



QUALVISTA

SMART BIOGAS MONITORING

Online Biogas Monitoring System for detecting Siloxanes continuously, reliably and accurately

**Helping to
convert biogas
into renewable
energy**

Qualvista

Juha Lauritsalo, CEO

Cleantech Venture Day

Lahti, 13 June 2018

The biogas business



BIOGAS



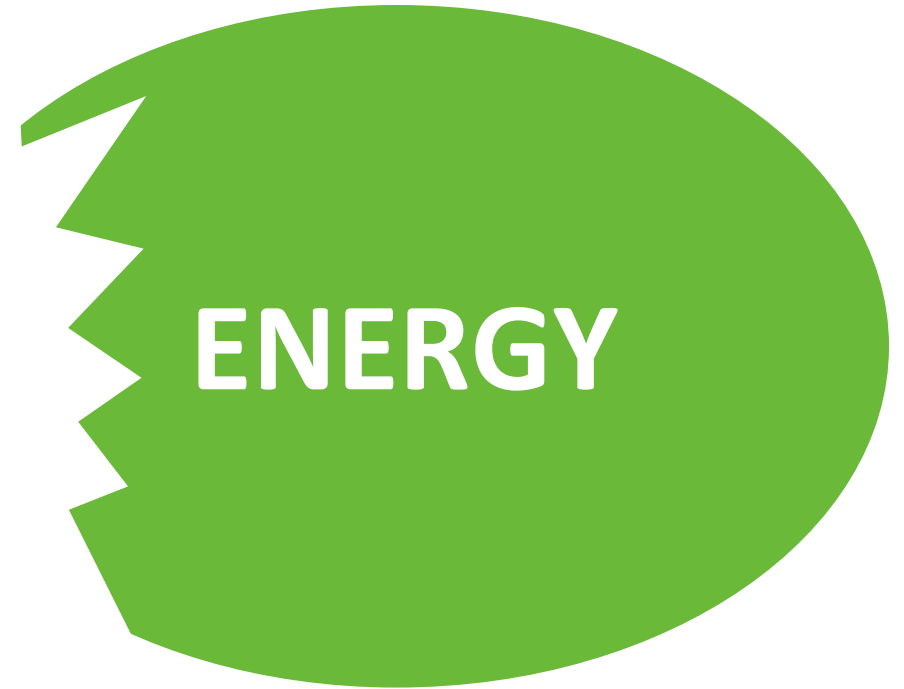
ENERGY

- Biogas is produced from biowaste in increasing volume and in an increasing number of locations
- Modern engines, turbines, grid injection and traffic use require gas of good, steady and reliable quality.

The biogas business is broken.



- Biogas is produced from biowaste in increasing volume and in an increasing number of locations
- Modern engines, turbines, grid injection and traffic use require gas of good, steady and reliable quality.



- **The quality of the gas is often poor or unknown**
- **A large share of the biogas produced is unusable**
- **Poor and unknown gas quality is a show-stopper.**

Siloxanes are an expensive problem. They stop the biogas-to-energy process.

- Harmful chemical compounds
 - They convert into particles similar to sand or glass
- Millions of euros spent to purify biogas
 - Gas samples typically taken monthly
 - Results come in late, often inaccurate



The Qualvista solution fixes the biogas business



- The Qualvista biogas monitor provides accurate on-line information on the quality of the gas
- Gas compounds measured include siloxanes as well as CO₂, CH₄, O₂, H₂S and limonene

- **The quality of gas is known at all times**
- **Gas quality requirements are met**
- **Filter change and maintenance times are optimised**
- **The efficiency and commercial feasibility of biogas as source of energy is enabled**

Our unique solution has been proven in the field



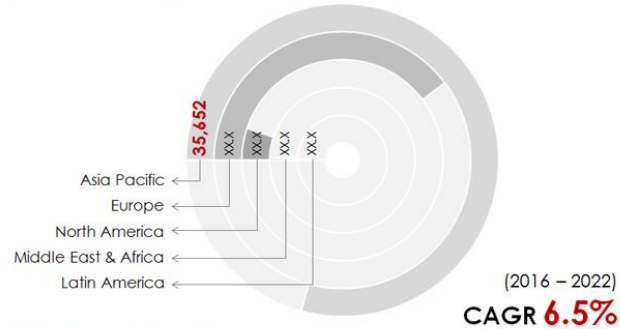
- Low investment level
- High sensitivity and accuracy
- Continuous measurement
- In use at customer sites in Europe and USA
- Repeat purchases from existing customers



The biogas and biogas plant markets are growing globally at CAGR of 6.5%

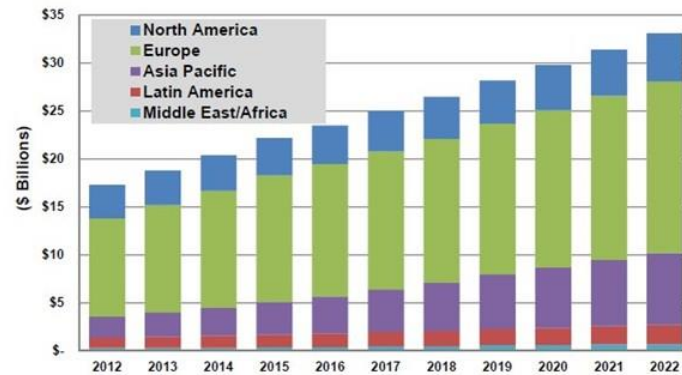
Global Biogas Plant Market Volume

By Region, 2015 (Units)



Source: Transparency Market Research Analysis, 2016

Chart 1.1 Biogas Market Value by Region, World Markets: 2012-2022



Source: Pike Research

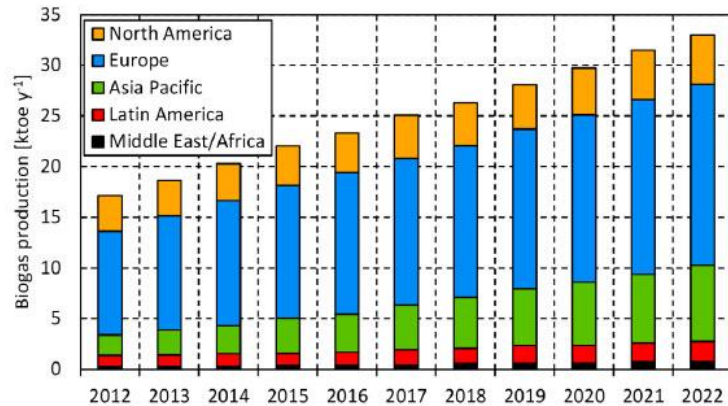
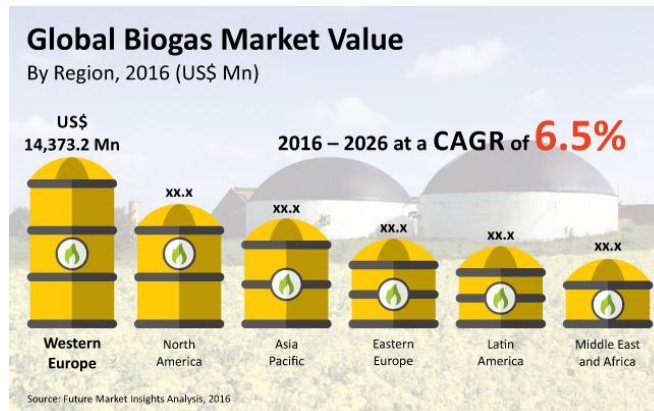


Figure 1. Biogas production at 2012 and trend to 2022 in different areas of the world (Pike Research, 2012).



Source: Future Market Insights Analysis, 2016

- Over 17 000 biogas plants in Europe alone
- Estimated over 60 000 plants globally – and growing fast to 90 000 by 2024
- Qualvita market opportunity: several thousand installed systems

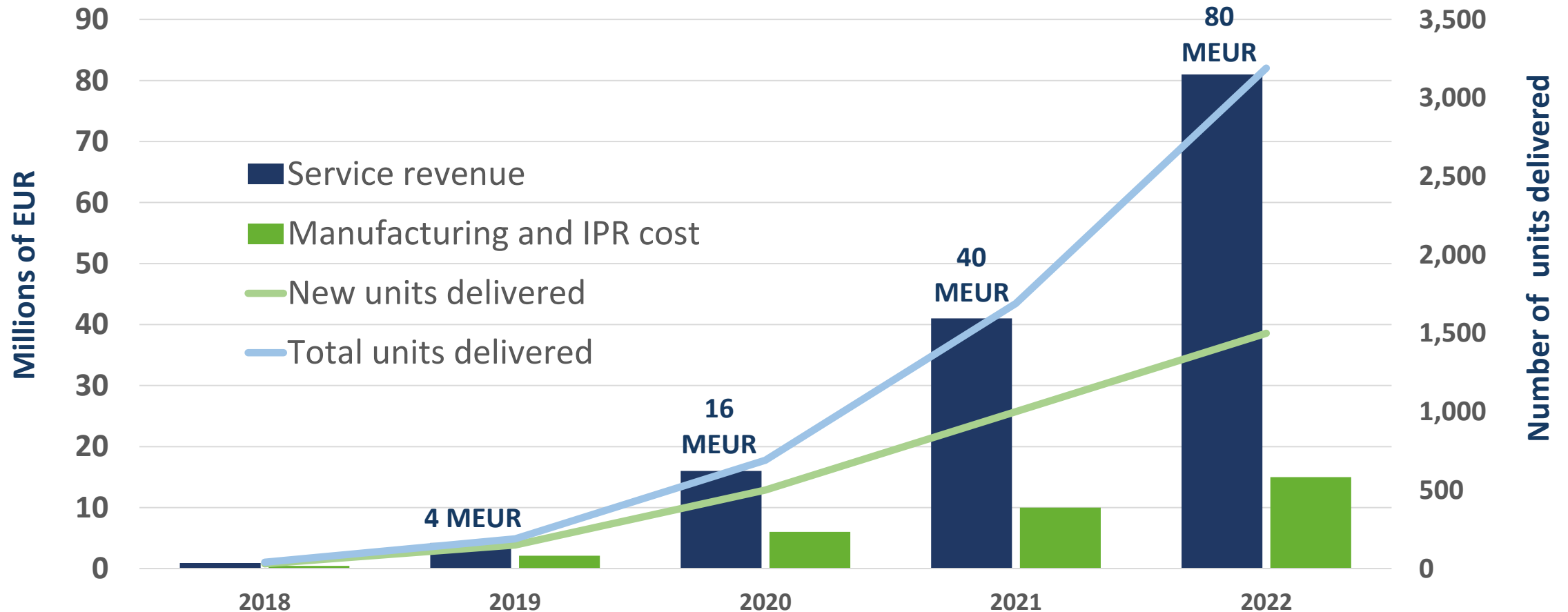
Sources: Transparency Market Research, Pike Research, Future Market Insights, European Biogas Association

Qualvista is built to grow fast.

Business is based on service model with monthly fee. Capex -> opex.

Manufacturing is financed through a sell-and-lease-back model with a partner.

The team is experienced with bringing technology product to the market.



Investment opportunity

BIOGAS

ENERGY

- Targeting to raise 2 MEUR
- Funding to be used for sales and growth execution
- Reasons to invest:
 - Large, growing market
 - The only working product available on the market
 - Satisfied customers, good pilot cases
 - Scalable working capital financing exist



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