



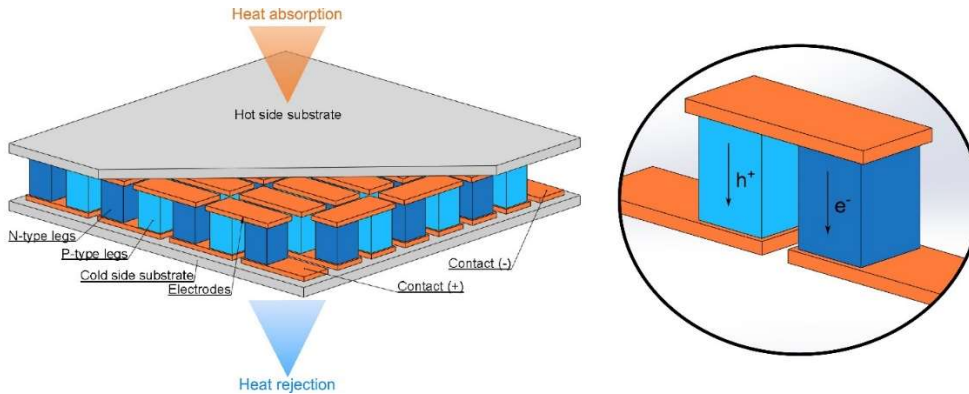
SBS TEPU
(Thermo Electrical Power Unit)



Thermo Electrical Power – What is it?

Basic principle:

- Thermo electrical semiconductor elements use heat flux to generate a DC current
- Heat flux is created by condensing surplus steam by means of cooling water.
- Switchgear transforms the DC output to AC matching the vessel grid



Why TEG?

A thermoelectrical generator (TEG) is the waste heat equivalent to a solar cell, providing free and non polluting power:

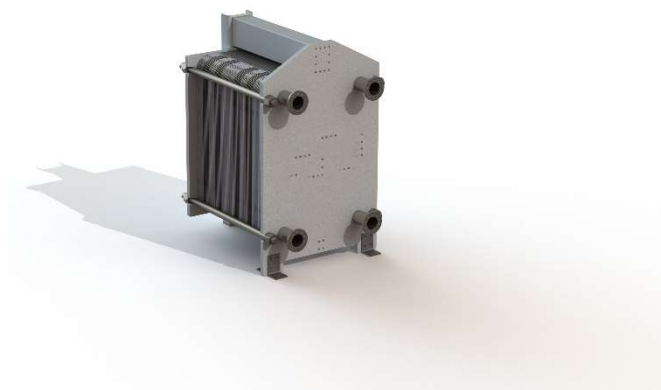
- Reduce fuel consumption and carbon footprint
- Improve SEEMP (Ship Energy Efficiency Management Plan)
- Extend Auxiliary Diesel Engines overhaul intervals

Operational advantages:

- No moving parts
- Reduce maintenance cost
- Stepless and 100 % flexible configuration
- Reliable and proven switchgear

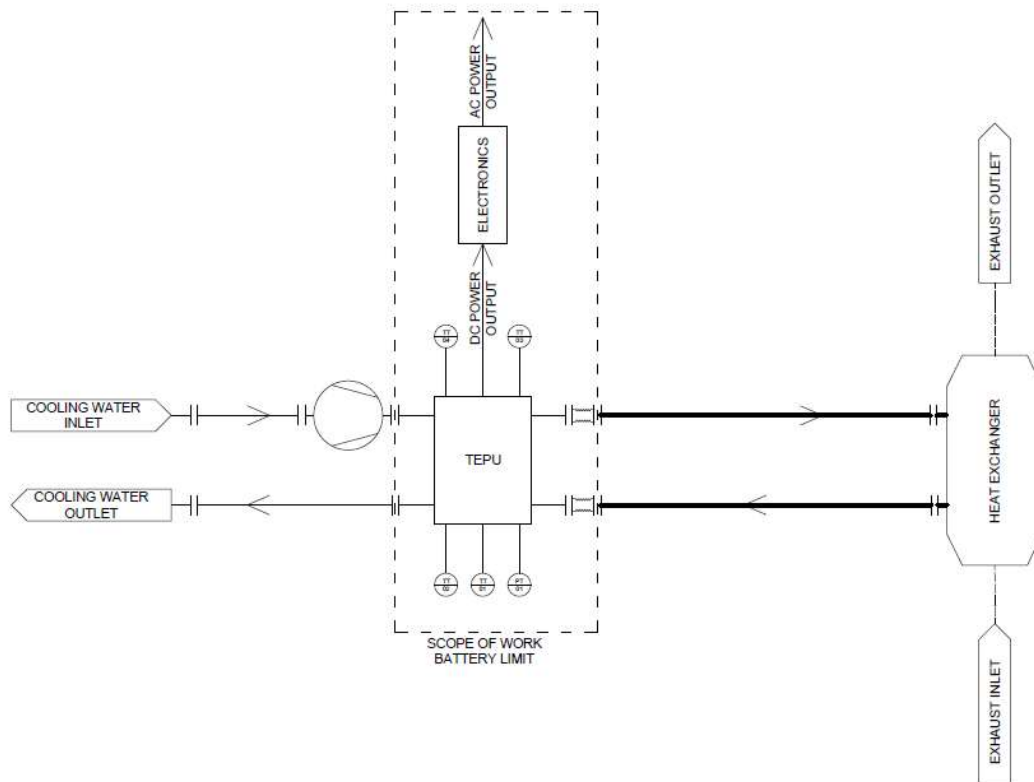
Basic TEPU installation

- The semiconductor plates are arranged in an array like a plate heat exchanger – which it actually is.
- Steam is connected to one side and fresh cooling water to the other.



TEPU integration onboard

The TEPU is installed to function like a dump condenser, using the existing surplus steam control.



TEPU Capacity Table

- Plate Modules can be stacked in parallel to achieve required power output, refer to below table:

Steam[kg/h]	600	800	1000	1500	2000	3000	4500
Power[kW]	27	34	41	51	68	102	154

TEPU PAYBACK PERIOD - PBP

- Levelized cost of electricity @ 90 USD/MWh for TEPU compared to 200 USD/MWh for diesel generator.
- Simplified Pay Back Period of less than 2.2 years based on reduced wear of Aux.Diesel Engines
- Service life expectancy 20 + years
- Very low or no maintenance costs



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FOR TEPU SALES PRESENTATION, CONTACT: SALES@SBS-ENGRGHOLDINGS.COM

FOR TEPU TECHNICAL/QUOTATION, CONTACT: PROJECTS@SBS.HR

EUROPE

CROATIA
+385 51 684 755
@sbs.hr

DENMARK
+45 7027 1000
sbs@sbs-eu.com

repair@sbs-asia.com

AMERICA

FLORIDA, USA
+1 954 763 7375
sbs@sbs-us.com

repair@sbs-asia.com

ASIA

SINGAPORE
+65 6767 0200
sbs@sbs-asia.com

repair@sbs-asia.com

CHINA

NANTONG
+86 513 8565 2711
sbs@sbs-china.com

repair@sbs-asia.com