CASE STUDY

INGERSOLL RAND PROVIDES TAILORED AIR SKIDS FOR **COMBINED CYCLE POWER PLANT**

REQUEST A QUOTE

Engineered Systems and Services
www.ingersollrand.com/air-compressor-systems

CASE STUDY

When a leading global energy company was awarded a contract from a Middle Eastern Corporation to convert a coal-fired power station into an efficient gas power plant, they chose Ingersoll Rand based on our expertise in Instrument and service air to help them design their air compression stations.

Using advanced technologies, our customer has been providing high-quality equipment and solutions to gas power plants in the power industry that are in use in the entire energy cycle from generation to consumption. With decades of experience in industrial power generation, the company serves more than 150 countries, globally.

PROJECT NAME: Combined Cycle Power Plant
OUR CUSTOMER: A global leader in power generation
END-USER: Public and government-owned power generation company
LOCATION: Middle East
APPLICATION: Instrument and Service Air

PRODUCT:

- 4 Oil-free compressors D110-10A
- 4 Heatless adsorption dryers A250TXT + pre/post-filters
- Air receivers 7000L
- 2x11 meters common skid
- Interconnection piping
- Fully redundant PLC based control system and electrical cabinet for internal power distribution.

CUSTOMER BENEFIT:

Instrument and service air with a reduced/optimized footprint.

A Plug & Play solution: few terminal points to connect at site, facilitating easy installation and start-up.

THE EFFICIENCY OF COMBINED CYCLE POWER

With a well-earned reputation and extensive expertise in the field of converting power plants from coal to natural gas, our customer's goal was to design a gas power plant that will be the embodiment of the most efficient gas power plant in the Middle East.

To allow the plant to achieve top-level efficiency, a decision early on in the design phase was to engineer it as a Combined Cycle Power Plant, which utilizes an assembly of heat engines that work in tandem from the same source of heat, converting it into mechanical energy. The principle of a Combined Cycle is that after completing its cycle in the first engine, the exhaust is still hot enough that a second subsequent heat engine can extract energy from the heat in the exhaust. By generating power from multiple streams of work, the overall efficiency of a given plant can be increased by 50–60%.

RELIABLE INSTRUMENT AND SERVICE AIR APPLICATION

When designing a new combined-cycle power plant, it is essential that reliable instrument and service oil-free air is provided to various plant entities, some of which have a critical role in plant operation and safety, such as instrumentation and valves, among others. Therefore, dependable production of dry, clean oil-free compressed air is of the highest importance for combined-cycle power plants.

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INGERSOLL RAND PROVIDES THE RIGHT EQUIPMENT

Our customer put their trust in Ingersoll Rand mainly because the project required a fully integrated package of air compression devices with a high level of specification, and the experts at Ingersoll Rand have proven time and time again their expertise in the field, and impressed with a wide range of applicable products.

The conversion project that aimed to modernize the power plant and enhance it with leading efficiency was divided into two phases. First, the air stations needed to be designed, and the customer awarded Ingersoll Rand with the task of designing the first compressed air station that would serve as a template for the additional air stations needed.

After much deliberation and planning by our experts, a solution was provided. The customer was delighted not only with the compact air solution that was supplied, but also with the on-going engineering support and cooperation throughout the project.

In total, Ingersoll Rand supplied four two-stage oil-free screw compressors and four heatless adsorption dryers, along with a dedicated PLC based control system and various ancillary parts, including filters and receivers. The complete package was fully integrated and skid-based, minimizing interfaces and complying with customer's requirements at battery limits. Two such air stations were provided in phase 1 of the project.

A COMPACT PLUG & PLAY SOLUTION

As is the case in most power plants, and such was the requirement for this combined cycle power plant, maintenance areas between the air stations need to be thoroughly respected to avoid injury and avail for easy access to crucial devices.

Our engineers designed a customized enclosure for the entire system, which was able to house compressors, dryers, filters, pipework and the I&C control system, plus all the electronic connections with a reduced number of interfaces; the provided Instrument Air Skids measured just eleven meters long, providing a complete plug & play solution.

Ingersoll Rand's solution required minimal space to provide reliable compressed air to instrument and service outlets. In addition, few terminal points were required to connect the instrument air skids on-site and facilitate installation and start-up.

ON-GOING SUPPORT LEADS TO MORE SUCCESS

Not to be ever underestimated, Ingersoll Rand also fully satisfied the customer's requirement of comprehensive project management support throughout the entire project. Our Engineering team provided engineering design and documentation services according to the project's complicated specifications.

To our delight, the success of the initial air station design resulted in our experts being given with the task of designing additional compressed air package necessary for the second phase of the project.

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Engineered Systems and Services (ESS)

Ingersoll Rand's Engineered Systems and Services (ESS) is dedicated business line to providing market-leading, **custom-engineered solutions.**

Formed from a merger of three renowned business units - Ingersoll Rand Air & Gas Solutions, Ingersoll Rand Engineering Project Solutions, and K. LUND Offshore - Ingersoll Rand Engineered Systems and Services (ESS) leverages extensive experience to serve Engineering, Procurement, and Construction (EPCs) contractors and other firms in need of specialized engineering Services.

With a portfolio that includes state-of-the-art **air and gas compressors, dryers, nitrogen generators, and gas recovery Systems**, Ingersoll Rand Engineered Systems and Services (ESS) is committed to pioneering innovation and maintaining the highest standards of engineering excellence. We pride ourselves on managing intricate projects across the globe, employing cutting-edge technology to drive the success of our customers.