Network Innovation Competition Full Submission

Supplementary Answer Form

Tick if this answer is Confidential: ☐

Tick if this answer has been provided verbally: ☐

Project code:	NGGTGN01	Question Number	11
Question date	03 September 2013	Answer date	05 September 2013
Submission section question relates to	Section 4		
Topic	Criteria d		
Question	Rolls Royce has applied the VIGV to the Slovakian network (in a project soon to be commissioned). Please explain why NGGT has not already applied this technology to the NTS in the new compressor stations that have been built over the past 5 years?		
Notes on question			
Answer	National Grid only recently became aware of this project. The feasibility study – "*Research into Variable Envelope Compressors*" – commissioned in the fourth quarter of 2012 and completed in August 2013 assessed three known methods for increasing the range of compressors when used in place of or in combination with speed control. Engagement with the OEMs on these methods has revealed widely varying levels of technical knowledge of applying these methods. The feasibility study also showed use of VIGV with speed control to be the most promising methods for increasing the current range, and possibly efficiency, of speed controlled compressors. The only reported case of VIGV + Speed Control still in build phase is the Slovakian project (see page 31 of Frazer Nash Report). National Grid is mandated to employ Best Available Technique (BAT) in the selection of technologies installed on the gas transmission system. This ensures that gas can be transported safely, reliably and efficiently while minimizing impact on the environment. BAT is defined in Article 11 of the European Union Council Directive 96/61/EC – Integrated Pollution Prevention and Control as well as Section 5 of the Environment Protection		

	Act as follows: **'best available technique'** shall mean the most effective and advanced stage in the development of activities and their methods of operation which indicate the practical suitability of particular techniques for providing in principle the basis for emission limit values designed to prevent and, where that is not practicable, generally to reduce emissions and the impact on the environment as a whole: - **'techniques'** shall include both the technology used and the way in which the installation is designed, built, maintained, operated and decommissioned, - **'available'** techniques shall mean those developed on a scale which allows implementation in the relevant industrial sector, under economically and technically viable conditions, taking into consideration the costs and advantages, whether or not the techniques are used or produced inside the Member State in question, as long as they are reasonably accessible to the operator, - **'best'** shall mean most effective in achieving a high general level of protection of the environment as a whole. An "available" technique is either: 1. One that has been tried and tested in similar application environments to such a level as to provide sufficient information of its design, operation, failure modes, maintenance, reliability (e.g. mean time between failure and mean time to repair), environmental impact and overall energy efficiency. A single dissimilar prototype installed on a different network would not be admissible as BAT. To allow new technology to be introduced on the UK gas transmission system and fulfil BAT requirement National Grid require the OEMs to demonstrate a minimum that a minimum of 5 of the same design of equipment should have been installed and operational in similar applications anywhere the world 2. A technique that whilst nascent in application can be built and thoroughly tested and assessed on National Grid's gas transmission system as a demonstration project. This would provide a similar level of confidence for admission as BAT in new builds of future retrofits. Variable Envelope Technology (VIGV plus Speed Control) can be admitted as BAT on the gas transmission fleet if there are a minimum of 5 units of similar design operating in comparable environment over a sufficient period of time anywhere in the world OR as an innovation demonstration project on the UK gas transmission system. To allow this technology to be designed to provide maximum flexibility, automation and control on the gas transmission system and to be proven in the shortest possible timescales, the innovation demonstration route has been chosen.

Attachments	
Verbal Clarifications (Consultants)	