Banks, Cable Trench, ...
- Consultation, Design, Supervision, Execution & Procurement of Power Plant Control System
- Consultation, Design, Supervision, Execution & Procurement of Lighting Facilities
- Inspection Test on L. V. & M. V. Equipment by Advanced Elements
- Cable Power Calculation
- Design of LV, MV & HV Line by ETAP
- Design of LV & MV Control Circuit
- Load & Cable Calculation
- Paging System Design
- Relay Calculation
- Single Line Diagram
- Cathodic Protection Calculation & drawings
- Preparation of Load Shedding Document

5- Instrumentation

- Preparation of Arrangement Drawing for Instruments, Trays, Conduits & Junction Boxes
- Preparation of Hook-up for Instrument Installation, Instrument Pressure Piping & Instrument Air Piping
- Consultation, Design, Supervision, Execution & Procurement of Analyzers
- Consultation, Training, Supervision, Execution & Procurement of Instruments
- Equipment Arrangement Design & Cabling in Control Room
- Technical Specification Document of Instrumentation Design
- Design & Calculation of Control Valve, PSVs and Orifices
- Design & Procurement of PC and PLC Control System
- Preparation of Instrument Datasheet
- Design & Drawing for F&G System
- Logic & Control Loop Diagram
- MTO & MR

6- Civil

- **Preparation of Detail drawings for Execution of Structures & Foundations**
- **Design & Calculation of Steel Structure**
- **Design & Calculation of Concrete Structure**
- **Design & Calculation of Foundation**
- **Preparation of Equipment Foundation drawings**
- **Preparation of Supports & Sleepers drawings**
- **Preparation of Roof, Ladder & Stairs drawings**
- **Civil Design Specification**
- **Material Requisition**
- **Geotechnical Study & Soil Mechanic**
- **Detail Drawing for Structures**
- **Road Grounding Detail drawings**
- **Pipe Rack Calculation & Design**
- **Piling Calculation**

7- Water & Wastewater

- **Layout Preparation**
- **Hydraulic Design**
- **Pretreatment & Advanced Water treatment**
- **Supervision and Technical Inspection**
- **Design, Procurement & Construction of Water & Wastewater Treatment Plant**
- **Design of Sanitary, Industrial & toxic Wastewater Treatment**
- **Wastewater Plant Modification**
- **Design & Fabrication of Wastewater Packages**
- **Commissioning & Pre-Commissioning for Wastewater Plants**
- **Design & Construction of Portable Wastewater Unit**
- **Design and Fabrication for Ultra Filtration (UF) and Reverse Osmosis (RO)**
- **Tender Document**
- **Perform the Maintenance**
- **Supervision on Manufacturing**

8- HSE

- **Perform all HSE Procedures According to API & NFPA**
- **Fire Water Ring Calculation**
- **Design of Sprinkler & Deluge System**
- **Fire Fighting Datasheet Preparation**
- **Cause & Effect Preparation**
- **Utility Specification Preparation**
- **Utility Summary Table & Load**
- **Design of Fire Water P&ID**
- **Design of P&ID for Utilities**
- **Utility MTO Preparation**

9- Planning

- **Preparation of Procedure for Relation between Contractor, MC & Client**
- **Preparation of Time Schedule Document & Document List**
- **Preparation of WBS, CBS & S Curve Documents**
- **Supervision on Project Promotion Process**
- **Preparation of Management Report**
- **Detection of Critical Points**
- **Monthly Report**

1- Equipment Installation

KIA is qualified in installation using expert engineers in oil, gas and petrochemical fields.

Installation, Test & Startup of all Rotating Equipment (Compressor, Generator, Pump, Turbine, ...)

Installation of Storage Tank

Installation of Heat Exchangers, Silos, Reactors, ...

Installation of Steel Structures, Pipe racks, ...

2- Industrial Piping Installation

KIA is able to execute, test and flash of all piping types (UG/AG).

Execution of Utility Production Systems (Nitrogen, Steam, Air, Water, ...)

Execution of Wastewater Treatment Systems

Execution of Fire Fighting Systems

3- Electrical & Instrumentation Installation

- **Installation of LV, MV, HV Panels & Motor Control Station**
- **Execution of Earthing Systems, Cathodic Protection & Lightning**
- **Installation of Instruments According to Hook-up**
- **Loop Check & Energize Continuity Check**
- **All Electricals & Instrumentation Test**
- **Installation of Support, Trays, Ducts & Conduits**
- **Electrical Systems Commissioning & Startup**
- **Installation of Junction Boxes & Local Panels**
- **Cabling of Control Systems**
- **LV, MV, Control & Transmittal Cabling**
- **Calibration of Instruments**
- **Installation of Control Room Elements**
- **Installation of Fire Alarm Systems**
- **Execution of Instrument Air Line**
- **Installation of Lighting Systems**
- **Installation of Paging & CC TV**
- **Installation of UPS & Battery**
- **Installation of Control Panels**
- **Installation of Analyzers**

4- Commissioning & Startup

- **Pre-commissioning & commissioning are the most important stages of a project. So an exact plan is required which is performed by special software.**
- **Some of the Commissioning activities are as follow:**
- **Implementation of Industrial Cleaning, Flashing & Drying of Pipes and Vessels**
- **Preparation of Timing Plan for Pre-Commissioning & Commissioning**
- **Preparation of Commissioning Documents, Drawings & Mechanical Datasheet**
- **Evaluation of Required Lubricants & Chemical materials**
- **Electrical & Instrumentation Systems Test**
- **Mechanical Run & Load Run**
- **Line-up According to P&ID**
- **Training of Client Personnel**
- **Rotary Equipment Free Run**
- **Maintenance Planning for each Unit**



Management Of Contracting

KIA has a high ability in responsibility reception of MCs in oil, gas, petrochemical & steel fields using expert engineers & special software. In these fields, KIA perform MC in all stages of a project such as Feasibility Study, Contract with Basic Engineer & Licensor, Review of Technical Documents Prior to Detail Designer Election, Procurement, Startup and Commissioning.

Some of the MC activities are in the following:

- **Supervision & Control on Sub-Contractors in Case of Quality & Progress**
- **Supervision & Control on Basic Engineer Activities**
- **Management & Control of all Internal & External Sources for Procurement**
- **Supervision & Control on Detail Engineer Activities**
- **Supervision & Control on Commissioning and Startup**
- **Technical & Economical Study of the Project**
- **Coordination of Activities Prior to Contract with Licensor**
- **Supervision on Basic Engineering Contract**



1- Bio-Ethanol Production Unit

- **Production of Ethanol with Fuel Grade**
- **Ethanol Production Using Sugar, Starch or Celluloid Material**
- **Production of DDGS Using Process Trash**

2- Crude Oil Distillation Unit

- **Production of Naphtha, Kerosene, Gas Oil and ...**
- **Mobile Installation up to 2000 bbl/day Capacity**
- **Fixed Installation up to 10000 bbl/day Capacity**

3- Water & Wastewater Unit

- **Production of Industrial Water**
- **Desalination Plant**
- **ZLD Plant**

Completed Projects

1- Engineering & Construction of Slaughterhouse

- Capacity: 240 m³/day
- Ultra Filtration Technology



Completed Projects

2-Conceptual Design, Basic and Detail Engineering of Crude Oil Distillation Unit Ordered by APA Company

- Capacity: 10000 bbl per day
- Produce LPG, Naphtha, Kerosene, Gasoil & Fuel Oil

3-Design & Construction Bio-Ethanol Dewatering Unit to Produce Bio-Ethanol 99.5% (Fuel Grade)

- Applying Two Separation Technology:
Molecular Sieve Adsorption
Membrane
- Fuel Grade Bio-Ethanol to use in Car

4- Aero Gel Production Unit Detail Engineering Ordered by Vakonesh Sanate Part Company

- High Sensitive Unit to pH
- Process with High Corrosive Liquid

Completed Projects

5- Feasibility Study on Construction and Outfit of Central Laboratory of Fars Chemical Industry Technology Complex

- Technical and Economic analysis by COMFAR Software
- Layout & Installation Detail Drawing (HVAC)

6- Simulation, Basic & Detail Engineering of Solvent Recovery System Ordered by Shimiaei Sabz Parsian Co.

- Capacity: 1000 Lit/hr
- Purification of the various solvents

Completed Projects

7- Conceptual Design, Basic & Detail Engineering and Construction of Mastic Gum Production Unit Ordered by Isfahan University of Technology

- **Special Food & Pharmaceutical Gum**

8- Simulation, Basic and Detailed Design of Rolling Oil Production By BON Co.

- **ATM & VAC. Separation Units**

9- Detailed Design of Rubber Oil Unit Ordered By Milad Oil Co.

- **Reactor for Acidification of Heavy Oil**

10- Conceptual Design, Basic and Detail Engineering of Wastewater Treatment Unit of Petro Polymer Shargh Co. Ordered by Pars Arian Ab Co.

- **Capacity: 5 m³ per hr**

11- Conceptual Design, Basic and Detail Engineering & Construction of Bio-Ethanol Production Unit Ordered by Isfahan University

- **Capacity: 500 liter per day**
- **Production of Ethanol from Grain & Celluloid Material**

12- Design, Procurement, Installation & Commissioning of Gas Compressor Instrumentation for Salman Gas Plant

- **Unit Power Consumption of 1000 kVA**
- **Integration of Siemens Control System and Available Yokogava Control System**

Completed Projects

13- Design and Construction of Wastewater Static Mixers Ordered by Mobarakeh Steel Company

- Capacity: 3000 m³/hr
- 28” and 32” Stainless Steel LPD Type



Completed Projects

14- Design & Construction of a DAF Package for Chadormaloo Mine

- Full Automated Control Package
- 99 % Efficiency of Oil & Fats Removed
- COD Reduction up to 80%



Completed Projects

15- Engineering, Consulting & UF Package Construction for Varagh Khodro Co.

- Ability of Microbial Pollution Removed
- COD Reduction Up to 90%
- BOD Reduction Up to 100%



Completed Projects

16- Installation & Commissioning of Instrumentation & Electrical Equipment for Development Plant of Zarif Mosavar

- Control System S7-400 Redundant
- Unit Power Consumption of 1000 kVA
- XSBR Capacity of 120 ton/day



Completed Projects

17- Process Modification of Wastewater Clarifier for Karoon Petrochemical Co.

- Capacity: 10 m³/hr
- 50% TSS Removal by Using Lamella



Completed Projects

18- Design & Construction of Coagulation, Flocculation and Filtration for Pars Decor Co.

- Portable Package
- Equipped with Local Control Panel



Completed Projects

19- Portable Wastewater Unit (UF & RO Filtration) for Slaughterhouse Complexes

- Portable Package
- Equipped with Local Control Panel



Completed Projects

20- Ultra Filtration Water Treatment Package for Stonecutting Workshops

- Portable Package
- Equipped with Local Control Panel and Automatic Backwash



Completed Projects

21- Process Modification of Wastewater Clarifier for Mobarakeh Steel Company

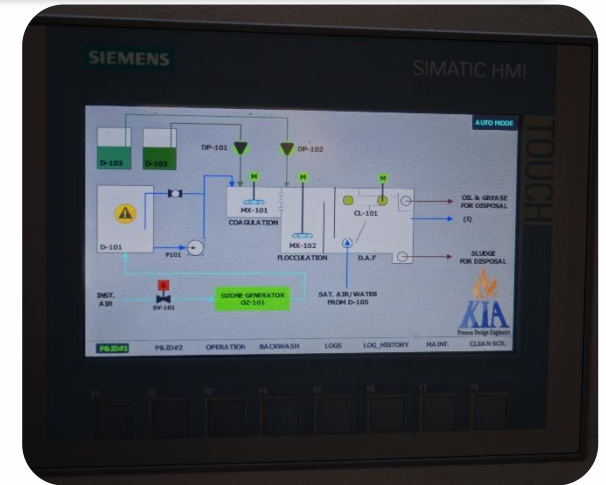
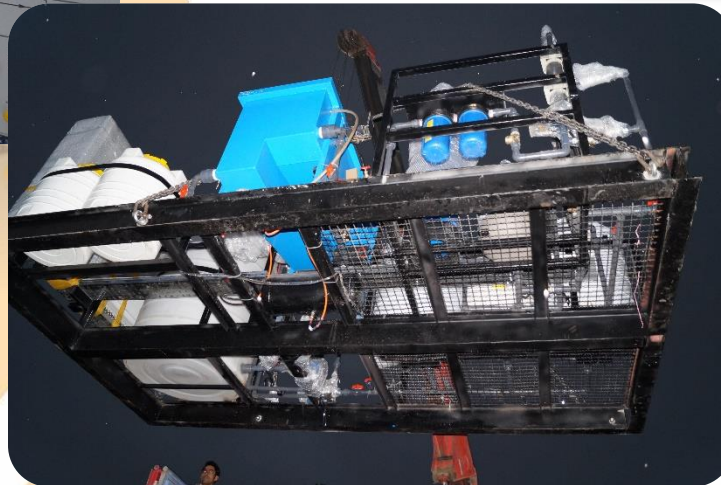
- Capacity: 300 m³/hr
- V-Notch Installation with 12 Width



Completed Projects

22- Portable Wastewater Pilot of Toxic Wastewater for Karoon Petrochemical Co.

- Inlet Wastewater COD up to 70000 ppm
- Advanced Oxidation & Ultra Filtration



Completed Projects

23- Telemetry, Automation & F&G Design for Pump Station in Lordegan Petrochemical Co.

- **Wireless Communication up to 5 km**

24- Technical Consulting in Hydrocracking License Development Ordered by Isfahan University of Technology (the First Phase)

- **Process Review around High Tech. License**
- **License Evaluation**
- **Process Selection**

25- Technical Consulting in Wastewater Treatment Plant for Borjian Dairy Complex

Completed Projects

26- Procurement for Wastewater Treatment Unit in Mandegar Textile Co.

- Chemical Wastewater with High COD
- Capacity: 40 m³/day

27- Construction, Installation & Commissioning of Wastewater Unit for Behnood Zhen Co.

- Pharmaceutical Wastewater with High COD
- Capacity: 3 m³/day



Current Projects

1- Engineering, Procurement & Construction (EPC) of Wastewater Treatment Unit

- Process Water Production for Ardestan Steel Co.
- Plant Capacity : 40 m³/hr



Current Projects

2- Design & Supervision on Construction of Zarif Ris Dyeing

- Chemical & Petrochemical Material Removal

3- Engineering, Procurement & Construction of Noorian Dairy & Meat

- High Oily Wastewater and High BOD Content

4- Engineering, Procurement & Construction of Salimi Dairy & Meat

- High Oily Wastewater and High BOD Content

5- Basic & Detail Design of an Oil Mini Refinery Ordered by Mobtakeran Petro Pazhooh Co.

- Solvent Recovery
- Fuel Oil Cracking

Current Projects

6- Engineering and Supervision of Wastewater Treatment Plant for Karun Petrochemical Co.

- Inlet Wastewater COD up to 70000 ppm
- Plant Capacity : 60 m³/hr
- 99.5% COD Removal

7- Engineering, Procurement & Construction of Water Reuse Plant for Chodansazan Industrial Complex

- Circulation of Industrial Wastewater and Producing Process Water
- Ultra Filtration & RO for Final Treating Stage

8- Basic & Detail Design of F&G System and Firefighting Network Ordered by Mobtakeran Petro Pazhooh Co.

Current Projects

9- Design & Supervision on Construction of Mandegar Textile Co.

- Chemical & Petrochemical Material Removal

10- Design of Scrapped Heat Exchanger for Zalpars Refinery

- Crystallization & Dewaxing

11- Construction of Sluice Valves for Sabzevar Wastewater Treatment Plant

- Plant Capacity: 700 m³/day

12- Engineering of Cooling water supply and return of Casting unit in Mobarekeh Steel Complex

- 2 km. Pipe line.

Contact Us

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