

# Pulse - Case Study

## Natural Gas PRMS stations, Israel

### *Pulse SCADA at the Israeli Natural Gas PRMS stations*



In a world of rising energy costs and emission gas levels, it is essential to search for alternative sources of energy to cut down on the use of fossil fuel.

The source of natural gas is both environmentally friendly and cheaper than other sources of energy. Natural gas as a source of energy offers benefits to businesses, consumers and the environment. For consumers, this means lower energy rates because of lower production costs. Businesses benefit from a plentiful source of energy at a low price that directly contributes to their financial performances. Finally, the greatest advantage in using natural gas is its benefit to the environment. In contrast to fossil fuels, natural gas evaporates when exposed to air and does not pollute the environment.

Israel has long been looking to diversify its sources of energy and decrease electricity production costs. For this purpose, the Israeli government has decreed the founding of a governmental agency (NGA) to regulate the use of natural gas in Israel. Under the 2002 natural gas act, the national natural gas authority founded a fully owned company - Natural Gas Transmission Company (INGL), for the design, construction, operation, and maintenance of the transition natural gas infrastructure.

INGL supplies consumers with high-pressure gas (above 16 bars). The gas is extracted from offshore drillings, and in the future from other inland neighboring sources, to a high pressure pipe line and then to multiple Pressure Reducing & Metering Stations (PRMS) that regulate the pressure of the gas, to the consumer's pressure level and flow rate requirements. Currently, the company uses an underwater pipeline of 94km and another, 90km inland pipeline. Hundreds of kilometers of pipeline are under construction in the south of Israel, as well as a similar section to be constructed soon in the north of Israel.



A.R.G. - AFCON R.M.G. Gas Technologies JV (ARG), is a new Israeli-German joint venture established three years ago as an equal strategic partnership between the Afcon Group and RMG International Group. The companies' missions are to provide the natural gas transmission and distribution industry in Israel with services such as engineering, supply, assembly & building, integration and maintenance needed for the construction of PRMS stations and migrating plants to gas projects. Furthermore, the company is pursuing new gas technologies and systems appropriate for the relevant trades and industries in Israel.

Recently, 20 unmanned PRMS stations were constructed and completed by ARG and are now successfully operating, while dozens more are planned for the future.

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AFCON Control & Automation Ltd. Has also formed a separate joint venture - AFCON-IDS JV - that was awarded the SCADA system project, including the control center at INGL, for the complete Israeli Natural Gas Transmission Network and is responsible for controlling, monitoring and regulating the flow of natural gas in the pipeline, the valve stations, and the PRMS' stations.

PRMS stations are used for analyzing, filtering, measuring, heating, and regulating the gas flow in the pipeline to the consumer's facilities (turbine, GenSet, boiler, furnace, dryer, etc.). Fully owned by INGL, the PRMS is constructed at the consumer's facility and is self-regulated, requiring no human intervention during operation.

Each PRMS station consists of a gas chromatograph, filters / separators, meters, heaters, regulating and safety valves, hot water system with auxiliary boilers, measuring and monitoring instruments, electrical power, and a dedicated SCADA system controlled by the AFCON SCADA solution Human Machine Interface (HMI) software. The AFCON SCADA solution controls and monitors the processes in the PRMS and provides the operation / maintenance personnel with a smart and friendly HMI. The AFCON SCADA solution carries out emergency shut-down procedures, informs the operators at the central control room of alarms, and collects historical records from the Modicon PLCs.



Furthermore, the AFCON SCADA solution monitors the preheating of the water boilers at every PRMS. When depressurized, the natural gas expands and cools down to freezing point which can damage the pressurization valves. Therefore, it is critical to reheat the gas to prevent it from freezing. The AFCON SCADA solution constantly surveys the water temperature at the boilers and reheats water when needed.

As the project expanded, the AFCON SCADA solution has grown into a Boiler Operation Control system (BOC) to control the boilers operation.

The AFCON SCADA solution is certified to license each PRMS before it is brought on-line. Every PRMS station must be approved by the respective authorities before it is sanctioned for use. The certification process is done during the cold commissioning phase, used for monitoring pressure readings, temperatures, checking water and electricity and more. The process is monitored by the AFCON SCADA solution and the readings are then used for certifying the PRMS for final approval.

One of the major Gas Turbines power stations owned and operated by Israel Electric Corporation (IEC) is installed by ARG with a new large PRMS and is commissioned with Natural Gas. This GEZER PRMS is fully controlled and monitored by the AFCON SCADA solution.

## Contact Info

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