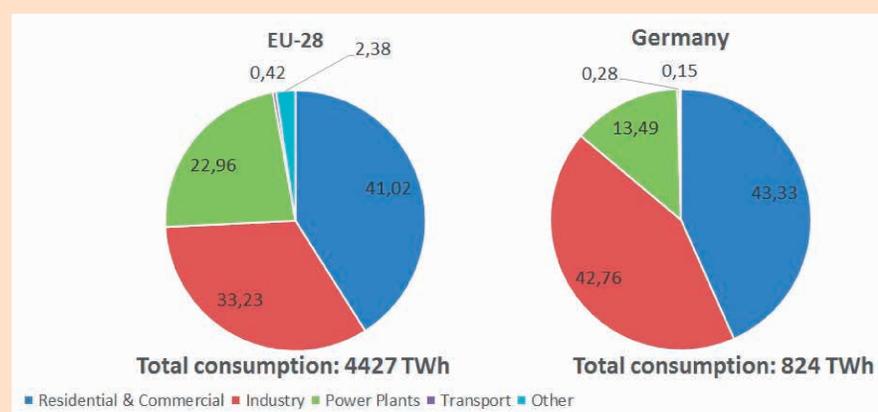


The Growing Concern about Natural Gas Quality

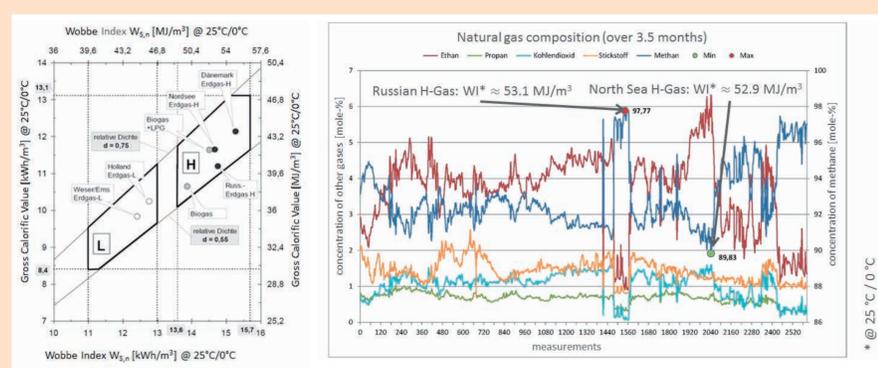
In the last decades, the European natural gas markets have been changing, due to a number of reasons: **liberalization** and **unbundling**, **European harmonization** efforts and increasing globalization (LNG), but also the continuing **integration of renewable energy** sources such as **biomethane** 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



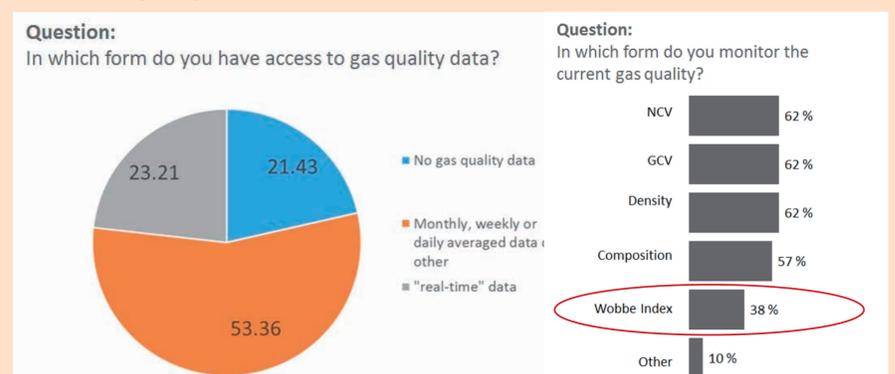
German Research Activities

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

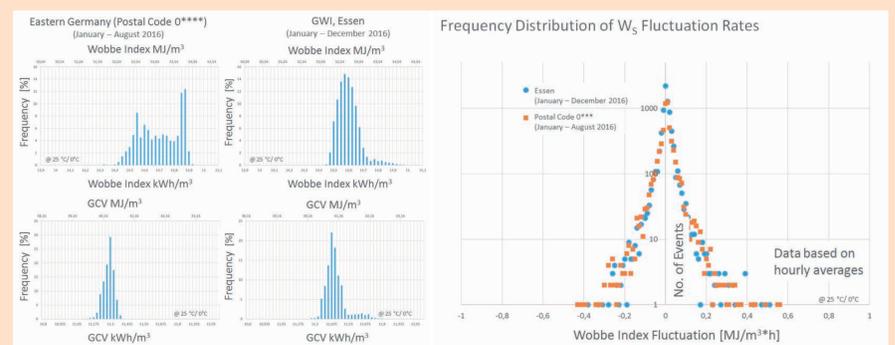
In the DVGW study, **56 operators** of industrial **thermal processing** and **chemical manufacturing** processes as well as **32 industrial equipment manufacturers** answered detailed questionnaires about adjustment practices, typical process parameters, installed measurement and control hardware, existing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

