

## **Haydale Graphene Industries plc**

**("Haydale" or the "Group")**

### **Haydale Commission Composite Pipe Long Term Testing Facility**

Haydale Graphene Industries plc (AIM: HAYD), the Group focused on enabling technology for the commercialisation of graphene and other nano materials, is pleased to announce that its subsidiary Haydale Composite Solutions Ltd ("HCS") has completed the installation of a composite pipe testing facility to assist in the development and approval of graphene-enhanced polymer materials for oil and gas pipelines (the "Facility").

As announced in December 2014, HCS have been very active in the design, development, testing and certification of reinforced thermoplastic and thermosetting composite pipes for the oil and gas industry and the Facility has been supported by a £261,000 Regional Growth Fund grant through the Leicester and Leicestershire Enterprise Partnership, with the support of Leicester City Council and the European Regional Development Fund.

The Facility, located at HCS in Loughborough, consists of eight independently controlled tanks which can perform short and long term pressure testing of composite pipes up to 500bar at temperatures up to 80°C. The Facility is very versatile and can conduct short term burst pressure tests, determine long term hydrostatic pressure rating as well as performing dynamic, fatigue and cyclic testing of composite pipes to a wide range of international standards including API 15S, ISO 14692 and ASTM D2992.

Nigel Finney, HCS Commercial Director said:

"Successful commissioning of this facility is a major step towards delivering our new range of thermoplastic pipes. The generation of long term (10,000 hours) test data is vital in obtaining approval for the use of new materials in oil and gas pipeline systems. This facility enables us to simultaneously test a range of materials and designs, thereby enabling us to quickly optimise such products before performing full 10,000-hour hydrostatic test certification."

Gerry Boyce, Managing Director of HCS added:

"We see a wide range of benefits in utilising graphene enhanced polymers for oil and gas pipeline systems, including improved strength, stiffness and toughness, increased permeation resistance and enhanced fatigue performance. We can quantify these benefits through the use of this test facility which will lead to potential customers having access to graphene-enhanced composite pipelines with improved performance and lower cost. We are therefore optimistic about generating sales of our HDPlas® functionalised graphene polymers into the oil and gas pipeline industry."

- Ends -

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**About Haydale**

Haydale has developed a patented scalable plasma process to functionalise graphene and other nanomaterials. This enabling technology can provide Haydale with a rapid and highly cost-efficient method of supplying tailored solutions to enhance applications for both raw material suppliers and product manufacturers.

Functionalisation is carried out through a low-pressure plasma process that treats both mined, organic fine powder and other synthetically produced nanomaterial powders, producing high-quality few layered graphenes and graphene nanoplatelets. The process can functionalise with a range of chemical groups, with the level of functionalisation tailored to the customer's needs. Good dispersion improves the properties and performance of the host material and ensures the final product performs as specified.

The Haydale plasma process does not use wet chemistry, nor does it damage the material being processed; rather, it can clean up any impurities inherent in the raw material. The technology is a low energy user and most importantly environmentally friendly. The Haydale process is an enabling technology, allowing the Group to work with a raw material producer who seeks to add value to the base product and tailor the outputs to meet the target applications of the end user.

Haydale, based in South Wales and housed in a purpose-built facility for processing and handling nanomaterials, is facilitating the application of graphenes and other nanomaterials in fields such as inks, sensors, energy storage, photovoltaics, composites, paints and coatings.

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