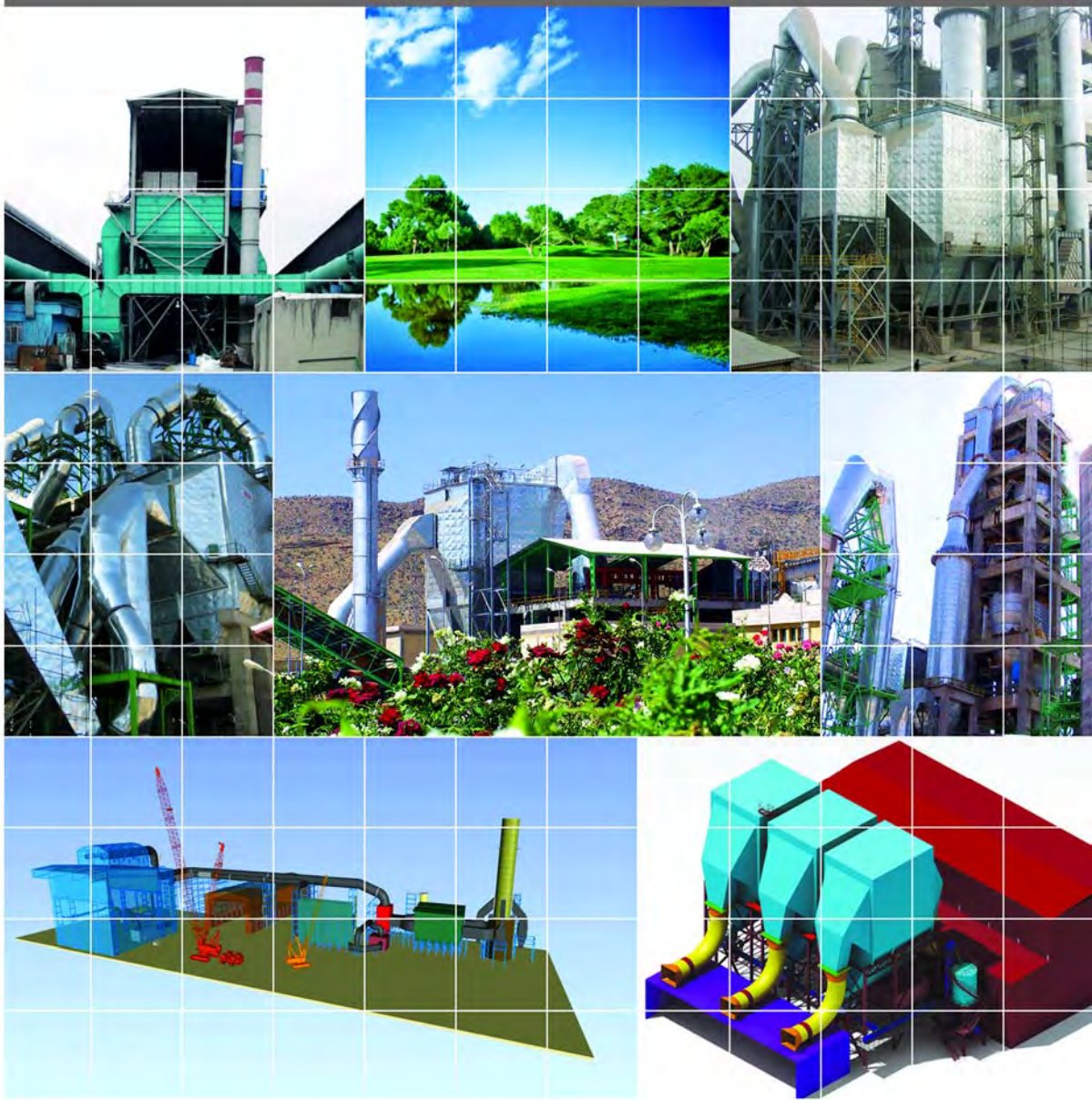


JDEVS

Air Pollution Control Center



WWW.JDEVS.COM

Designing, Engineering & Manufacturing of:
Industrial Air Pollution Control Equipment

APCA 02-01



GREEN EARTH & BLUE SKY

INTRODUCTION

JDEVS is an Iranian, public nongovernmental self-finance scientific, engineering and production organization, which has been established in 1980. It is mainly involved in technical and industrial activities in the fields of environmental, electrical, mechanical, civil and architecture engineering through its different subsections working as different centers by more than 500 well trained employees.

Air pollution control center, is one of them which is active in environmental projects of dedusting and gas cleaning systems and technologies based on tailor made engineering, applicable for various industries such as cement, steel, copper, aluminum, mineral and etc. In this regard our main partner is FLSmidth Denmark which is the leader in cement and mineral industries for full line technology and we try to be always updated with the latest knowledge of clean gas technology in the world, beside our local know-how.



PRODUCTS AND SERVICES

Main Products:

- Electrostatic Precipitator (ESP)
- Wet Electrostatic Precipitator (WESP)
- Fabric Filter and Bag House (FF& BH)
- Hybrid filter
- Gas Conditioning Tower (GCT)
- Wet scrubber

Auxiliary Products:

- Dust conveying systems including drag chain, screw conveyor, air slide, air lift, pneumatic conveyor, double flap valve, rotary valve and etc.
- Damper
- Expansion joint
- Duct & support
- Storage & silo
- Fan
- Special high voltage transformer-rectifier
- Control unit / cabinet
- Spare parts

Services:

- Specific measurements of gas parameters
- Retrofit and upgrading of existing systems
- Operation and Maintenance
- Installation
- Spot and overall supervisory / Trouble shooting
- Commissioning
- General consulting / Solution provider
- After sales service
- Training

ELECTROSTATIC PRECIPITATOR (ESP)

A highly efficient filtration device that removes particles (dust) from a gas stream by passing the carrier gas between electrodes across which a unidirectional, high-voltage potential is applied. The particles are charged before passing through the field and migrate to an oppositely charged electrode. These devices are very efficient collectors of small particles. With more than 5,000 installations worldwide together with our foreign technology provider, we have the experience to understand your individual process requirements. We will help you to design the most optimal ESP configuration that adheres to stringent emissions regulations for your plant.



Some of the features and benefits:

- Proprietary Power Supply System

For increasing efficiency and particulate capture under difficult operating conditions such as high resistivity and very fine particles.

- Computational Fluid Dynamics (CFD)

For optimal gas and dust distribution, 100% utilization of installed collection area resulting reduced equipment foot print.

- Proprietary Microprocessor Controls

Enables the ESP to react efficiently under the process variations, ensuring outlet emissions remain low even under challenging conditions.

- Unique Electrode Design

For specific process and operating conditions increasing efficiency and reducing energy consumption.

● **WET ELECTROSTATIC PRECIPITATOR (WESP)**

The Wet Electrostatic Precipitator (WESP) provides high efficiency control of submicron particulate, heavy metals, acid mists and fumes. The WESP is adaptable to a wide variety of gas cleaning applications, wet electrostatic precipitators are especially effective at collecting sub-micron particles- regard less of the physical or chemical nature of collected material. WESP works with 3 steps action of charging, collecting and removing. The gas enters. The WESP where it is evenly distributed across the tube bundle. In the collecting tubes, incoming particles are given a strong negative charge by a high intensity ionizing corona produced by high voltage electrodes. As the gas flows through the collector tubes, the action of the electric field on the charged particles causes them to migrate toward the grounded wall of the tubes where they accumulate. Finally the washing action of the water film that falls down the inside of the tubes, removes the collected material as a slurry to a discharge drain.



● **FABRIC FILTER (FF)**

A fabric filter (FF) or bag house (BH) is used throughout industries in a wide range of applications providing technical and commercially attractive solutions on processes which demand high collection efficiencies with related low dust emissions. Our technology features a sophisticated gas and dust distribution system, perfect bag to cage match and on-line maintenance possibility, resulting the highest particulate removal efficiency at the lowest total cost of ownership. Our customizable fabric filter solutions offer significantly longer bag life, minimal maintenance and reliable, cost-effective operation that can deliver emissions below 2.5 mg/Nm³ depends on process data.

Some of the features and benefits:

- ***Unique Gas Distribution Screens*** – For optimized dust and gas distribution, longer bag life and greater overall efficiency.
- ***Advanced Control System*** – Our smart controller ensures smooth operation and increases filter lifetime.
- ***Long Filter Bag Technology*** – enables smaller equipment footprint and reduces overall maintenance costs.
- ***Proprietary Cage Design*** – The star-shaped cage design improves bag lifetime by minimizing wear.
- ***Simple Inlet/Outlet Duct Layout*** – For ease of installation, maintenance and replacements.
- ***Energy and Cost-Efficient*** – Unique design increases efficiency with pre-separation of dust and requires minimal maintenance.

● **GAS COOLING TOWER (GCT)**

The cooling tower can be used for any cooling of gases such as pre-heater exhaust, cooler excess air and kiln by pass systems before they are conveyed to mills and filters. The hot exhaust gases enter the top section of the vertical, cylindrically shaped and insulated tower and are drawn through the cooling tower by a fan. Some of the dust from the gases is precipitated and collected in the bottom hopper of the conditioning tower and extracted by a conveyor.

We can offer towers with different principles for water atomization:

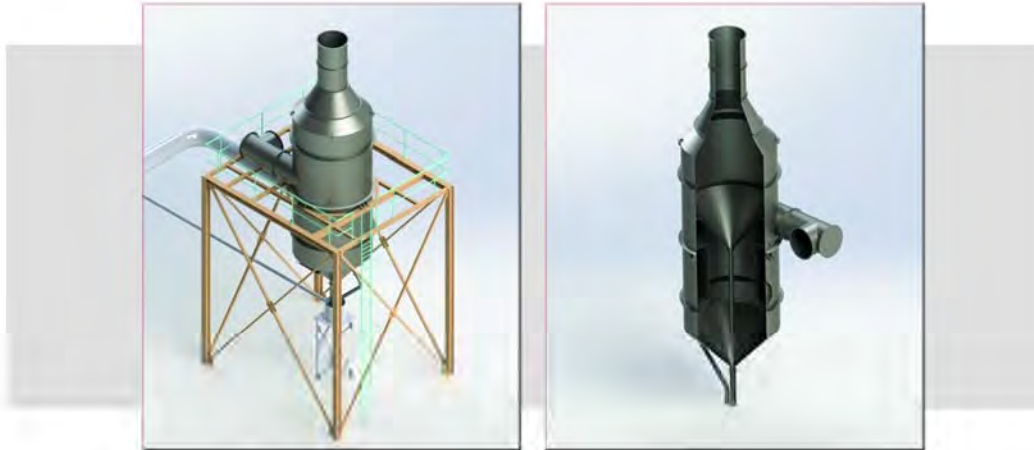
- The original nozzle system that operates at high water pressure.
- The newer 2-phase nozzle system that operates with water and compressed air at low pressure.

For more information regarding to details and specifications, kindly refer to our website or contact our sales department mentioned in contact us.



WET SCRUBBER

Wet Scrubber is a form of pollution control technology. In a Wet Scrubber, the polluted gas stream is brought into contact with the scrubbing liquid, by spraying it with the liquid, by forcing it through a pool of liquid, or by some other contact method, so as to remove the pollutants.



Some of the features and benefits:

- The ability to handle high temperatures and moisture.
- In wet scrubbers, the inlet gases are cooled, resulting in smaller overall size of equipment.
- Wet scrubbers can remove both gases and particulate matter.
- Wet scrubbers can neutralize corrosive gases.

HYBRID FILTER

Our company has the experience and expertise to provide the most efficient air pollution control solutions for your specific requirements. By using a hybrid filter, a part of the ESP will be modified to function with both ESP and fabric filter technology. The original (First) section collects the majority of the dust, while the fabric filter section removes the fine particles. This way, the hybrid filter ensures optimum particulate removal efficiency at all times and is also less expensive to install than a new complete fabric filter, with lower operating costs.

Some of the features and benefits:

- Improved Performance

Greater reduction of mass and fine particle emissions, even if the ESP section is de-energized.

- Significant Energy Efficiency

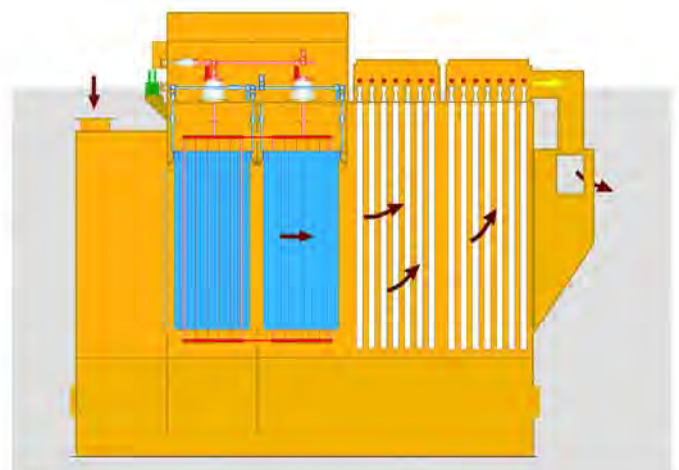
Less dust on the filter bags results in lower pressure drop, fewer cleaning cycles, compressed air savings and longer bag life.

- Greater Reliability

Constant low emissions in spite of varying operational conditions.

- More Cost-Effective

Using of existing ESP structure and less demand on the Fabric Filter section makes the hybrid solution significantly better value for your investment.



RETROFIT AND UPGRADING

Our experts are always ready to suggest you the best solution providing all required advantages for your existing plant and equipment especially when you are looking for a better green environment based on the latest regulations. In this regard we can use our vast experience to modify your design by lowest cost and time. Some of our activities are listing below:

- New dedusting system selection by preparing the technical and economical comparison report.
- Conversion of ESP to Fabric Filters or Hybrid to reach the better guarantee level.
- Using powerful software for designing, operation, analysis, simulation and improvement of dedusting systems.
- Applying the years of experience in design and manufacturing of air pollution control products.
- Modernization & upgrading of existing gas cooling systems from one phase to two phases.



Esfahan Steel Co.



Khatoon Abad Copper Smelt Complex



Abadan Refinery

RESEARCH AND DEVELOPMENT

All JDEVS subsections has its own R&D group, so the same individual team for air pollution control center with its PhD experts are working on different aspects of technology. Mainly, they are focusing on previous projects and products to recheck any failure or damages caused by design or any modification on them, looking for the latest solutions in the world to be updated in engineering and production technology, together with a continuous improvement for preparing the next generation of available products.



TRAINING

As a core strategic target, we always support our clients and also industrial managers and experts with latest technology issues to transfer our knowledge and experience to them through the best academic methods in our individual learning building or on site. In this regard, we provide various training courses titled to our range of products and clients requirements during a year. For more information about subjects and programs, please contact us.

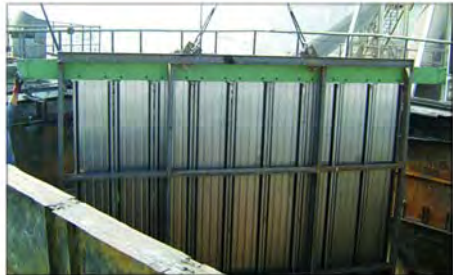


AFTER SALES SERVICES AND SPARE PARTS

JDEVS fully supports all clients in the projects by using his expert's consultancy, fast dispatch of technical team to sites as services and also by providing all individual parts of our main products including collecting plate, discharge electrode, rapping system, dust transport system, insulator, HV transformer, microprocessor based controller, control cabinet, bag, cage, solenoid valve, compressed air tanks and etc. All key parts are mainly being manufactured in our work shop or supplied from client AVL , reputed brands and partners.



Spare Parts for ESP



Conveying System



Spare Parts for Bag House & Bag Filter



MECHANICAL WORKSHOP

JDEVS workshops located in ACECR R & D complex with the total complex area of 900,000 m². With the present specific policy of out sourcing for air pollution control center, all the key component and internal parts like as collecting plates, discharge electrodes, cages and etc., with JDEVS, FLSmidth and other patented technologies are being manufactured in a 2,000 m² production hall (indoor) and 5,000 m² production space (outdoor) plus our new indoor mechanical hall of 5,000 m² which increases our capacity of manufacturing.



REFERENCE LIST

Here we have decided to provide a brief review of our references in order to show the variety of clients, for receiving projects specification details and last updated list, please kindly contact sales and marketing group of Air Pollution Control Center or send your request through our officials email addresses.

- Cement Industry:

Almost 80% of the clients in Iran's market such as Tehran Cement, Behbahan Cement, Abyek Cement, Qeshm Cement and etc as well as Iraq, Turkmenistan and other neighbor countries as foreign market.

- Steel and Pelletizing Industry:

Butia Pelletizing Plant, Khorasan Steel Plant, IRITEC Co., Bardsir Steel Plant, Esfahan Steel Co. (ESCO), designing and manufacturing of Sechahoon Pelletizing Plant as the biggest ESP(Electrostatic Precipitator) in the Middle East, Maadkoush Pelletizing Plant, Goharzamin Iron Ore and etc.

- Copper Industry:

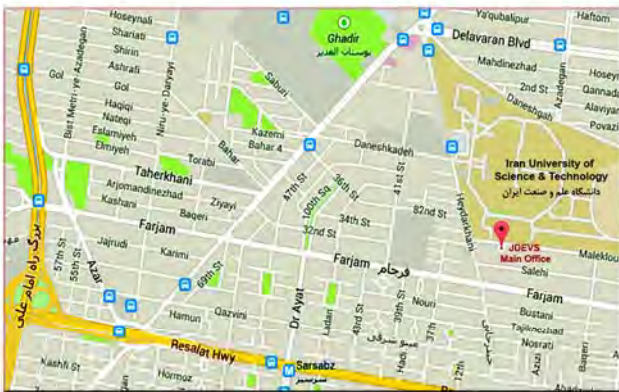
National Iranian Copper Industries Co. (NICICO), Sarcheshmeh Copper Complex, Khatoon Abad Plant, NIPEC Co., TIV Energy Co.(SABAFAM Joint Venture) and etc.

- Aluminum Industry:

Azarshahr Pilot for Nepheline Syenite, IRALCO and etc.

- Others:

Zanjan Bronze Co, Machine Sazi Arak, Tondgouyan Petrochemical Plant, Abadan Refinery Plant, Khorasan Gypsum Co and etc.



CONTACT US

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188-190 Malekloo St., Haidarkhani St., Farjam Ave., Narmak, Tehran, IRAN,
(Postal box: 16765-1899, postal code: 1684933511)

- Workshop address: ACECR R&D complex, end of Kavosh St., Supa Blvd., km 55 Tehran-Qazvin High way, Iran

JDEVS founded in 1980 as an industrial complex in Iran and operates in six core business areas. JDEVS is a leading designer and manufacturer of industrial power supplies, power protection system, high voltage test equipment, air pollution control, with a reputation for high quality and reliability products gained during its four decades of experience in the demanding market of Iran & ECO countries.



▼ Air Pollution Control Equipment

- Electrostatic filters, bag filters and scrubbers for non-metallic mineral and metal industries, refineries and petrochemicals
- Internal parts: collecting plates, electrodes, rapping systems, ...
- Upgrading of existing dedusting systems
- Supplying spare parts for ESPs and bag houses



▼ Oil Industry Equipment

- Designing & manufacturing of oil & gas land drilling rigs
- Designing & manufacturing of drilling rigs electrical and control system (SCR & MCC)
- Supplying spare parts, upgrading and repairing of land drilling rigs
- Technical & consultant services in the field of oil & gas land drilling rigs
- Automation in oil, gas and petrochemical industries
- Turn-Key projects in electrical and control packages
- Oil loading arms
- Submerged rotary jet (SRJ)
- Electrostatic oil desalter



▼ Mechanical Manufacturing Workshop

Manufacturer:

- Mechanical and steel equipments
- Steel structures
- Steel ducts with different sections & dimensions
- Cyclones, shots, hoppers & vessels
- Material handling systems (elevator, screw conveyor, drag china)
- Machining parts with light and semi-heavy weight
- Cage for bag filter



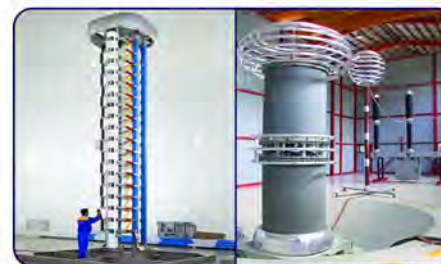
▼ Converters & Power Supplies

- Industrial UPS single/three phase(s)
- Standard UPS
- Industrial charger
- Variable frequency drive (VFD)
- Special converter & inverter
- Battery monitoring test system
- AC/DC no break system



▼ Industrial Transformers & Rectifiers

- High current transformer rectifiers for zinc, copper and aluminum industries
- High voltage transformer rectifiers for ESPs & vacuum coating
- Rectifier for metro traction transformer
- Continuously adjustable autotransformer
- Primary current injection power supply
- Dry type transformer
- Multiply voltage power supply



▼ High Voltage Test Equipment & Services

- AC, DC, impulse, resonant and hipot test equipment
- AC, DC and impulse measurement equipment
- Quality control testing services
- On-site test services (GIS stations and ...)

▼ R&D Groups and Dependent Companies

- Measurement, processing and control
- Industrial power supplies
- Electrical converters and power systems
- Electro-Mechanics
- JDEVS power engineers Co
- Fajr-e-Tosea consulting engineers Co