The Growing Concern about Natural Gas Quality

In the last decades, the European natural gas markets have been changing, due to a number of reasons: liberalization and unbundling, European harmonization efforts and increasing globalization (LNG), but also the continuing integration of renewable energy sources such as biomethane and in the future maybe large scale deployment of power-to-gas, to name just a few. Many of these developments offer benefits, but one consequence is that local gas qualities and compositions are likely to show greater fluctuations, both in amplitude and in frequency. For many end users, especially in sensitive industries or in power generation, this may be a new challenge.

Natural Gas Consumption by Sector (2014)

Gas Quality: Regulation vs. Real Life

German Research Activities

In order to assess how gas quality fluctuations can affect the various end use sectors, it is important to have data on the populations of installed appliances and applications in the various sectors, common practices for operation, maintenance and process adjustment as well as on how common gas quality fluctuations actually are in different parts of Germany. This was the focus of Phase I of the DVGW project „Hauptstudie Gasbeschaffenheit“. At the same time, another project called „GasQualitaetGlas“ looks at local gas quality/composition fluctuations at different glass manufacturing sites all over Germany and aims to develop compensation strategies specifically for the glass industry.

Some Results

In the DVGW study, 56 operators of industrial thermal processing and chemical manufacturing processes as well as 32 industrial equipment manufacturers answered detailed questionnaires about adjustment practices, typical process parameters, installed measurement and control hardware, existing experiences with gas quality fluctuations, ...

Some Highlights

Statistical Analysis

As part of the project „GasQualitaetGlas“, detailed long-term gas quality or composition measurements at 14 locations all over Germany are currently being carried out. Using statistical analysis, a comprehensive overview about current gas qualities in Germany is being developed, including issues such as Wobbe vs. GCV or local rates-of-change in gas quality.

Conclusions

- Local gas quality fluctuations are increasingly common all over Germany. End users, especially in industry and power generation, have to be aware of this and prepare. They are especially sensitive in this context.
- The Wobbe Index was found to be not particularly relevant for most industrial end users, other gas quality parameters are considered to be much more meaningful. Gas quality regulations, on the other hand focus on the Wobbe Index as the premier criterion for fuel gas interchangeability.
- Advanced measurement and control technology can help make even sensitive processes resilient to gas quality changes... but solutions often have to be tailor-made.