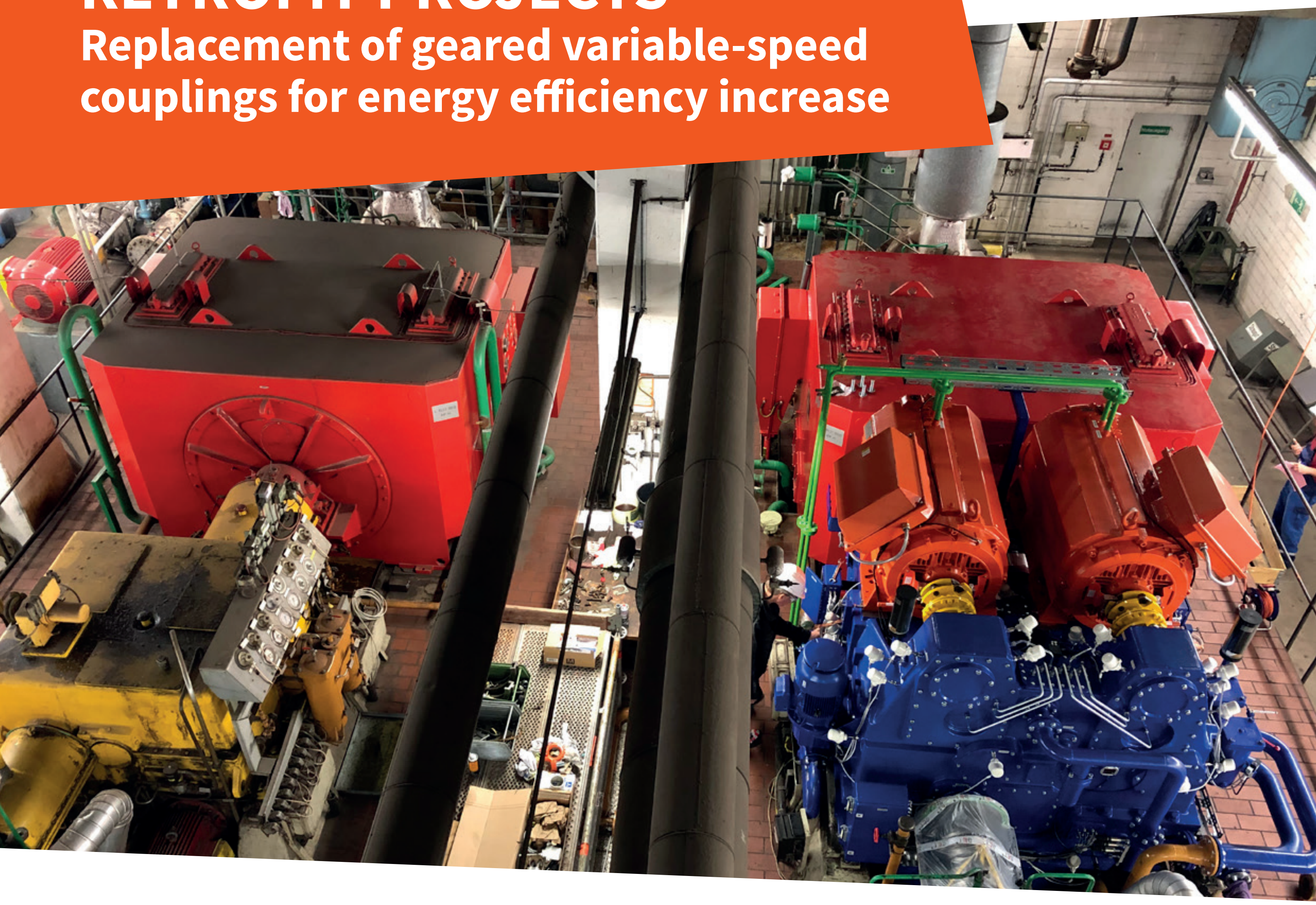
SETCON®

Driven by efficiency.

Variable-Speed Gearbox for Industrial Applications

RETROFIT PROJECTS

Replacement of geared variable-speed couplings for energy efficiency increase



Geared Variable-Speed Coupling

SETCON®

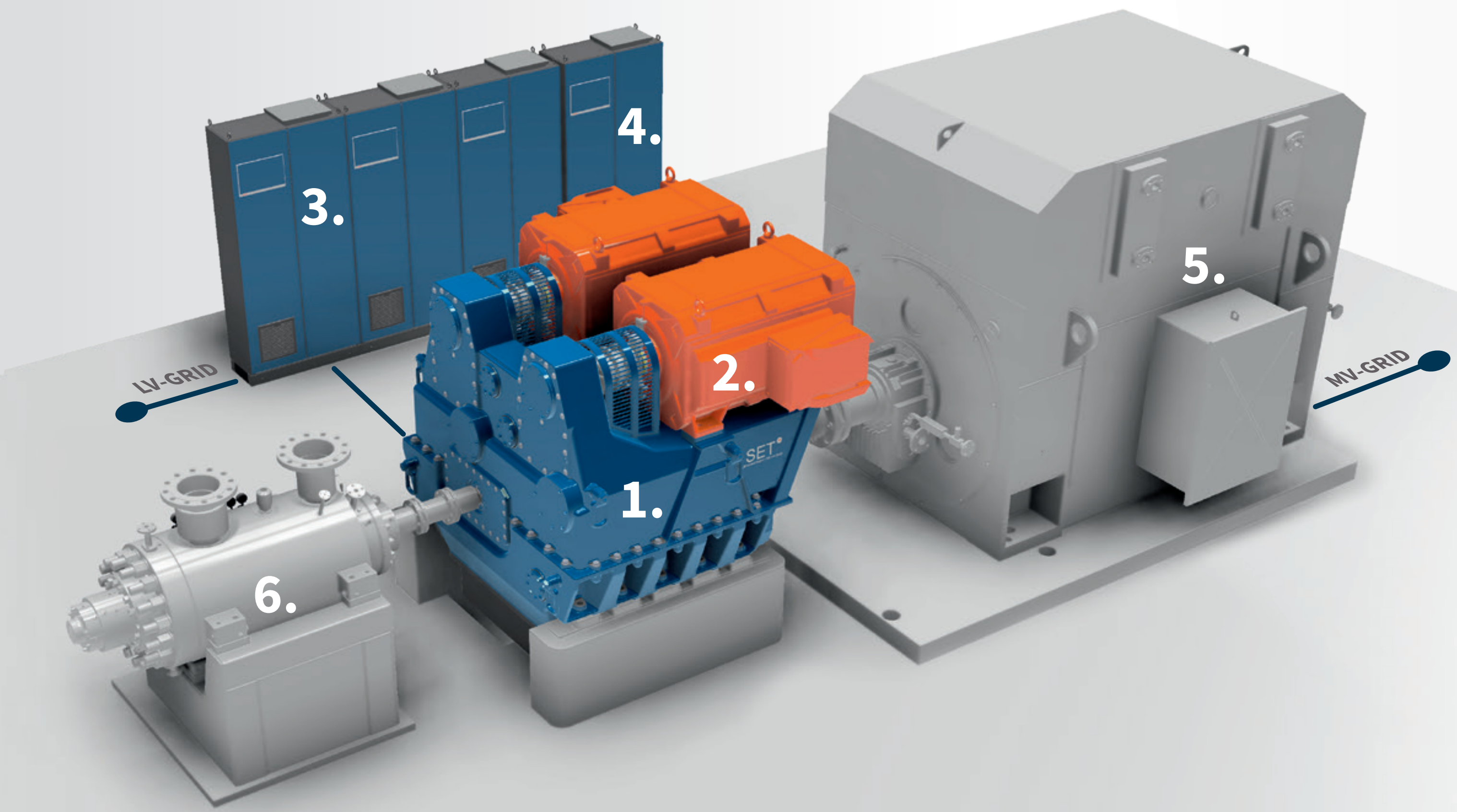
SET

SUSTAINABLE ENERGY TECHNOLOGIES

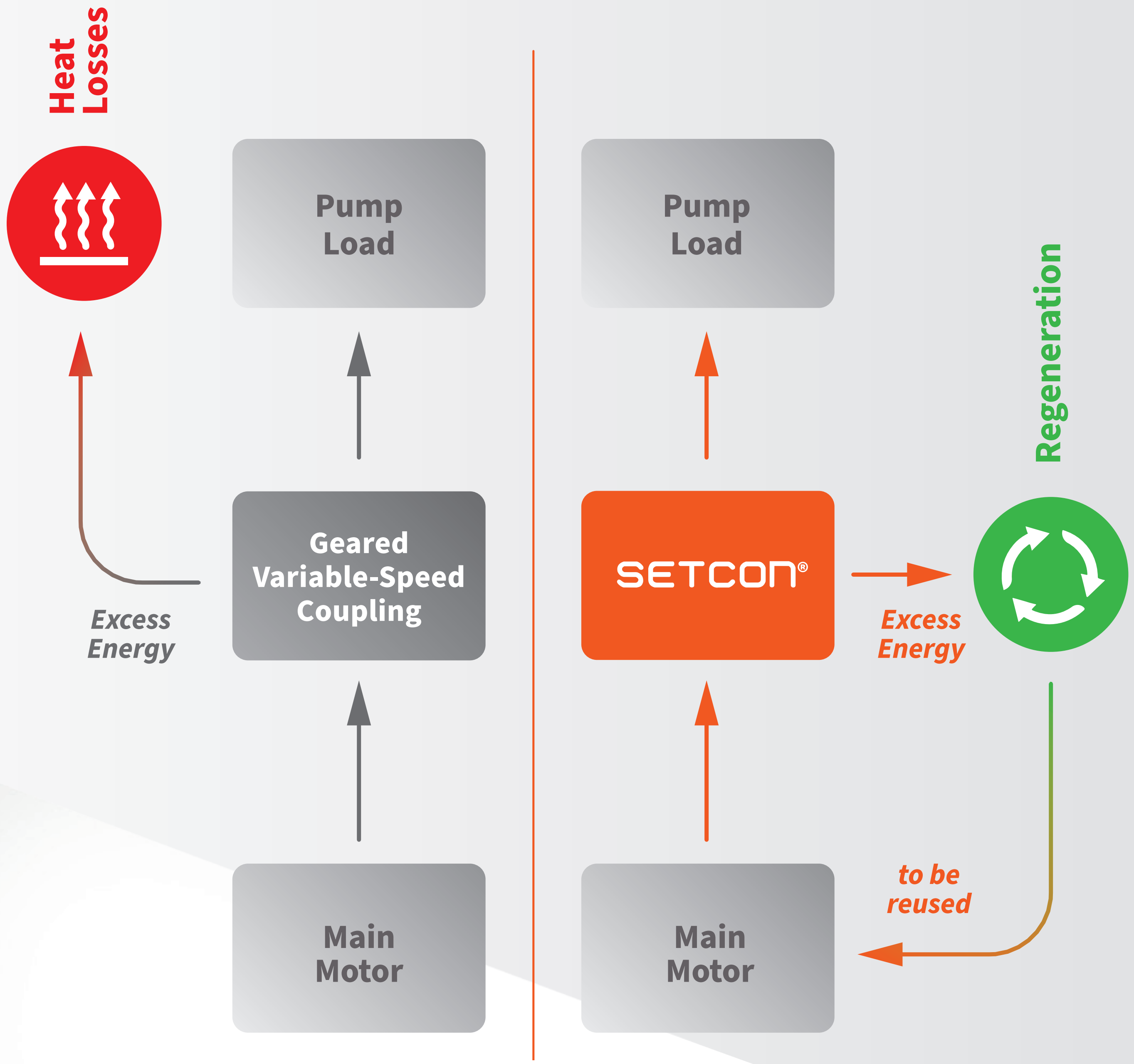
SETCON®
SET-UP

ENTIRE DRIVE TRAIN INCLUDING SETCON®

1. Gearbox incl. internal lubrication
2. Servos (ASM)
3. Low-voltage 4Q Frequency Converter (e.g. 690V)
4. Control Cabinet incl. PLC
5. Medium-voltage Main Drive (e.g. 10 kV)
6. Driven Machine



ENERGY FLOW IN OPERATION



PROJECT #1

Project data:

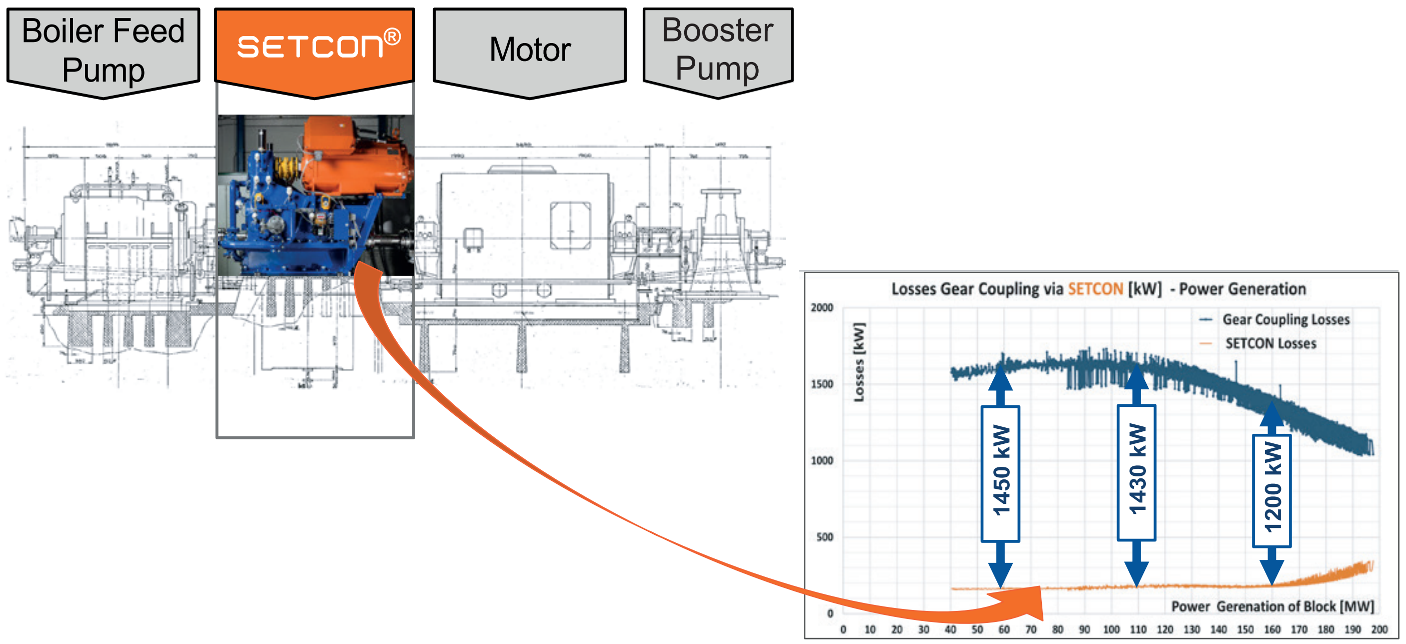
Customer: swb Erzeugung AG & Co. KG
Location: Power Plant Mittelsbüren (240 MVA), Bremen, Germany
Task: Replacement of geared variable-speed coupling (Voith R18K600) for energy efficiency increase

Technical data:

- Max. Pump Power: 6.5 MW
- Max. Pump Speed: 4 500 rpm
- Speed range required: 20% – 100%
- DBSE = 2 200 mm (1 850 mm)
- Center-line offset = 600 mm

Project highlights:

- Efficiency increase of up to 55% in partial load
- No shifting of the Main Motor and Pump due to the 1:1 footprint
- The existing installation space and anchoring points of the coupling have been used
- Continued use of existing lubrication oil cooler (shutdown of working oil cooler)
- **Installation in less than 14 days during periodical power plant revision**



Profitability analysis

Boiler Feed Pump with SETCON® SE6 – P_{max} = 6.500 kW

Criteria for Boiler Feed Pump	SETCON®	Geared Coupling
Efficiency	85% – 95%	30% – 86%
Increased Electricity Production in continuous operation	**12 815 MWh / year**	Ø
Earnings based on CoE 100 € / MWh (assumption)	**1 281 500 € / year**	Ø
Increase of Total Efficiency of entire power plant block	**up to ~ 1 %**	Ø
Reduction of CO2 Emission (CO_2 factor: 0.48 t / MWh - assumption)	6151 t / year (€ acc. CO_2 costs)	Ø
Net Installation Time	14-20 days	Ø

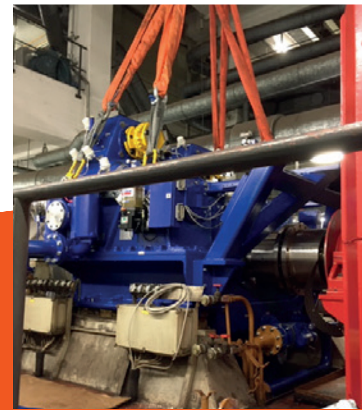
Impressions from the on-site drive exchange

REMOVAL OF GEARED VARIABLE-SPEED COUPLING




IMPLEMENTATION OF SETCON®





PROJECT #2

Project data:

Customer: RWE Generation SE

Owner: Hüttenwerke Krupp Mannesmann GmbH (HKM)

Location: HKM Thermal Power Plant (320 MVA), Duisburg-Huckingen, Germany

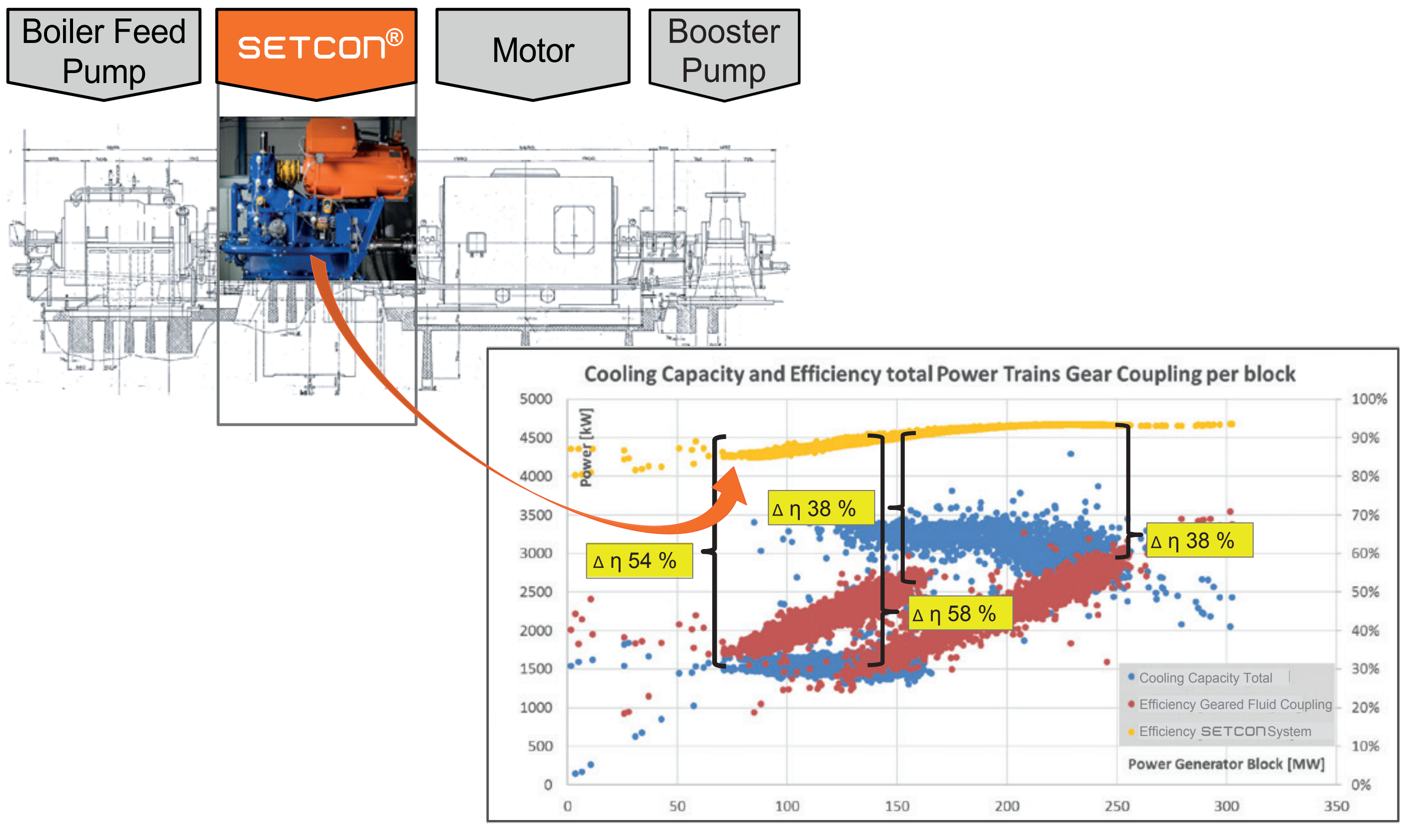
Task: Replacement of geared variable-speed coupling R17KGS for the overall energy increase

Project highlights:

- Significant energy savings compared to the status quo
- Highly efficient performance
- Smooth installation due to SETCON matching footprint, which substantially reduced implementation time & efforts
- Enhanced reliability and ease of maintenance through the use of proven industrial-standard electronic components
- Minimal cooling requirements of SETCON gearbox

Technical data:

- Max. Pump Power: 5 750 kW
- Max. Pump Speed: 6 282 rpm
- Speed range required: 49% – 100%
- DBSE = 1 950 mm
- Offset = 230 mm



Profitability analysis

Boiler Feed Pump with SETCON® SE6 – P_{max} = 5 750 kW

Criteria for Boiler Feed Pump	SETCON®	Geared Coupling
Efficiency	86% – 96%	45% – 95%
Increased Electricity Production average savings (4000 h/year)	**app. 8 500 MWh / year**	Ø
Earnings based on CoE 100 € / MWh (assumption)	**850 000 € / year**	Ø
Reduction of CO2 Emission (CO_2 factor: 0.48 t / MWh - assumption)	2 558 t / year (€ acc. CO_2 costs)	Ø
Net Installation Time	4-20 days	Ø

SETCON® gearbox assembly at SET in Klagenfurt, Austria

Impressions from the replacement at the power plant Huckingen

REMOVAL OF R17KGS

INSTALLATION OF SETCON®

FULLY ASSEMBLED SETCON®

SET

SUSTAINABLE ENERGY TECHNOLOGIES

SET IS A TECHNOLOGY COMPANY DEDICATED TO PRODUCING VARIABLE-SPEED DRIVE SYSTEMS.

BASED ON INNOVATIVE ENGINEERING METHODS AND OVER 30 YEARS OF EXPERTISE IN DRIVE TECHNOLOGY, SET DEVELOPS AND MANUFACTURES ELECTRO-MECHANICAL DIFFERENTIAL DRIVES

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