



# ADAPT Humbley Grove Dewpoint Unit

Germanisher Lloyd (GL) undertakes project at the next generation of UK Gas Storage facilities

## Background

At the Humbley Grove Oil and Gas Field in Hampshire, UK, Star Energy has constructed a 10 billion cubic feet gas storage facility.

The store operates by taking natural gas from the National Transmission System (NTS) through a 27 km long 24-inch diameter pipeline to the Humbley Grove oilfield. The gas is then pumped into the reservoir for storage. The gas can then be returned to the NTS after having been processed.

GL were awarded the contract to provide the process design package for the Dewpoint unit for gas treatment at the storage facility, ensuring gas exported back into the NTS met gas quality standards.

## The Project

GL was chosen for the project as they had an established track record, relevant technology available and operational plant support capability.

The technology chosen to provide the process design package for the unit involved the utilization of GL's ADAPT (Advanced Adsorption Process Technology) plant design.

ADAPT is a licensed technology for high pressure natural gas treatment using adsorption technology for silica gel and molecular sieve plants.

With this technology GL offer process development, licensed process design, plant optimisation, performance monitoring and process support services to the worldwide natural gas business.

Licensed ADAPT technology was developed in-house over a 25 year research programme. The company currently has provided licensed plant designs to 6 operational plants and provides specialist support to 20 operational plant locations worldwide. GL has also developed in-house adsorption plant models and a performance database.



Figure 1: ADAPT Dewpoint Unit during the final stages of commissioning

## What was involved

For the Humbly Grove project GL provided the basic engineering for the ADAPT dewpoint unit process design. This included the process flow diagram, a preliminary engineering line diagram, bed dimensions, plant cycle times, regeneration duty specification, heat and mass balance and preliminary major equipment datasheets.

This information was used to perform the detailed design of the plant. GL provided consultancy and assistance throughout the EPC phase to ensure the successful implementation of the technology.

## Benefits for Humbly Grove

The benefits of using GL's ADAPT technology for this project include:

- Capex and opex savings
- Simple plant configuration and minimum equipment count to minimise capex
- Longer cycle times, extended adsorbent service life and reduced energy consumption to minimise opex
- Environmental including much lower CO<sub>2</sub> emissions
- Plant flexibility
- High turndown
- Rapid start-up and shut-down
- Capability to handle variable feed gas compositions
- Operation under variable feed gas temperature and pressure.

## Testimonial

Antony Kane, Adsorption Technology Consultant within GL said that "Star Energy are the latest in a number of natural gas operators that have recognised the commercial and operational advantages of ADAPT adsorption technology for natural gas treatment operations. The plant will provide great flexibility making it ideally suited to gas storage applications where there can be significant variations in process conditions, feed gas composition and plant throughput during operation."

Star Energy's, Group Operations Director, Roger Pearson stated that "The technology offered by GL is eminently suitable for gas storage where reliability and flexibility are key to plant performance. GL supported the project well and their experience has been invaluable during design and plant operation."

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