Next-Gen Waste-to-Energy

Harnessing AI for Sustainable Power Optimization

AG Solution

Your global partner for Industry 4.0

+15 years of experience

AG Solution	Quariq
Process automation Data Intelligence (OI & ML/AI) BPC - MES / MOM OT Cyber Security Manufacturing IT	Digital Roadmaps Strategic Consulting Innovation ROI & business cases

>200
engineers, consultants & project managers

Offices:

Belgium (HQ) - Spain - France - Germany - Ukraine - Netherlands - Portugal

Long-term customers:

water-link, LANXESS Energizing Chemistry, TERSA, sanofi, Cargill

Projects throughout countries across several continents;

Supporting in more than 15 native languages.

Focus on multi-country - multi-site industrial companies, understanding your needs and deliver value for your operations.

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TERSA Waste-to-energy plant

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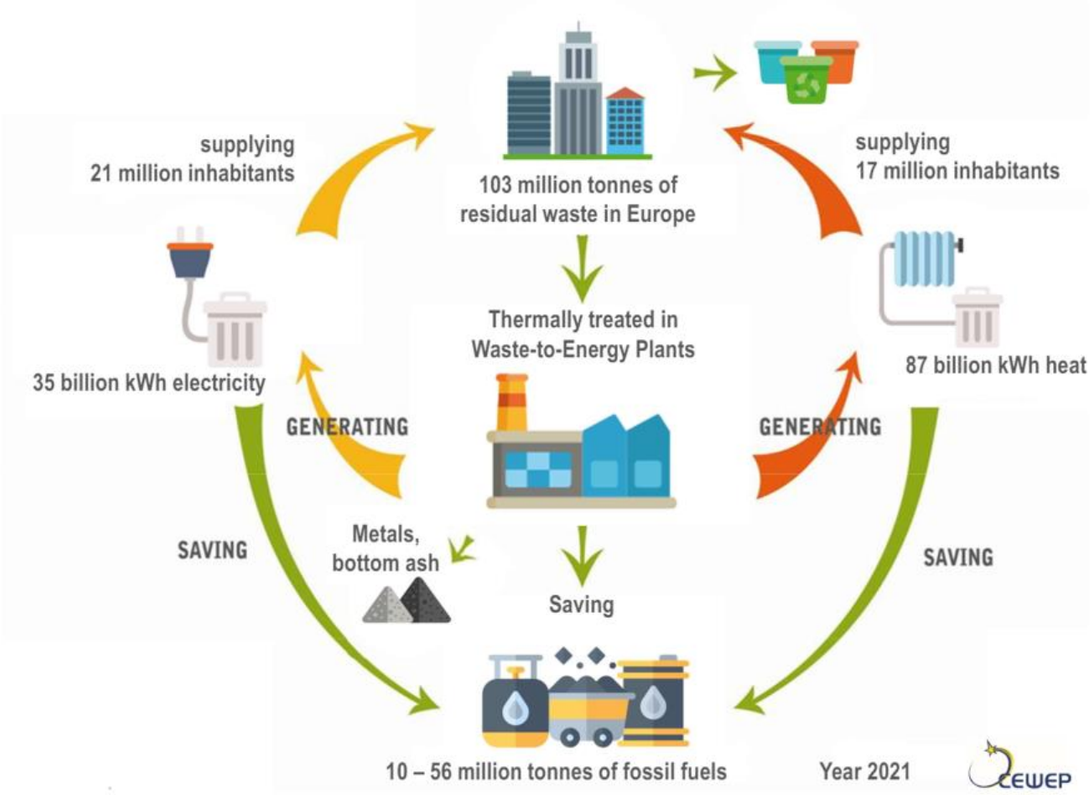
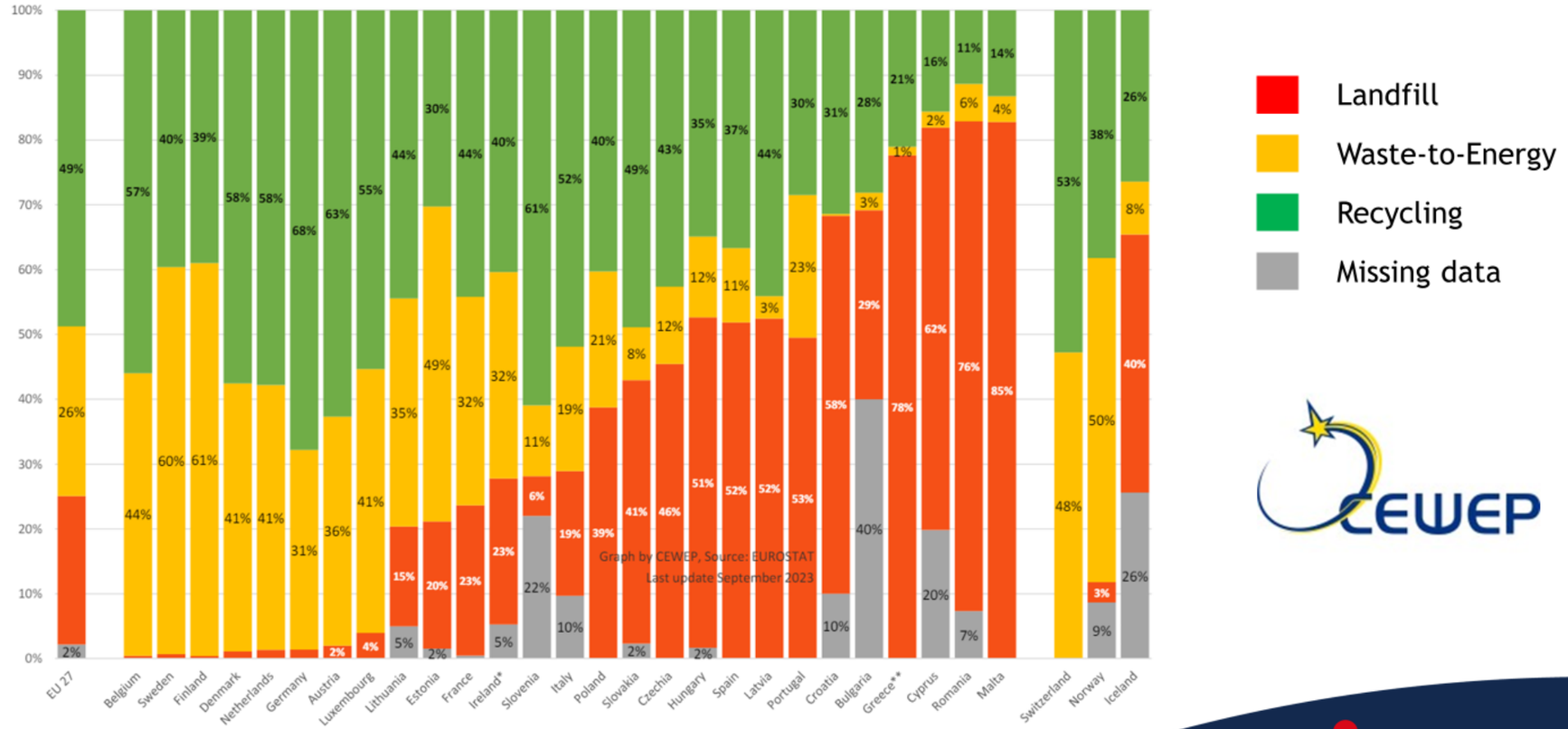
Waste-to-Energy cycle



Municipal waste treatment in Europe



Landfill

Waste-to-Energy

Recycling

Missing data

CEWEP

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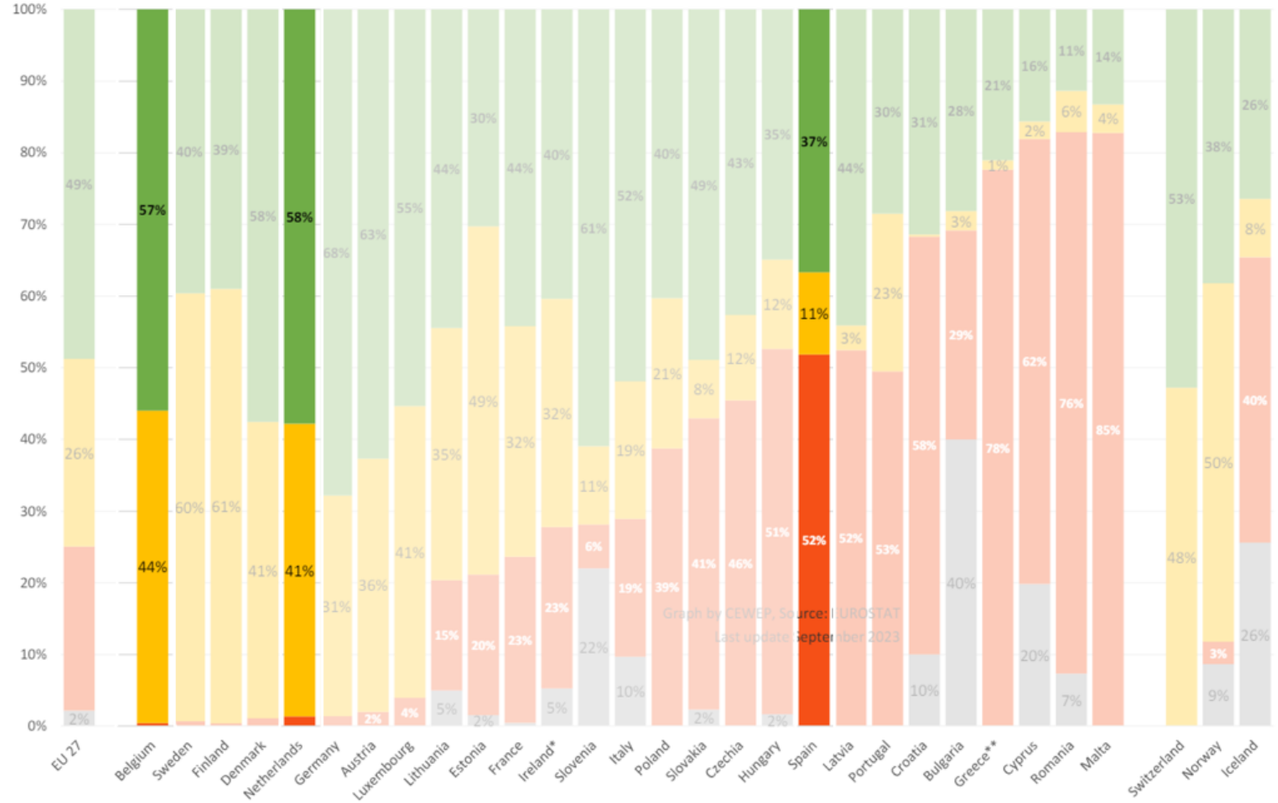
Municipal waste treatment in Europe



TERSA Waste-to-energy plant

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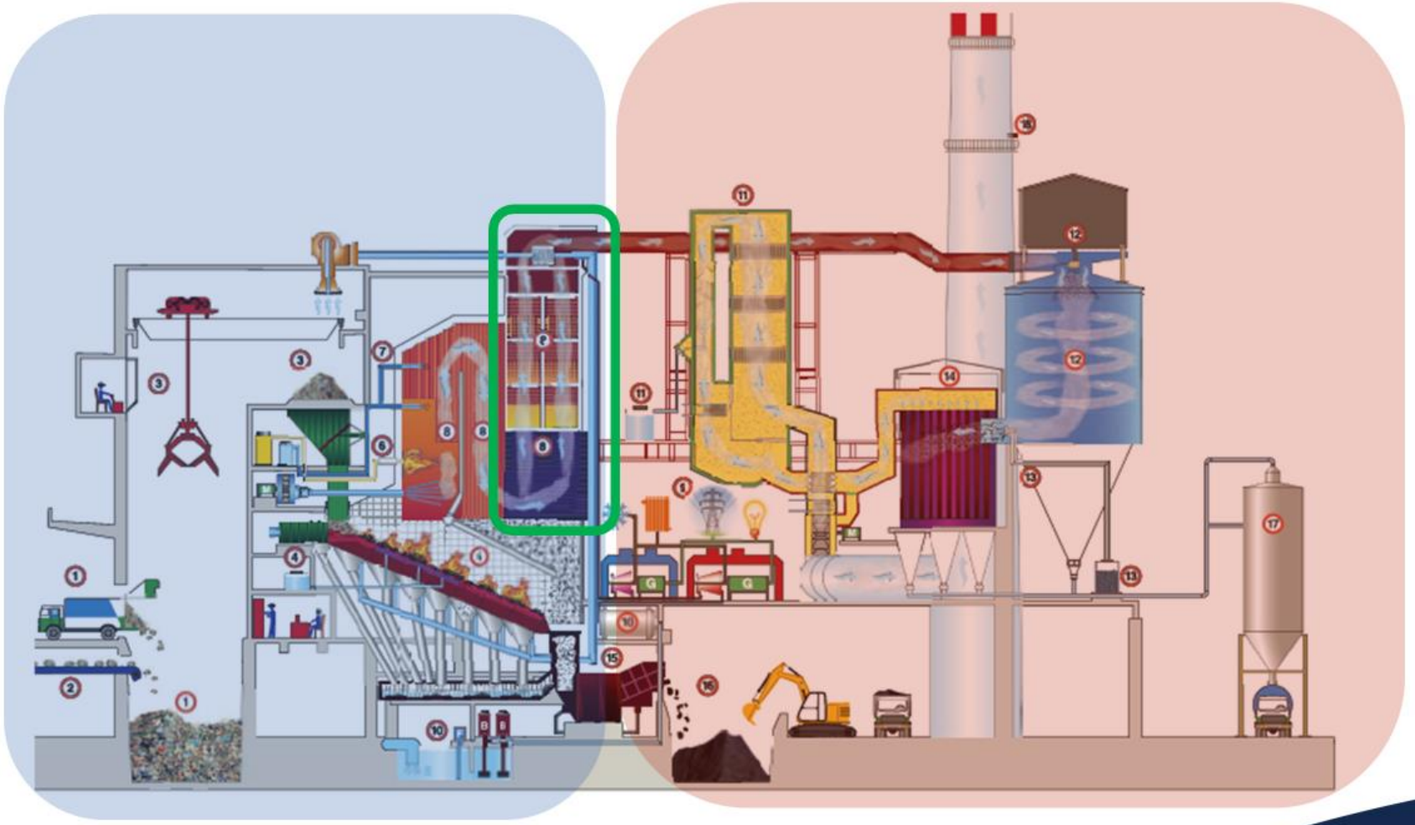
TERSA numbers

316.844 tons of municipal waste processed

191.921 MWh electricity generation

127.992 tons of steam supplied to municipal heat & cold network

The Waste-to-energy plant



Waste incineration

Flue gas treatment

Boiler third pipe

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The Artificial Intelligence Project

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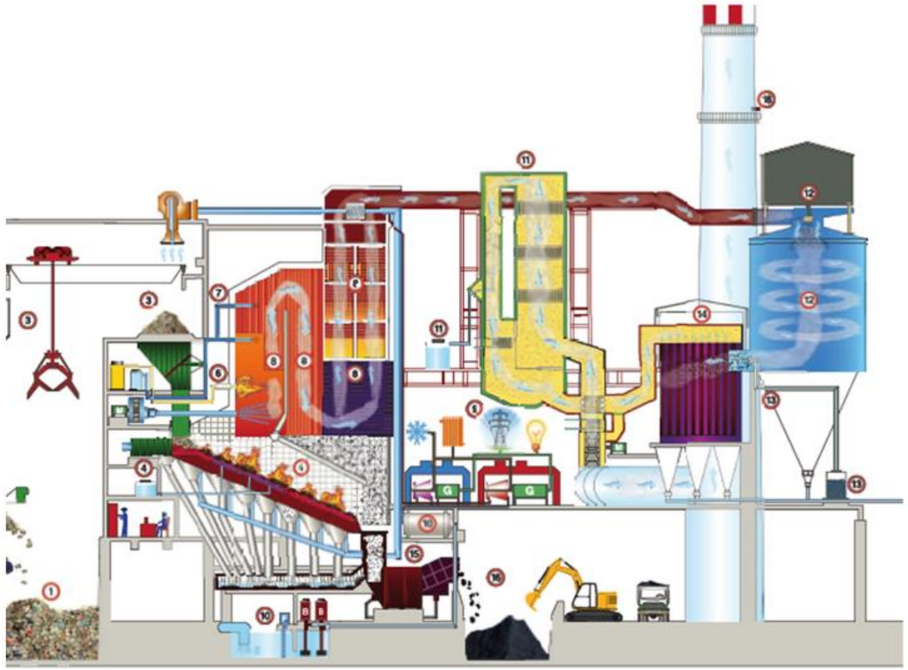
Project Introduction

- 1000 tons of Solid Urban Residues are incinerated in TERSA industrial ovens every day
- Generated highly energetic gases are used to generate steam
- Part of the steam is used to clean the pipes surfaces
- The lower steam used in soot blowing, the higher energy production in the turbine



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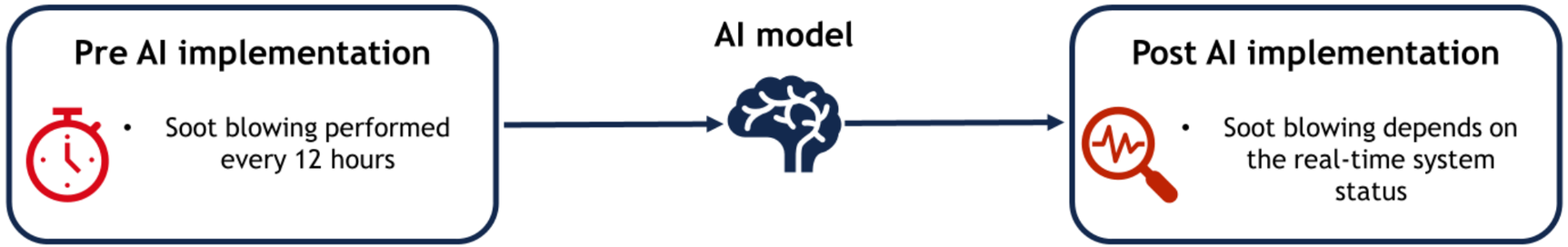
Project goals

1. Adjust the soot blowing frequency according to the pipes real-time status
2. Increase steam available for the turbine and municipal heat & cold network



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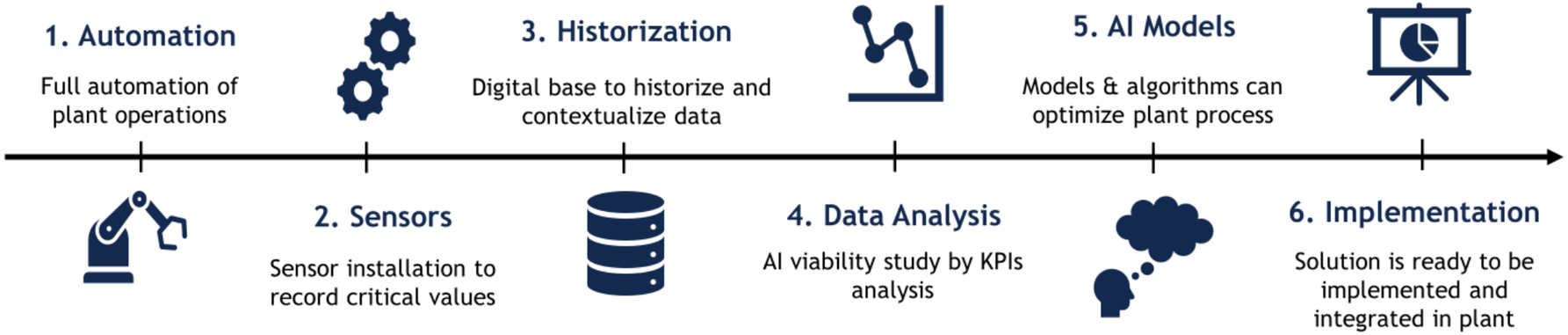
The path towards AI



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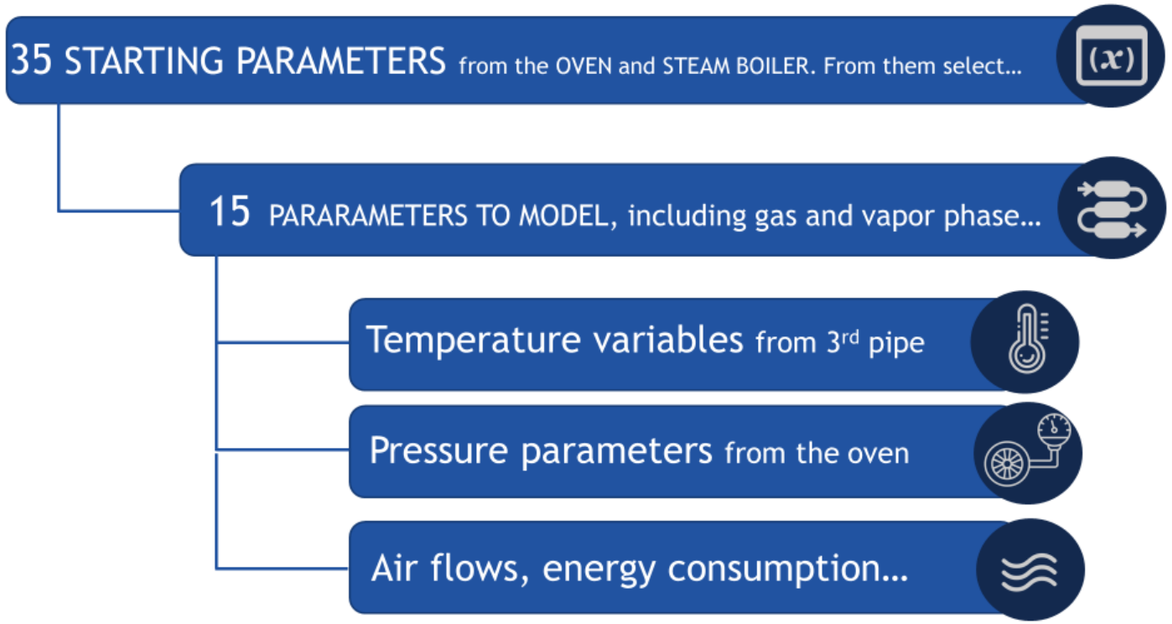
Original dataset



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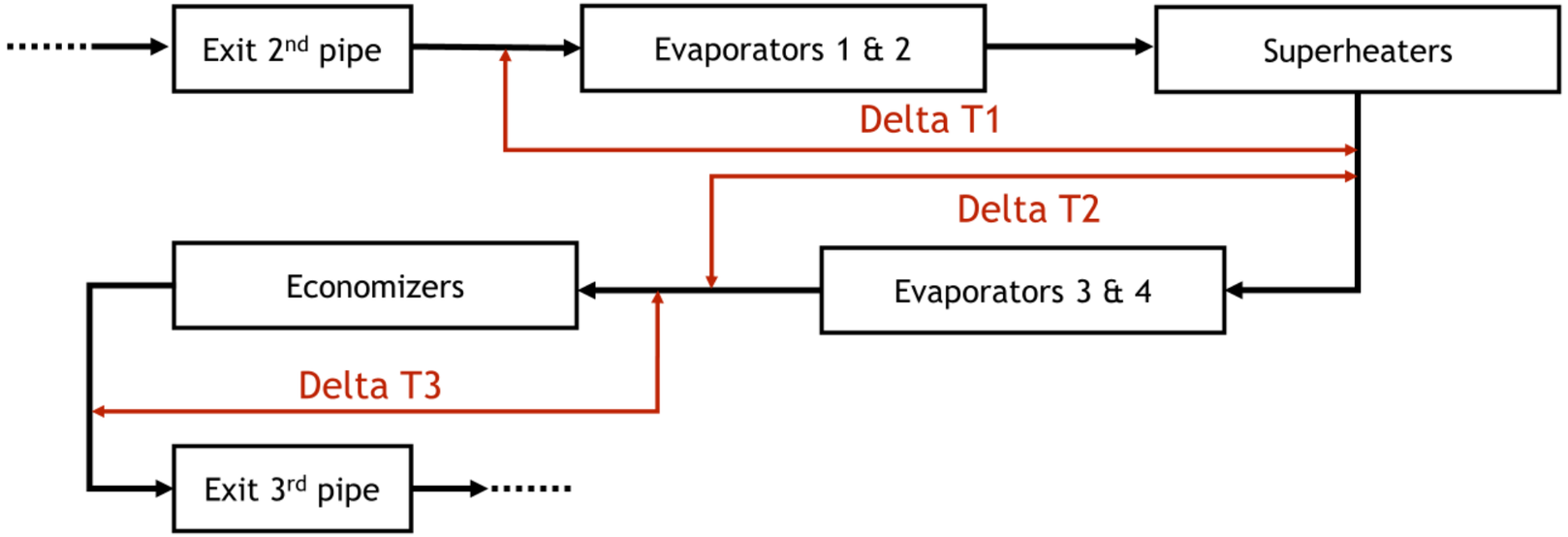
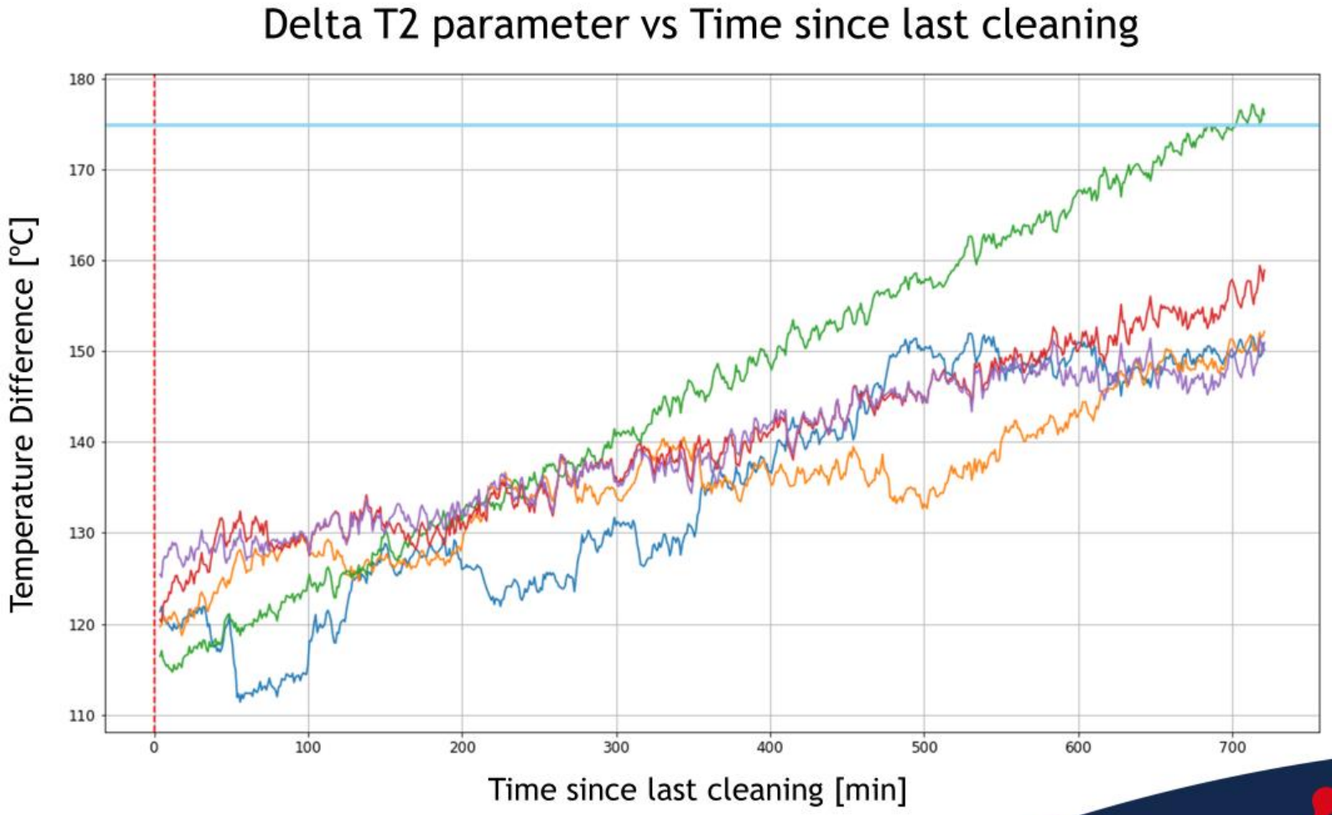
Algorithm operation basis

Steam boiler third pipe is divided into three regions. A linear combination of the system parameters from each region is performed to obtain a new parameter that allows to follow-up when blowing is required.



Algorithm operating basis



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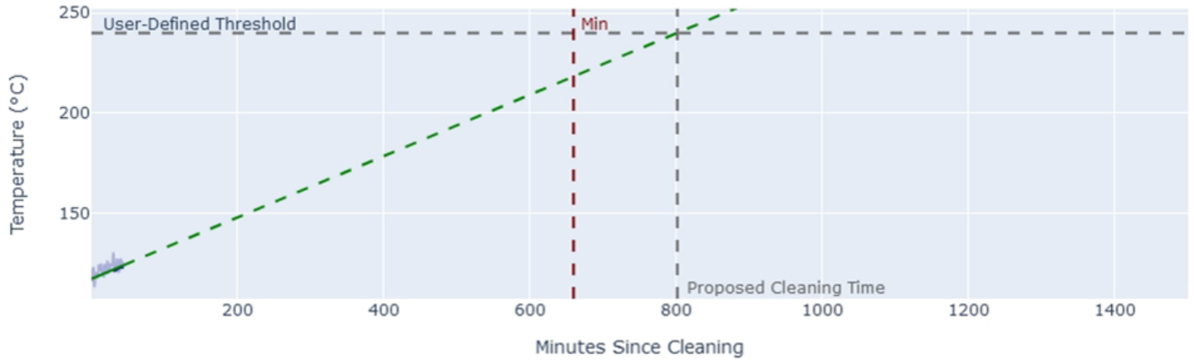
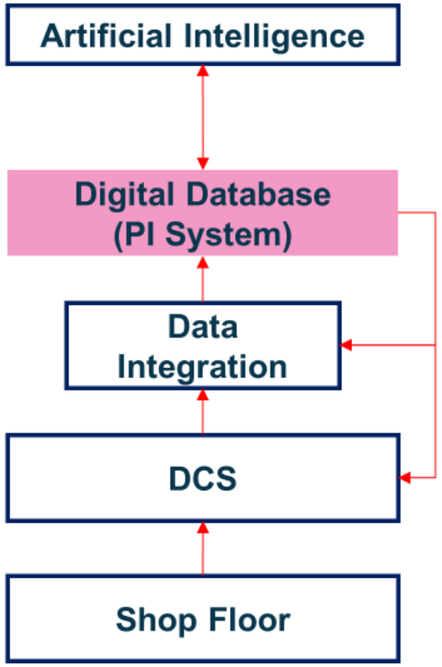
Algorithm Operating Basis





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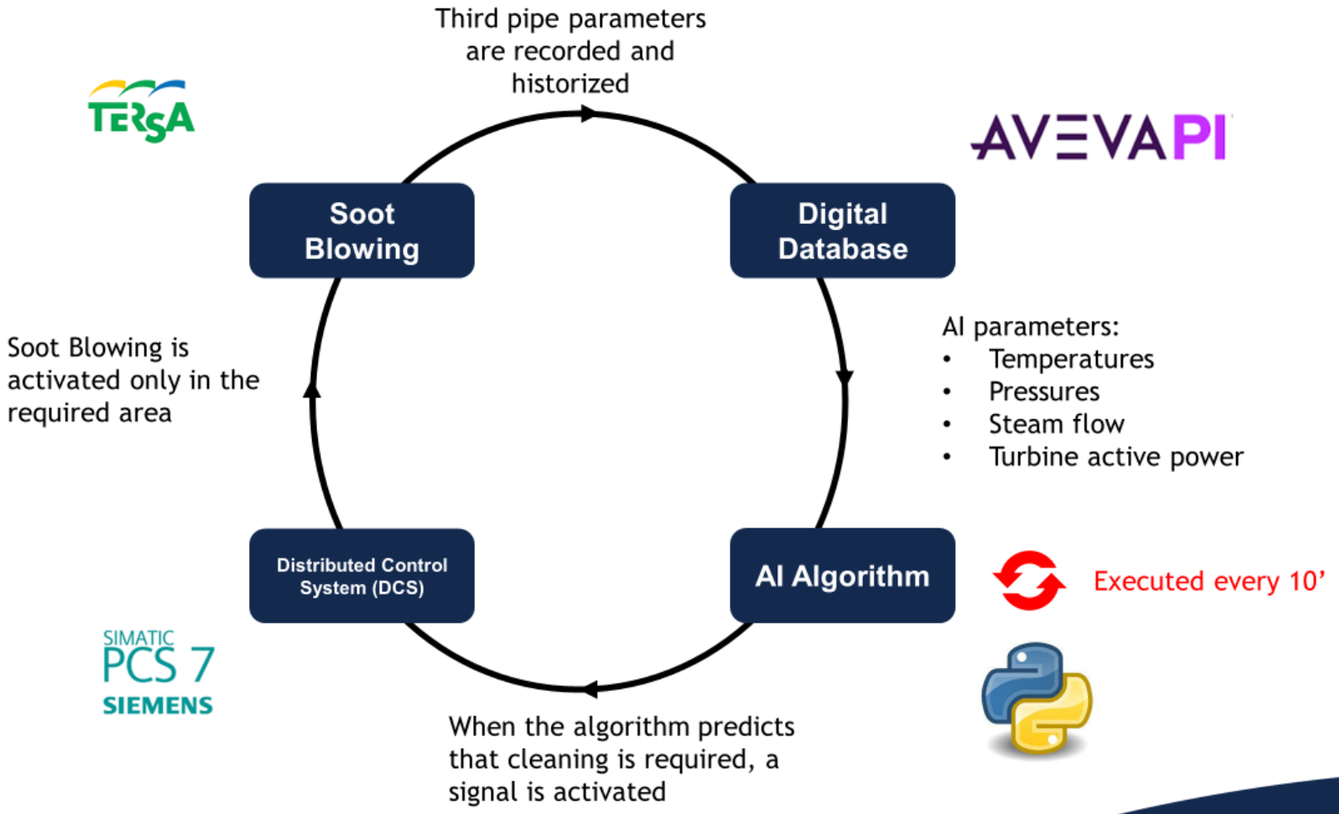
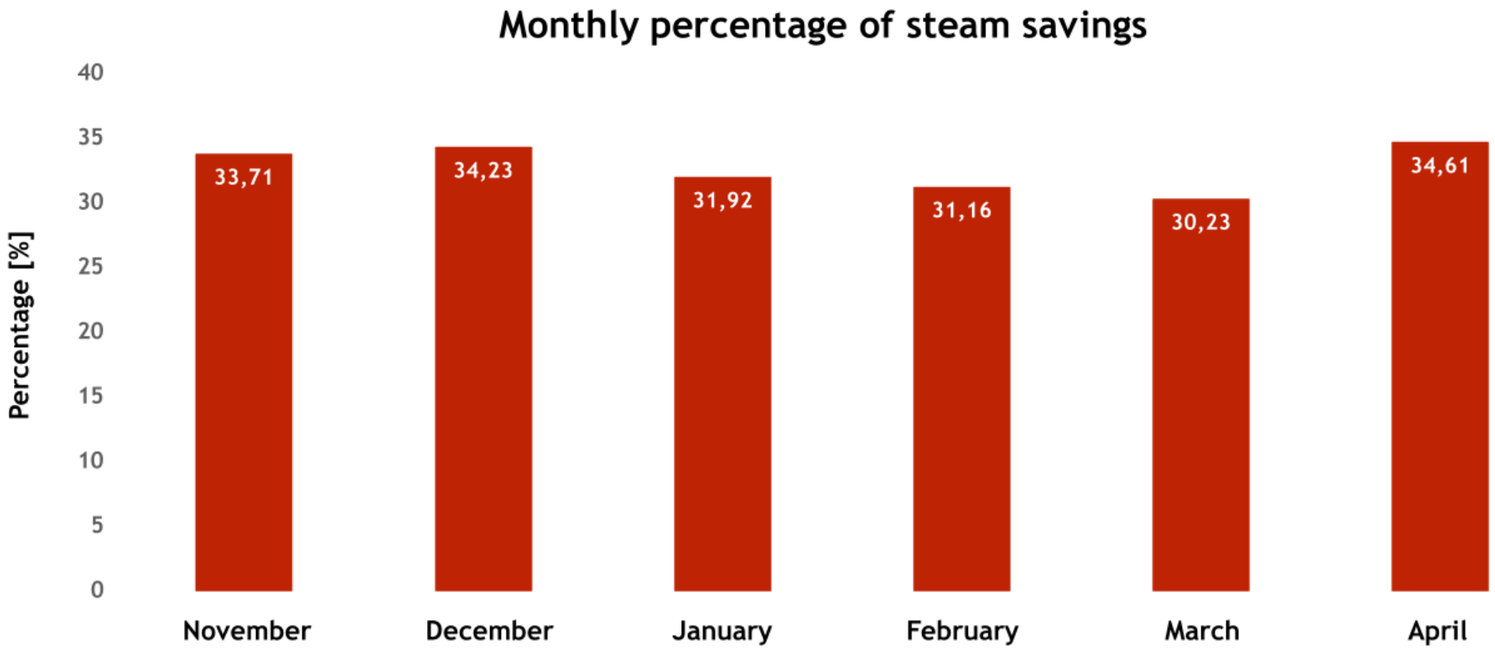
Algorithm operating basis



Results

Algorithm implementation Results

The amount of steam used in soot blowing cleanings **decreased by 30% - 35%** in each plant line.



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Algorithm implementation results

Implemented solution **increases energy production** in the turbine by **400 MWh per year**.

Reduction of +/- 260 tons of CO_2 / year emitted

Equivalent to planting around 1715 trees

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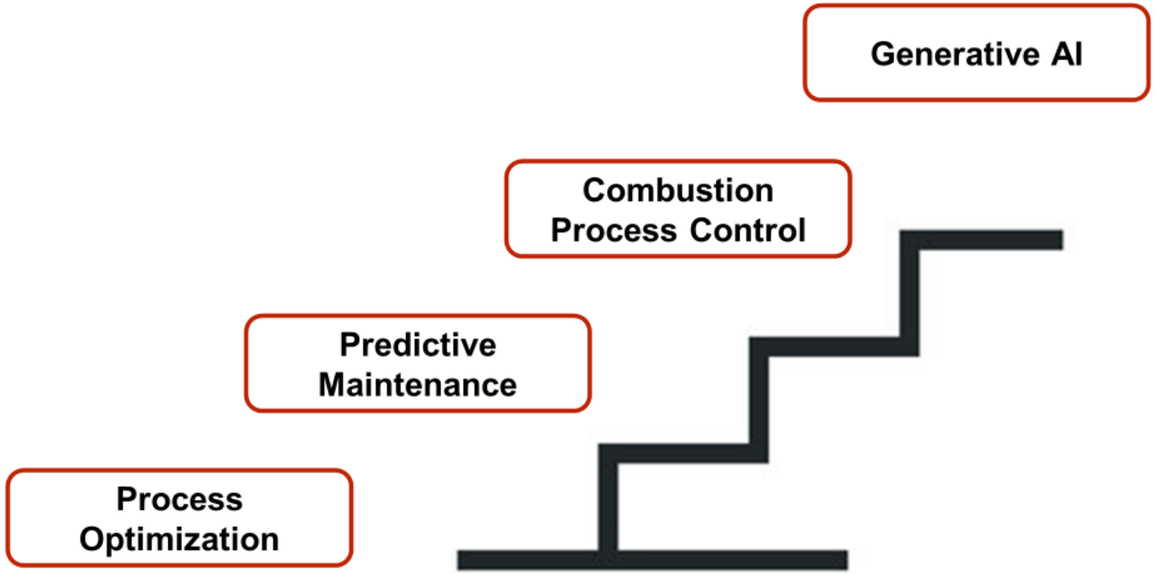
AI Next Steps in TERSA



Thank you!

Contact us:

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