

# Asset Management in Vattenfall BA Heat

BSAM VC-Meeting # 2

Smart Asset Management - DH Distribution Networks

June 28<sup>th</sup> 2021

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VATTENFALL






# Heat

One of Europe's leading players in district heating

## Overview

- One of Europe's leading players in district heating in large metropolitan areas
- Attractive growth prospects supported by urbanisation trend and increasing regulatory support for low carbon heating
- Strong partnerships with cities for realization of their carbon reduction plans supported by track record of fulfilling previous reduction targets
- Heat generation and distribution systems are a platform to integrate other energy solutions, e.g. cooling, e-mobility, wind and solar

## Highlights

-  **5,500 km** heat grids in operation
-  **9.5 GW** heat capacity
-  **8.2 GW** electricity capacity
-  **1.8 million** heat related end customers
-  **< 0.5%** churn rate



## Key data

	FY 2020
Net sales (SEK bn)	23.3
External net sales (SEK bn)	13.5
Underlying EBIT (SEK bn)	1.0
Electricity generation (TWh)	23.0
Sales of heat (TWh)	13.8



# Heat

## Overview of markets and installed capacity

The Heat operating segment includes Vattenfall's heating and condensing businesses. Our core business is district heating, where we have 1.8 million end customers in large metropolitan areas like Berlin, Amsterdam and Uppsala. The condensing business consists of mainly gas-fired power plants in the Netherlands. Vattenfall also entered the UK market and the first contract was signed to design, build and operate a new low carbon district heating network in London (serving 10,000 household equivalents<sup>1</sup>), to be operational from 2023.

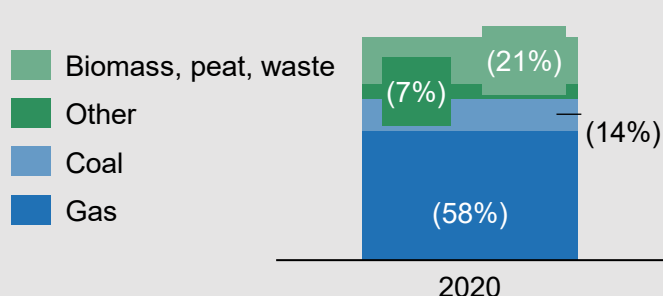
### Heat cluster 2020

	Heat (TWh)	Power (TWh)
Germany	9.8	6.0
Sweden	2.5	0.1
Netherlands	1.5	-
<b>Total</b>	<b>13.8</b>	<b>6.1</b>

### Condensing cluster 2020

	Heat (TWh)	Power (TWh)
Germany	0.1	1.9
Netherlands		14.7
<b>Total</b>		<b>16.6</b>

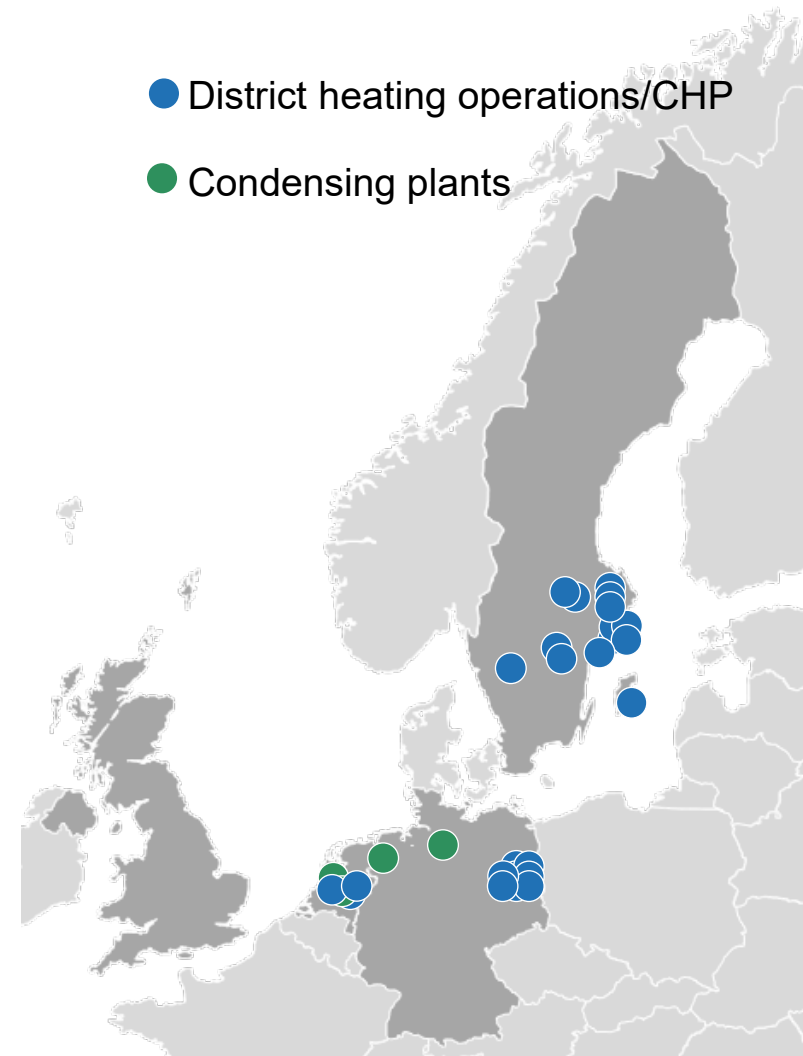
### Installed capacity by GW<sub>heat</sub>



**Total** **16.6**

**Transformation into fossil-free heat supply by 2040+**

- District heating operations/CHP
- Condensing plants



<sup>1</sup> 16,700 new homes and approximately 280,000 square metres of office, retail and commercial space

# District heating volumes set to increase significantly in Amsterdam and the UK...

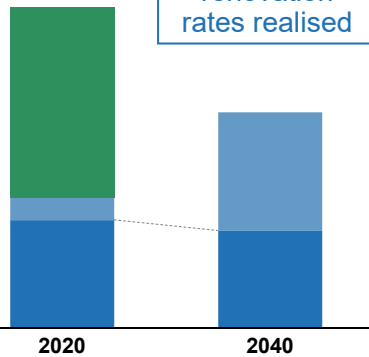
District heating market share by City, 2020 vs 2040



Berlin

Assuming high renovation rates realised

Dominating fuel (district heat)



Gas/coal/waste

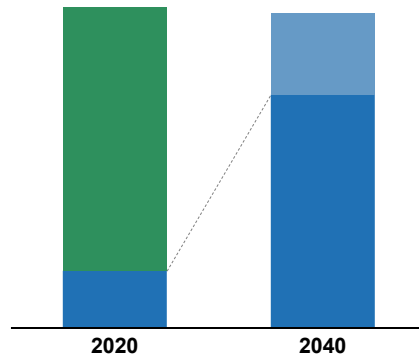
Power to heat/green gas/biomass/TPI

Rapid phase out of coal and totally fossil free by 2040+

Total heat demand set to decrease due to energy efficiency measures; district heating volumes stable with increased market share



Amsterdam



Gas/waste

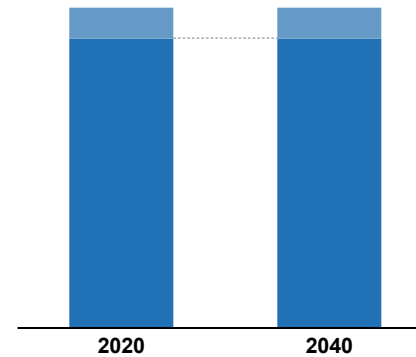
Power to heat/green gas/waste

Gas boiler phase out set to spur dramatic increase in district heating

Stable total heat demand – population growth offset by energy efficiency measures



Uppsala



Biomass/waste

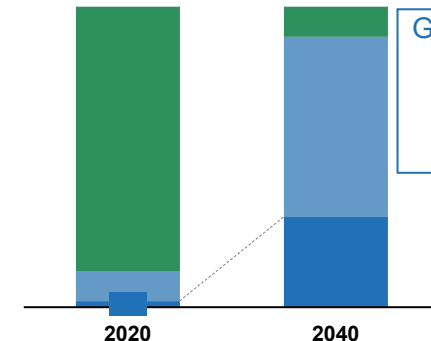
Biomass/waste

Mature market with dominant market share of district heating

Stable heat demand – population growth offset by energy efficiency measures



London & Edinburgh



Gas

Power to heat/waste

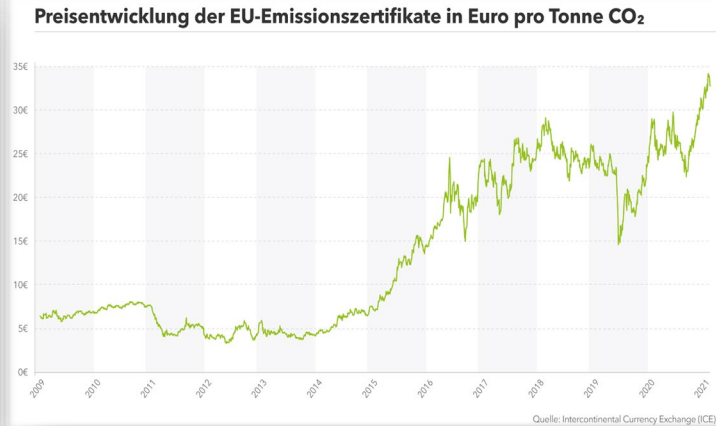
Government target to support district heating<sup>4</sup>

Dramatic growth of district heating expected as market share increases to 30% in 2040

Stable heat demand – population growth offset by energy efficiency measures

District Heat Electricity, Renewables & Other Fossil

# Our Framework conditions are...

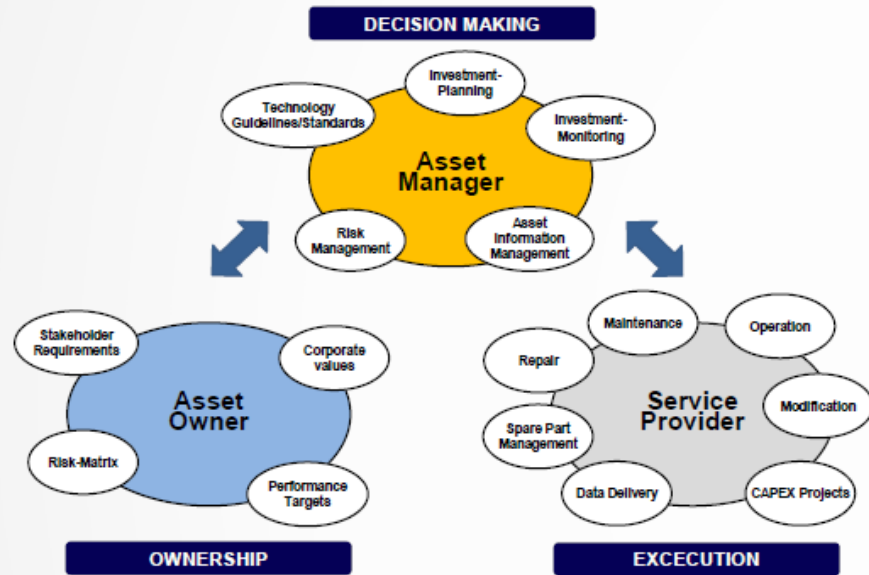


A multi-complex environment makes it difficult to find the "correct" decision



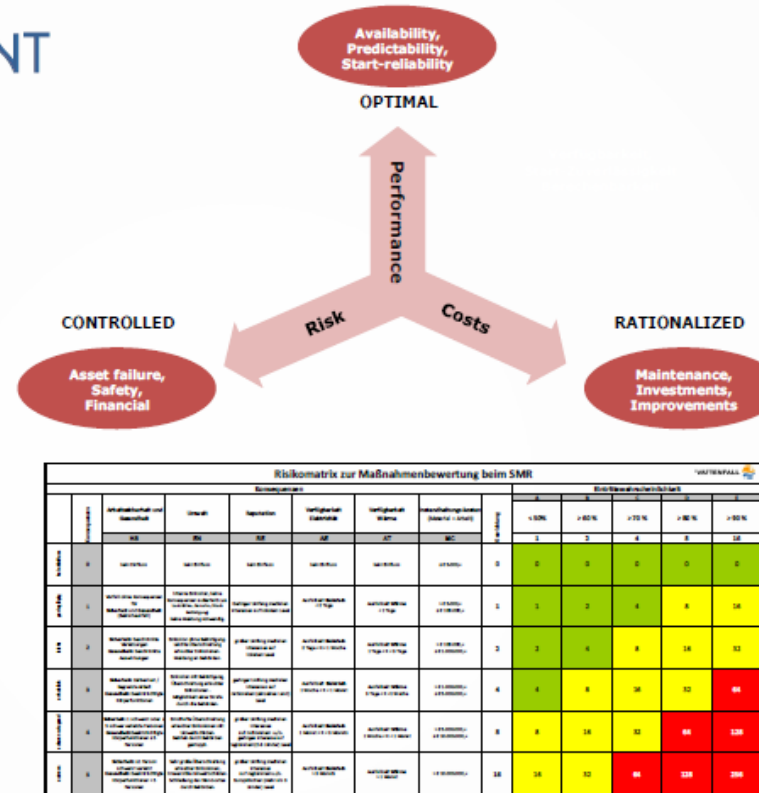
➤ THEREFORE, A STRUCTURED, RISK-BASED AND DOCUMENTED BUSINESS MANAGEMENT IS NECESSARY TO OPERATE ASSETS IN A SAFE, ECONOMIC AND SUSTAINABLE WAY.

## 2. KEY-ELEMENTS OF ASSET MANAGEMENT



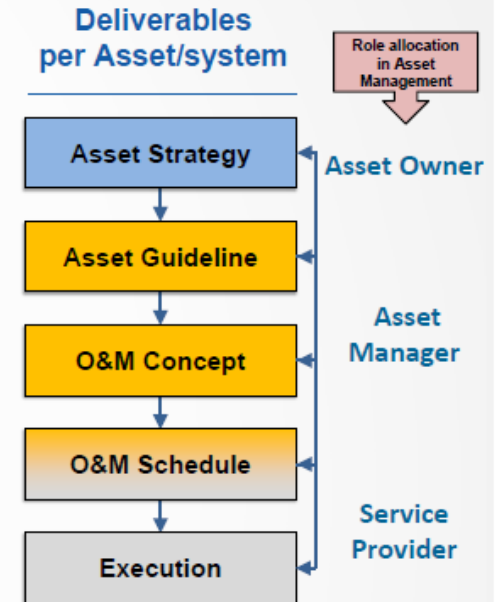
### Structured:

The basis for taking decisions is resting on stakeholder requirements, performance demands and the risk appetite of the owner.



### Risk-based:

Based on a risk-matrix, the planned activities are evaluated.



### Documented:

Decision making is documented with the aim of activity-based OPEX and CAPEX budgets in operation and maintenance concepts.

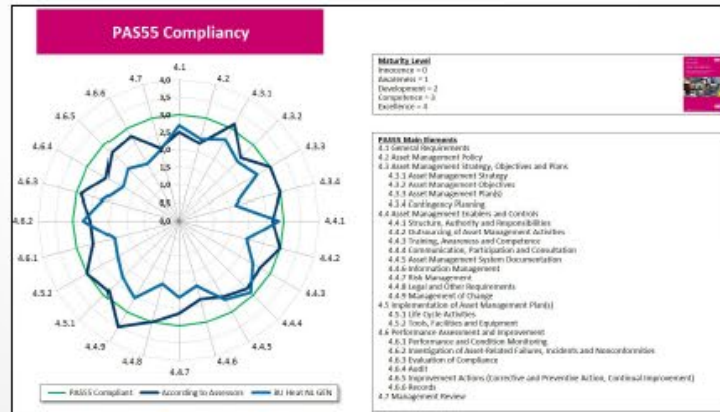
# INITIATIVES TO IMPROVE THE PROCESSES AND RESULTS:

## 3. PAS 55\* GAP-ANALYSIS

The international standard PAS 55 (or ISO 55000) serves as a reference for best practices in asset management.

The result of the analysis indicate the improvement areas for achieving compliance with the guideline.

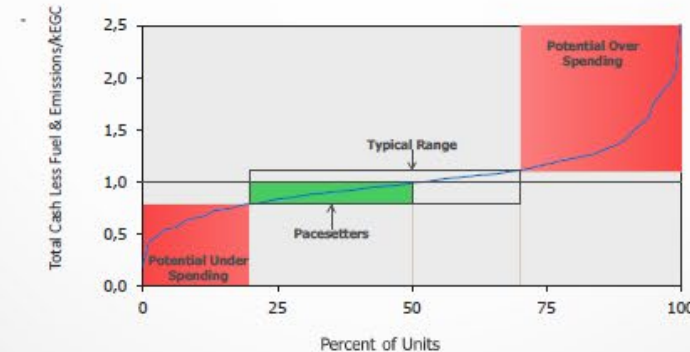
\* Publicly Available Specification



## 4. BENCHMARK (SOLOMON)

The performance of power plants can be measured and assessed in addition to financial and operational indicators by the characteristic value of EGC (Equivalent Generation Complexity).

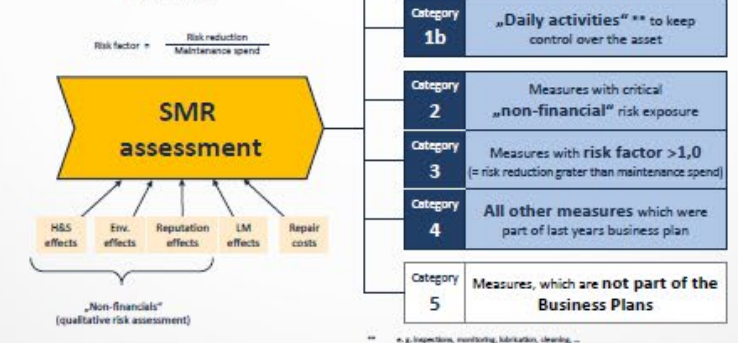
It shows the cost situation in relation to other power plants in an international comparison.



## 5. SMR\*

In addition, a structured review of the maintenance is carried out, taking into account the respective market position, in order to achieve an optimal balance between the risk and the costs for the maintenance planning. The FMECA methodology serves as the basis for the criticality.

\* Structured Maintenance Review



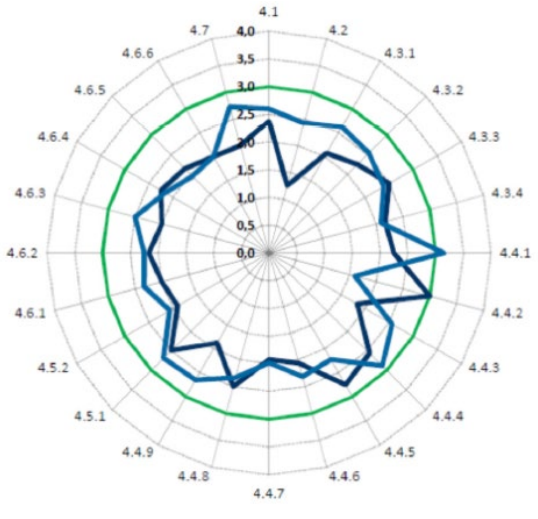
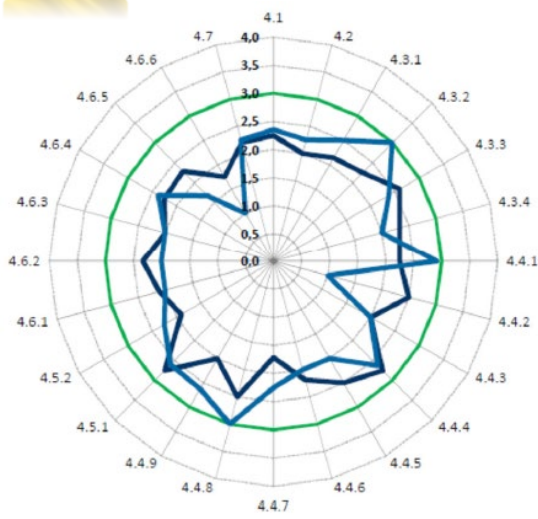


# PAS55 COMPLIANCY OVERVIEW



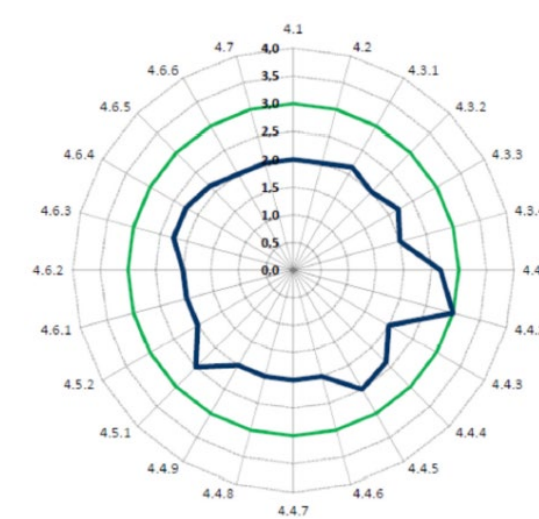
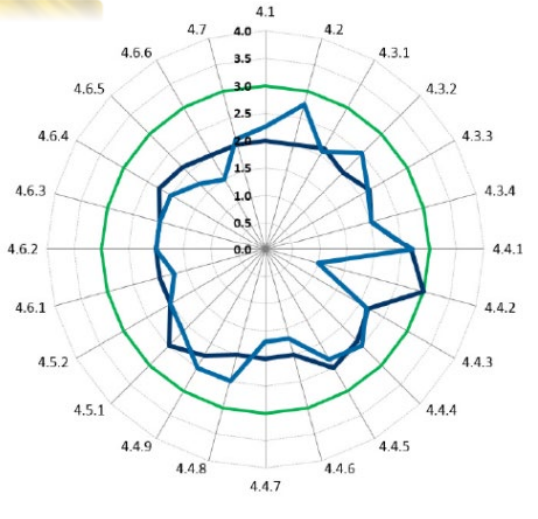
Generation

Grid



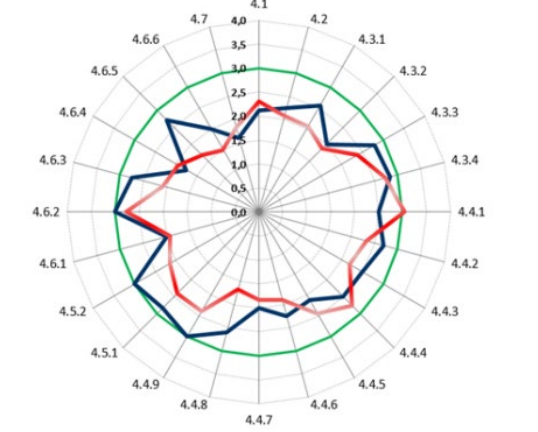
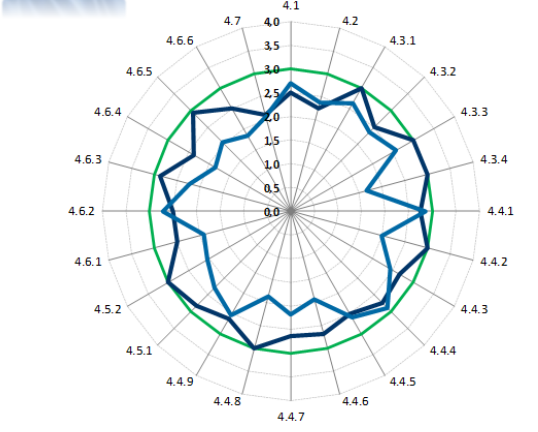
Generation

Grid

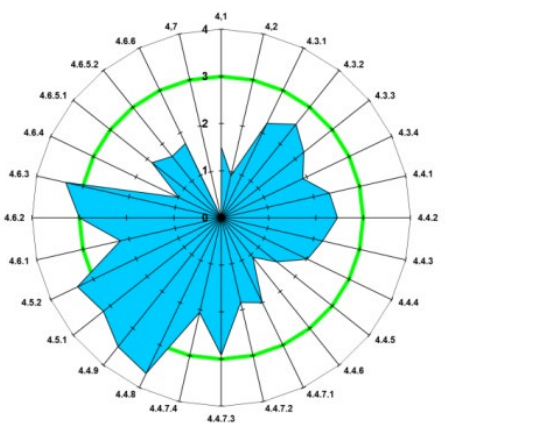


Generation

Grid



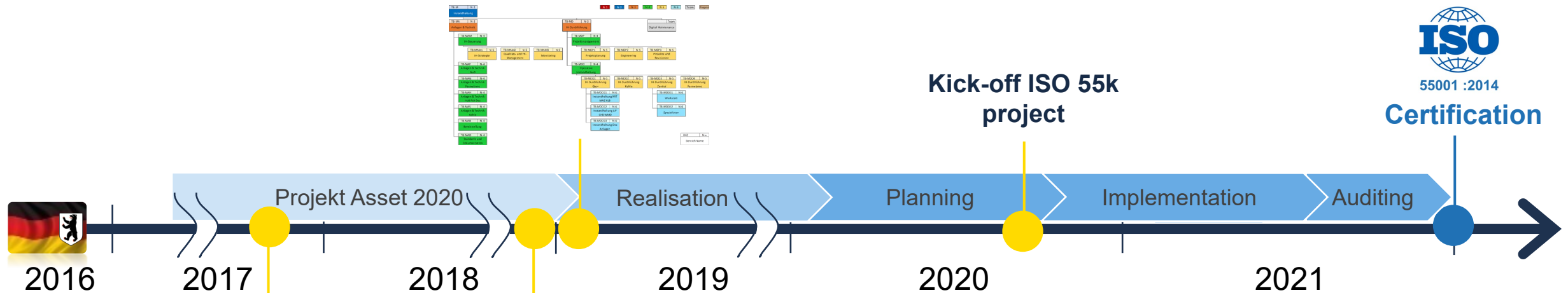
Sweden Generation and Grid\*



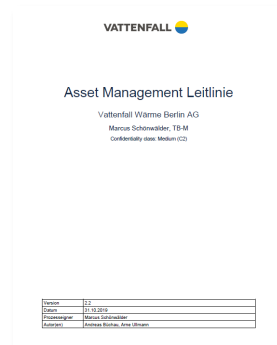


# Asset 2020 Organization certified by ISO 55001

Jan 1<sup>st</sup> 2019: Go live Asset 2020  
Organization



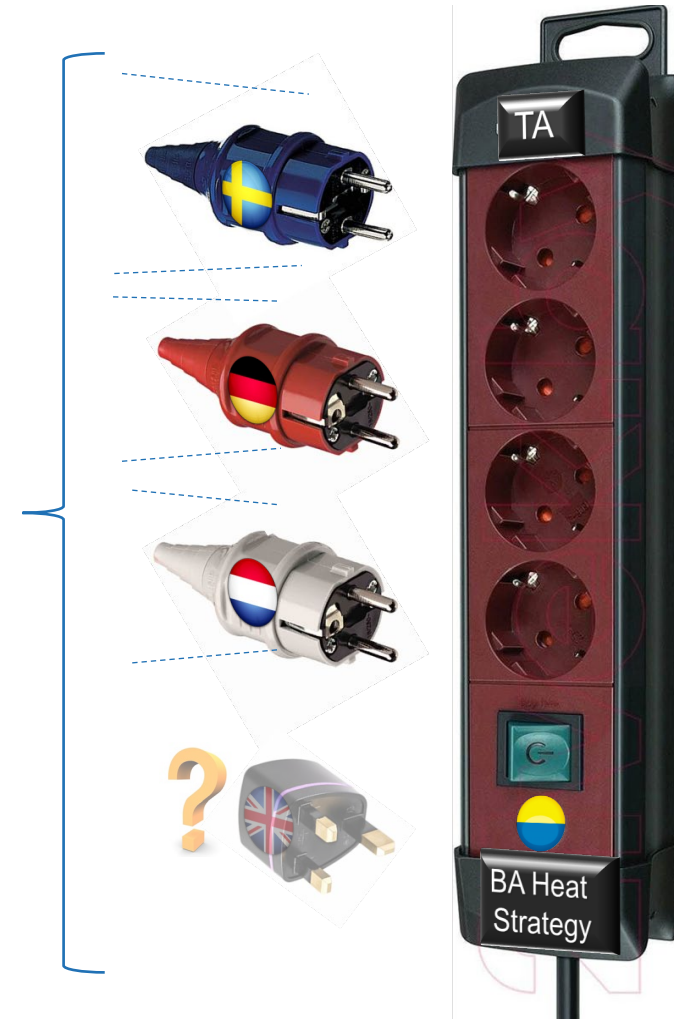
Decision to close the gaps with Project "Asset 2020"



Dec 18<sup>th</sup> 2018: AM-  
Handbook

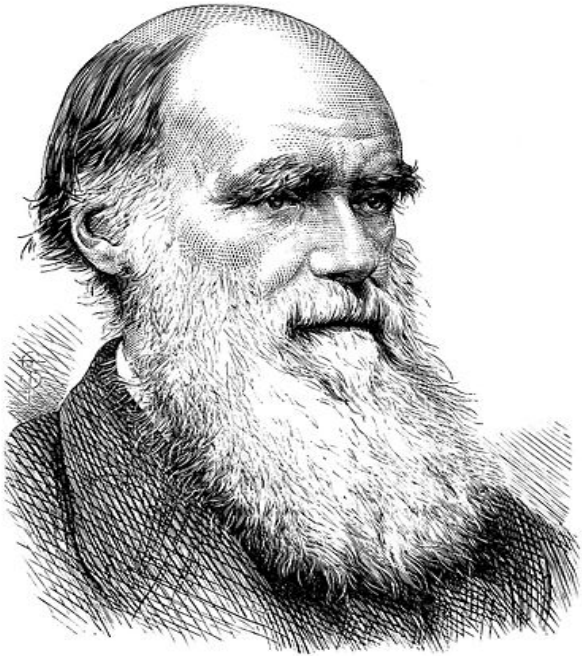
# This illustration of the plugs and the plug bar still represent our way of looking at AM system in BA Heat!

Each BU develops its AM system independently. They all have in common that they work towards the ISO 55k requirements and strives for certification according to the international best-practice-standard for capital-intensive infrastructure companies!





# We have to adapt to change because ...



“It is not the strongest or the most intelligent  
of all species that survives;

It is the one who can best adapt to change.”

– *Charles Darwin* –

# Thank you for your attention!

Contact

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