

# S2E 50-500

## STEAM TO ENERGY Transformer

Micro Steam Turbine & Generator Module  
Wet Steam Turbine Operation  
PLUG and PRODUCE System

### Key Features

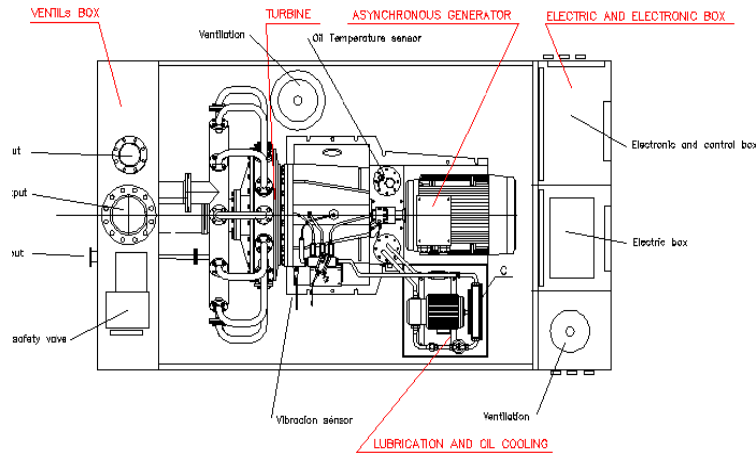
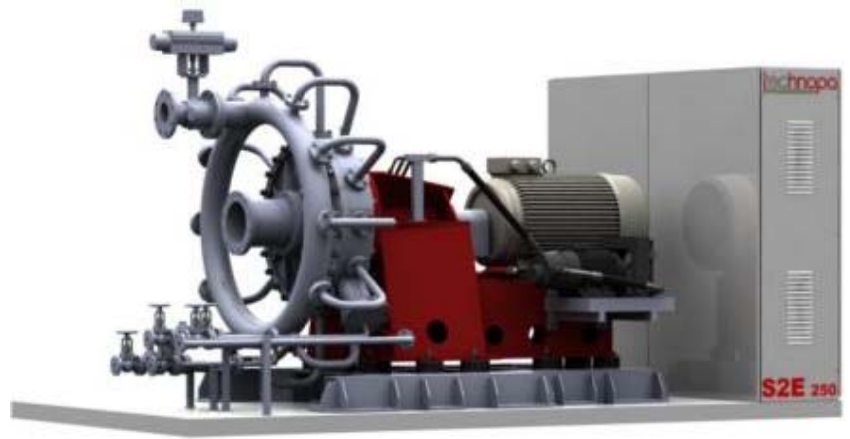
- High efficient, steam based energy generator
- Efficient operation in the conditions of wet steam
- Excellent ratio power/weight
- Modular construction with simple installation
- Environmental friendly technology
- Fully usable clean output steam
- Working life min. 100 000 hours
- Full power reaction time in 10 minutes

### Technical parameters

Characteristics	Specification
Electric Power 50 -500 kWe	50 – 500 kWe
Incoming steam temperature	min 130 °C max 350 °C
Incoming steam pressure	min 4,0 bar max 20,0 bar
Outcoming steam temperature	min 105 °C max 315 °C
Outcoming steam pressure	min 1,0 bar max 5,0 bar
Steam flow	min 1,5 t/hour max 8 t/hour

### Electric parameters

Characteristics	Specification
Voltage	230V 480VAC /400VAC
Frequency	50 Hz / 60 Hz
Grid-isolated regulation / steady state /	+/- 0,50 % nominal voltage max +/- 0,50 % nominal frequency
Efficiency based on Eff1	96%
Isolation class	IP 55



### Patented turbine

Non-blade turbine wheel  
Slow working revolutions of the turbine/ 3000 rpm /  
Efficient alteration of the Velocity Head on the power in turbine is min 95%  
Turbine is not a pressure tank

### Applications

Reduction turbine / electric energy production  
Electric energy production in the prime or secondary steam line

### High end level of the components

LANDIS&GYR valves  
Armatures made by TYCO company

### Focus on the Safety and Reliability

Sensors made by Baluff  
Tripping safety valve TYCO

### Simple operation and control

Automatic computerized control system  
touch panel for operation  
Internet connection /optional/

### Generator

Siemens asynchronous /synchronous generator

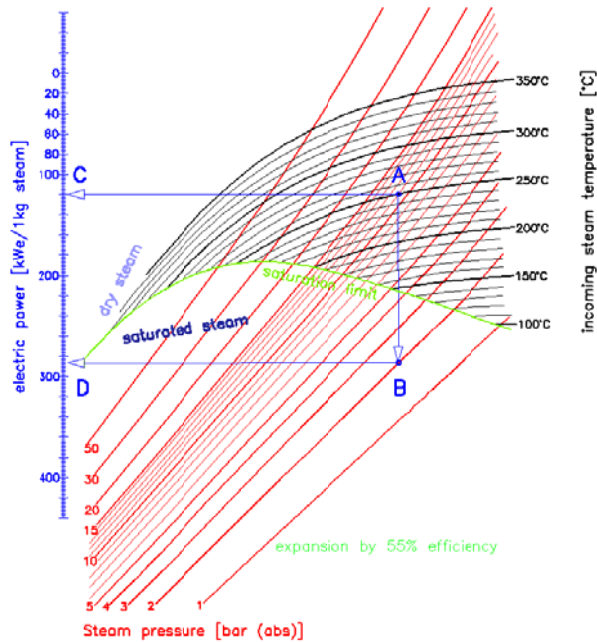
### Certification

Steam and condensate connection based on DIN 2576  
CE certification of the S2E module

**technopa**  
engineering

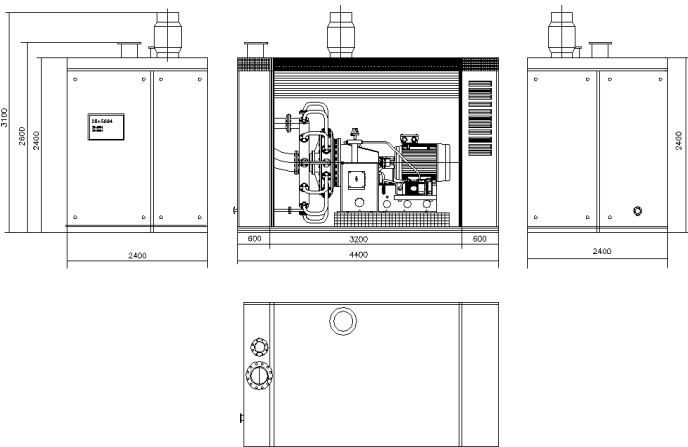
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## Enthalpy-entropy diagram for water and steam



### Calculation of the turbine capacity

- point „A“ = intersection of the curved lines :
  - incoming steam pressure +1 bar
  - incoming steam temperature
- point „B“ = intersection of the vertical line from point A with the curved line of outgoing steam pressure +1 bar
- point „C“ = intersection of the horizontal line from the point A and the Y-axis = **Power P1 / kWe /**
- point „D“ = intersection of the horizontal line from the point B and the Y - axis = **Power P2 / kWe /**
- TURBINE Power=(P2-P1) x Steam flow volume(kg/second) kWe**



### Minimum Clearance Requirements

Dimension	Size
Vertical	2000 mm
Horizontal front, and rear side	2000 mm
Horizontal left OR right side	3000 mm

Distributor :

S2E 50-500		INPUT	OUTPUT
Type	Capacity	Steam Inlet	Steam Outlet
S2E 50	50 kW	DN 40	DN 150
S2E 100	100 kW	DN 65	DN 150
S2E 150	150 kW	DN 100	DN 250
S2E 250	250 kW	DN 150	DN 250
S2E 300	250 kW	DN 150	DN 250
S2E 500	500 kW	DN 250	DN 350



### Sound Levels

Characteristic	Specification
Standard	80dB

### Net weight of machine with frame

Characteristic	Specification
Max	10500 kg
Min	2900 kg

### Physical Specification

Dimension	Size
Length	5900 mm
Width	2400 mm
Height	3100 mm ( Module itself 2400 mm)

### Service interval for bearings exchange

Characteristic	Specification
Turbine	25.000 hrs
Generator	25.000 hrs

The investment into an S2E Module creates for the customer the most efficient profitability on the basis of the waste steam in the existing system.

### QUICK RETURN on S2E INVESTMENT

Technopa GmbH provides a complete package for its customers, starting with the optimal calculation of the technical solution, through the basic engineering for the S2E placement, the S2E installation and the start up itself with the technical and financial service.

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