

# Case Study #2: Europe

**CWC LAUNCH + VISION EVENT**  
10.05.2022





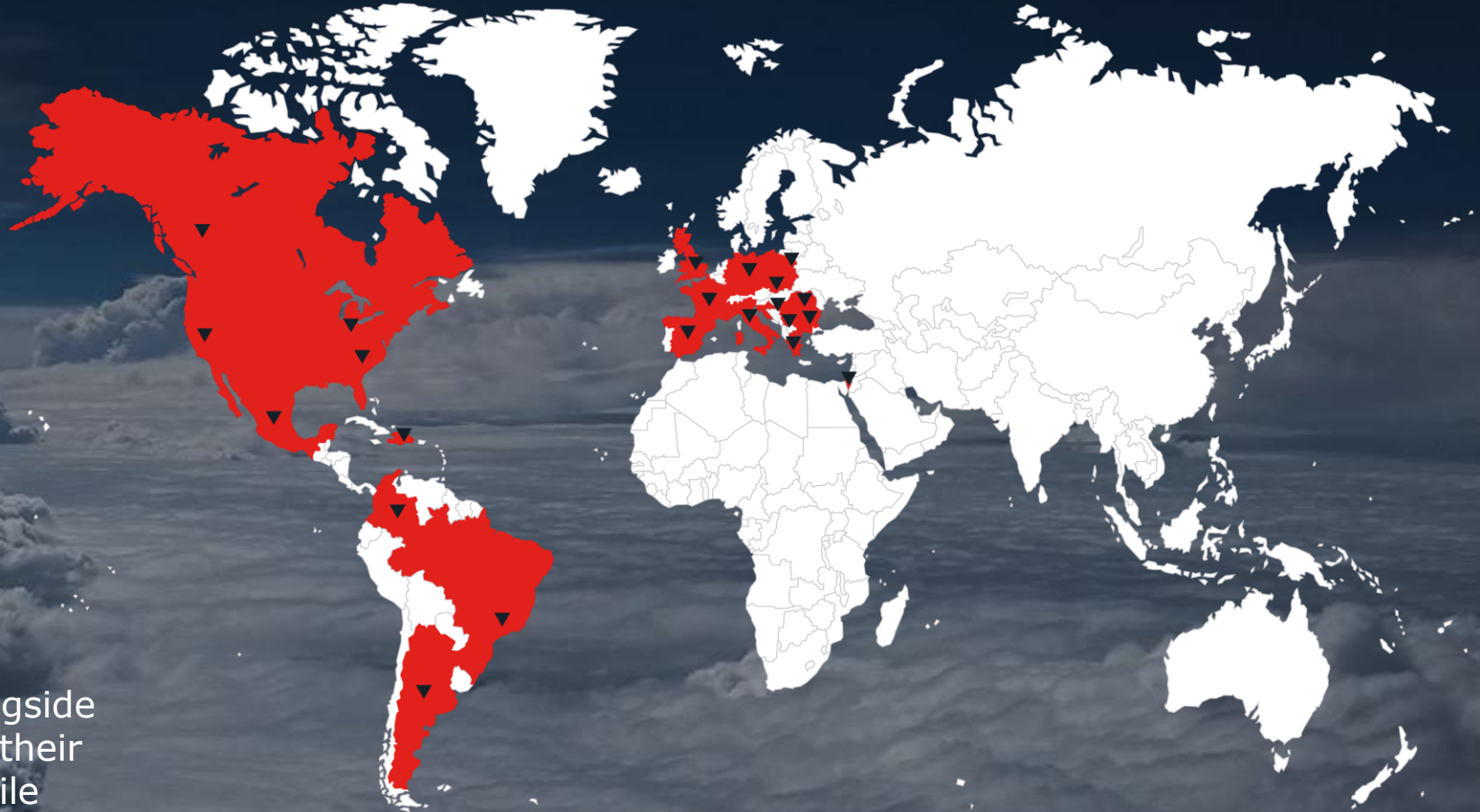
# AB IN THE WORLD

**+ 1670** plants designed and installed

**+ 1950 MW** installed power

**+ 1300** plants managed and monitored by AB service

Argentina Brazil Bulgaria  
Canada Colombia Croatia  
Czech Republic France  
Germany Greece Israel Italy  
Mexico Poland Puerto Rico  
Romania Spain UK USA  
Serbia



For 40 years we have been working alongside our customers helping them to improve their competitiveness with energy savings while reducing their environmental footprint.



← cogeneration from  
natural gas and biogas

biomethane →



air emissions  
treatment →





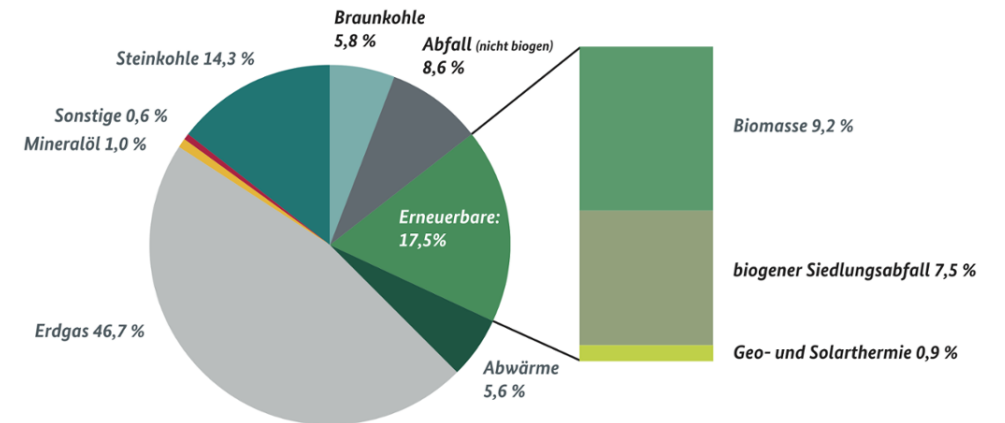
# District Heating in Germany

- **Half of the energy in Germany** is used for heating\*
- Real energy transition is only possible if besides the energy sector also **the heating sector is transforming**
- **District heating network plays a key role** in this: They can supply many households with (green) heat efficiently and cost-effectively
- The decision of Germany to **phase out coal** is **creating pressure** for action: Coal-fired power plants will be taken off the grid in the coming years
- **CHP systems are extremely flexible** and can provide highly efficient heat also in a climate-neutral way by using biomethane instead of natural gas



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zur leistungsgebundenen Wärmeversorgung 2021: 140 Mrd. kWh\*\*



\*der Wärmeversorger sowie Einspeisungen von Industrie und Sonstigen  
\*\*vorläufige Zahlen, teilweise geschätzt

\*Final Energy Consumption including heating & cooling, considering all sectors "Private households", "Industry" and "Trade, commerce and services".

Quellen: Statistische Bundesamt, Bundesverband der Energie- und Wasserwirtschaft e.V.; Stand 12/2021

# Frame Conditions

## DISTRICT HEATING NETWORK EXTENSION

- **Substitution** of an old CHP unit and **extension** of an existing district heating network with **5,4 MW<sub>el</sub> / 5,3 MW<sub>th</sub>** power
- Usage of the **limited space** available on site
- **Sound sensible location** due to school nearby
- **Short realization timeline** due to the upcoming heating period
- **High chimney** of 24m above ground
- **Connection & integration** to the existing system, including the hot water storage

**Substitution** through *Combined Heat and Power Act* (KWKG):

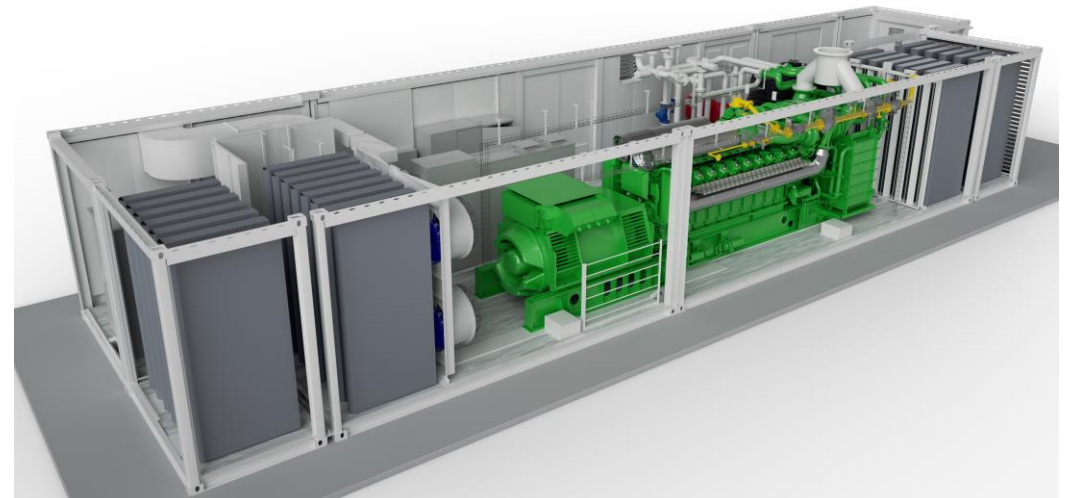
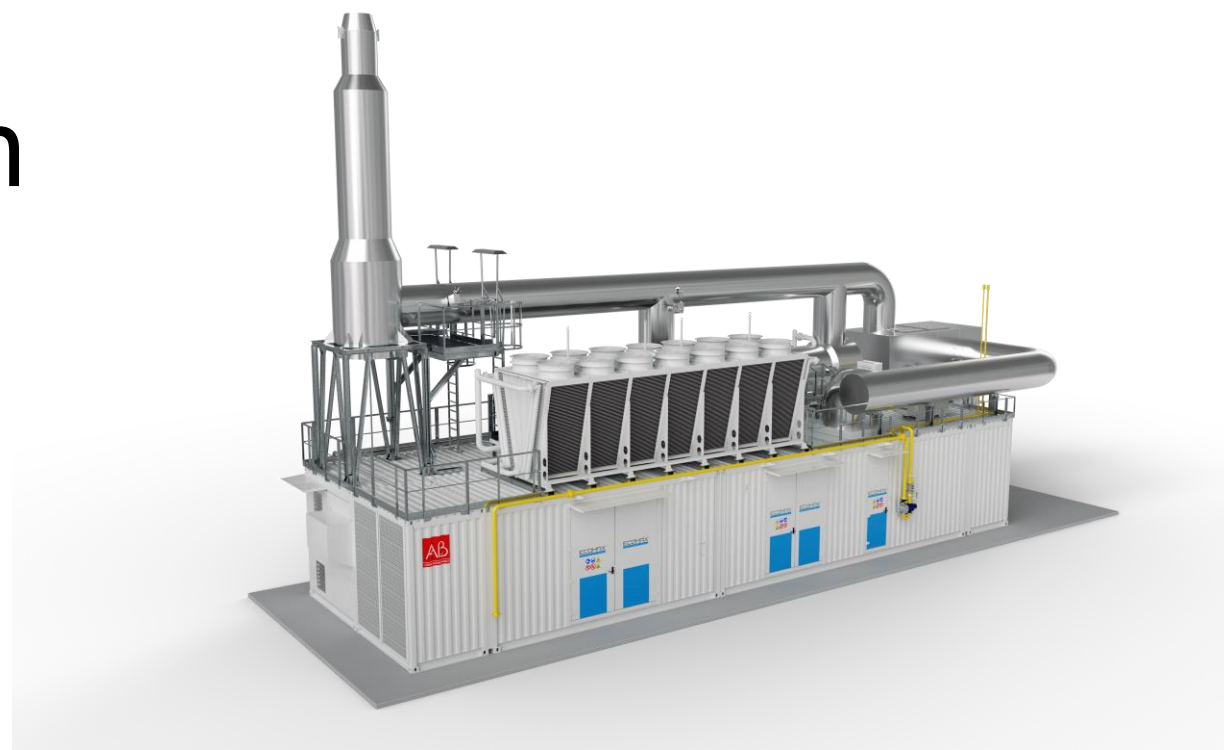
- **Special tender incentives** (CHP auctions) to substitute flexible CHP units which can run in most needed times – max. 3.500 OPH/year



# Our **ECOMAX®** Solution

CHP SOLUTION FROM AB ENERGY

- **ECOMAX®** is our flexible **containerized CHP solution** covering a range from 250 – 4.500 kW<sub>el</sub> per unit
  - This solution can be **adjusted exactly to the customer needs** due to its very high modularity
  - Very **well-thought-out solution** which has been continuously developed over many years
  - **Highest standard** (quality, accessibility, production times) thanks to a very high depth of manufacturing and decades of experience
  - **Meets strict emission requirements** thanks to SCR (selective catalytic reduction) system
- 



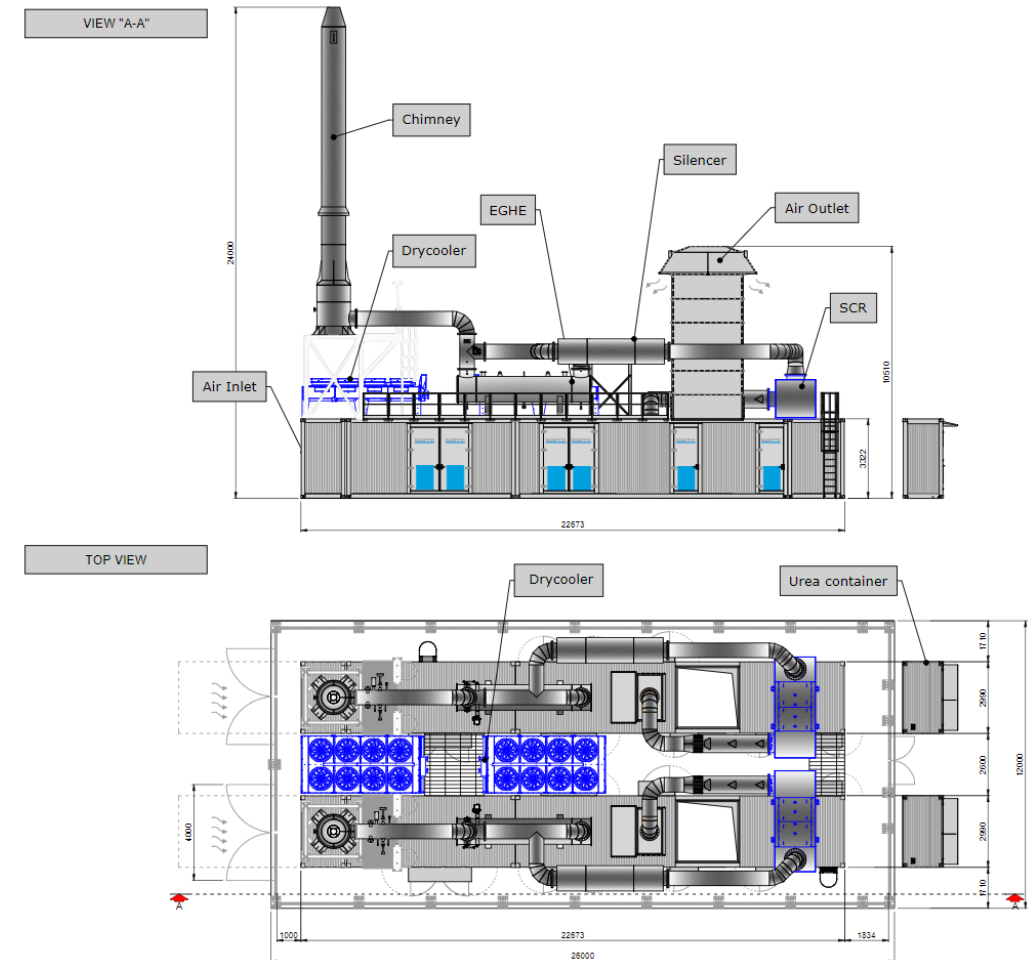


# Project Solution

## 2 X ECOMAX® 27 NGS

- To reach the required heat & electricity demand our solution was to install **two ECOMAX® 27 NGS** with each  $2.678 \text{ kW}_{el}$  &  $2.582 \text{ kW}_{th}$
- To meet the sound requirements we had to install additionally to our **super silent container solution**, a **sound barrier** of 6m around the CHP units
- Due to the limited space we had to **place the chimney on the top of our container** solution, together with **the emission reductions systems**
- Thanks to our standardization and pre-order strategy of engines we were able to build, install & commission the unit within the required timeline

ECOMAX® 27  
NATURAL GAS



# Project Solution

2 X ECOMAX® 27 NGS

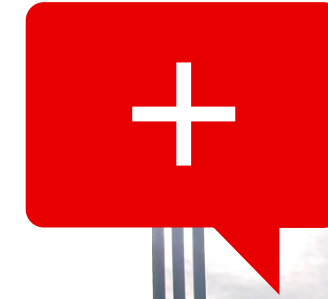




# Results for the customer

## BENEFITS OF THE CHP SOLUTION

- **More efficient** district heating network
- **Plannable add income** in addition to heat and electricity revenues, due to incentives for a total of 30.000 OPH (~8,6 years due to low running hours of 3.500 OPH/year)  
Guaranteed add income of:  
 **$\text{max. } 7 \text{ ct/kWh}_{\text{el}} \times 5,4 \text{ MW}_{\text{el}} \times 30.000 \text{ OPH} = 11,34 \text{ Mio€}$**
- Optimized **Primary Energy Factor (CO<sub>2</sub> savings)**
- **Reduced OPEX** due to more efficient CHP units
- **Higher flexibility** to react to future changes in the energy market

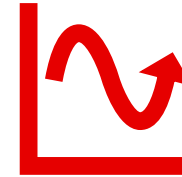


# Potential **future** benefits

## CHP ROLE IN THE FUTURE

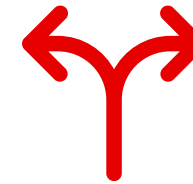
### **More volatile energy market in the future**

- Due to the increasing number of renewable sources the volatility in the energy market is increasing. Due to the tender conditions, the CHP-unit operates only 3.500 OPH/year. Therefore, its possible to participate in the energy market at times where el. energy is needed!



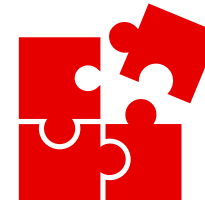
### **Flexibility in the future to reduce CO<sub>2</sub> footprint further**

- With increasing availability of renewable gases in the gas grid, CHP-units can partially or completely switch to **Biomethane or Hydrogen** as fuel and reduce there CO<sub>2</sub> footprint even further.



### **More integrated and intelligent energy systems in the future**

- Energy systems of the future require even more flexible solutions which can integrate with a variety of renewable energy sources. CHP-units can meet this requirement with smart, flexible and integrated plant control systems.







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