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ABB motor solves vibration problems for British Gas HRL

Motors from ABB have helped resolve a major motor vibration issue for British Gas HRL (Hydrocarbon Resource Ltd) at its North Morecambe plant in Barrow-in-Furness.

The previous pump motors were experiencing excessive vibration, leading to failure. The application pumps lean amine, a solvent used to remove impurities in natural gas.

Dave Brown, Electrical Maintenance Engineer for British Gas HRL says: “The vibration lead to several failures of the motors. The motors had a natural frequency around the running speed and this excitation was leading to deformations of the drive shaft. Because the motors are a flameproof design, they have a close tolerance on the bearings and the deformations were leading to touch contact, causing the bearings to fail.”

The failures were a problem that British Gas HRL needed to resolve, as the lean amine plant is one of several systems key to the North Morecambe terminal’s operation.

ABB, in partnership with the pump manufacturer, Sulzer, investigated the problem and a structural analysis was carried out on the existing layout in order to provide the best design possible. ABB adapted one of its existing motor designs to produce an 870kw, 3.3kV motor that would fit the unusual requirements of the plant.

Says Dave Brown: “ABB designed a motor with a low shaft centre to fit our existing set up. Four of the motors are double ended, driving a recovery turbine that returns energy to the motor and ABB had to adapt its design to provide for this.”

ABB engineers investigated the site to ensure that the dynamics between the new motor and its mounting would not lead to a repeat of the vibration problems.

During the development of the motors, Brown and a team from British Gas HRL visited the ABB plant in Milan where the work was carried out. “The ABB people were very thorough and helpful,” he recalls.

“To date the motors have proved excellent”, says Brown. “We have experienced no failures since the motors were installed last year. There is no vibration and the motors are also much quieter in operation than the previous ones. ABB have helped to resolve a niggling issue for us.”

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Caption: The pumping of lean amine at British Gas HRL's plant in Barrow-in-Furness is now secure thanks to a special motor design by ABB eliminating vibrations.

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