

Control of Pipeline Gas Quality to Extend Gas Turbine Life

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Abstract : Natural gas due to its cleaner combustion characteristics is expected to be the most widely used fuel in the move towards less polluting and renewable energy sources. Thus, the developed world is supplied by a complex network of gas pipelines and natural gas is becoming a major source of fuel. Natural gas delivered directly from the well will differ in composition from gas derived from LNG or produced by anaerobic digestion processes. Each will also have specific contaminants and properties although gas from all sources is likely to enter the distribution system and be blended to provide the desired characteristics such as Higher Heating Value and Wobbe No. The absence of a standard gas composition poses problems when the gas is used as a chemical feedstock, in specialised furnaces or on gas turbines. The chemical industry has suffered in the past as a result of variable gas composition. Transition metal catalysts used in ammonia, methanol and hydrogen plants were easily poisoned by sulphur, chlorides and mercury reducing both activity and catalyst expected lives from years to months. These plants now concentrate on purification and conditioning of the natural gas feed using fixed bed technologies, allowing them to run for several years and having transformed their operations. Similar technologies can be applied to the power industry reducing maintenance requirements and extending the operating life of gas turbines.

Keywords : gas composition, gas conditioning, gas turbines, power generation, purification

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