

ALIGNING NATURAL GAS INDUSTRY IN AN EFFICIENT AND EFFECTIVE MANNER TOWARDS GREENHOUSE GASES EMISSION INTERNATIONAL

Best Practices for the Natural Gas Industry

Background

The discussion and understanding with respects to global warming has progressed in the past few years. This is the most severe climate change that the human civilization has ever been faced to. The main villain of this rising temperature is now known, is the greenhouse gases effect. The carbon dioxide levels have been rising since people began to use oil, coal and natural gas as fuel. These elements are known as “fossil fuels”, because they are the fossilized remains of animals and plants that lived many millions years ago. Thus, when it is burned releases its carbon, usually in the form of carbon dioxide.

The most important developing countries - BRIC (Brazil, Russia, India and China) – which concentrate the fastest growing developing economies are being challenged to find energy sources and opportunities to support their growth curves. The Kyoto Protocol might soon establish clear CO₂ equivalent emission targets for those involved on it. Thus, efforts to sustain this growth trend will mandatory and to couple on reducing greenhouse effects might figure in the top of the list. Indeed that tends to be one of the biggest challenges, to keep growth trends without compromising even more the environment. Most of the countries and consequently its major companies have to foreseen reasonable and effective solutions for dealing with their greenhouse gases whereas keep their own development targets.

Aims

This paper aims to present an approach to integrate sustainability and safety concerns on top of a typical RAM Analysis to support new enterprises to find alternatives to align themselves to the greenhouse gases emission targets (measured as CO₂ equivalent).

This approach can support the Natural Gas Industry to foreseen challenges and opportunities to be implemented in the design or operational phases integrating their business goals and targets to the global efforts by reducing the greenhouse gas emissions.

Methods

A high level reliability analysis approach combined with CO₂ emission concerns is presented to support companies to restructure their business and strategic projects in a way to considerer in their processes, sustainability and safety philosophies towards their growth. An integrated approach for combining Sustainability and Safety into a RAM analysis, RAM2S (Reliability, Availability, Maintainability, Sustainability and Safety) based on a powerful reliability simulation tool, can be used to model an entire facility/system, taking into account alternatives to measure and control concomitant CO₂

equivalent “production” along entire system life-cycle, supporting strategic decisions. Part of engineering solutions relies on the possibility to capture and store CO₂, in a real time basis, by connecting facilities and storage fields by pipelines.

Results

There are no known on-going enterprises which considers in their design concepts, assessments to evaluate the impact of CO₂ capture and storage failures and unavailability of these systems in their business. Thus, hypothetical situations showing the expected gains from implementing on their business these CO₂ concerns is presented.

Summary/Conclusions

Thus, this integrated approach would allow industries to find out a more cost-effective alternative to adapt their business into the global warming reality, overcoming the inherent threats of greenhouse