

Emerson's Bettis™ Actuation Solutions Maintain and Sustain a 20-Year-Old Deepwater Gas-to-Power Plant

RESULTS

- Established preventive maintenance program to reduce process downtime
- Established asset information and updated service records
- Damaged actuators fixed and ready to go again



APPLICATION

Bettis actuators have been installed on Shutdown Valves (SDV) and Blowdown Valves (BDV), in various processes such as **inlet feed and separation process** (separates liquids from the feed gas and reduces the pressure in the pipeline), **acid gas removal and dehydration process** (removes hydrogen sulfide and carbon dioxide through an amine treatment), **fractional process** (separates natural gas into individual hydrocarbon products, such as ethane, propane and butane), and **cryogenic heat exchanger** (cools, liquefies and subcools natural gas to -146°C on over-pressure protection valves).

CUSTOMER

This natural gas production and processing facility located in the basin of Palawan, Philippines began operating around 2001. It is a **state-of-the-art facility with technology that extracts and condenses natural gas**. It processes the gas in a nearby shallow water production platform and transports it across three provinces through a 504km (313mi) underwater pipeline.

This Bettis G-Series Valve Operating System in a 20-year-old Deepwater gas-to-power plant provides plant safety and extends plant uptime.



Bettis G-Series

CHALLENGE

Aging equipment, including actuators, had impacted the efficiency of plant operations. Its maintenance program focused on reacting to equipment failures, since there was no system that specified when deteriorating components should be replaced to prior failure. The customer also reported Shutdown Valve units were inoperable even though they were energized.

SOLUTION

Emerson's Lifecycle Services assessed the facility's equipment health condition by periodic site walkdown, including the two units reported.

Upon identifying the issue, a multi-disciplinary expert team from Emerson was engaged to explore various options. Investigation found that some internal components of actuators had degraded as they had exceeded their intended lifespan. Customized solutions were provided to change seals to prevent water ingress into the actuators, with consideration of wear and tear based on each application. Service kits were also recommended for quick repairs to extend the equipment lifespan. New replacement actuators, such as the Bettis™ CBB-Series and G-Series with Valve Operating System™ (VOS), were also installed.

In addition, a preventive maintenance program was defined to ensure that all pneumatic actuators can perform at their optimum level. Wear and tear items such as seals and bearings were incorporated into the better-defined preventive maintenance to be replaced in the interval between damage detection and total failure of the component.

This turnaround was conducted in October 2021 and was a collaboration among the various business units in Emerson. The total number of actuators installed were 30 units of Bettis G-Series and 4 units of Bettis CBB-Series with Valve Operating System to date.



Bettis CBB-Series



Bettis CBA300