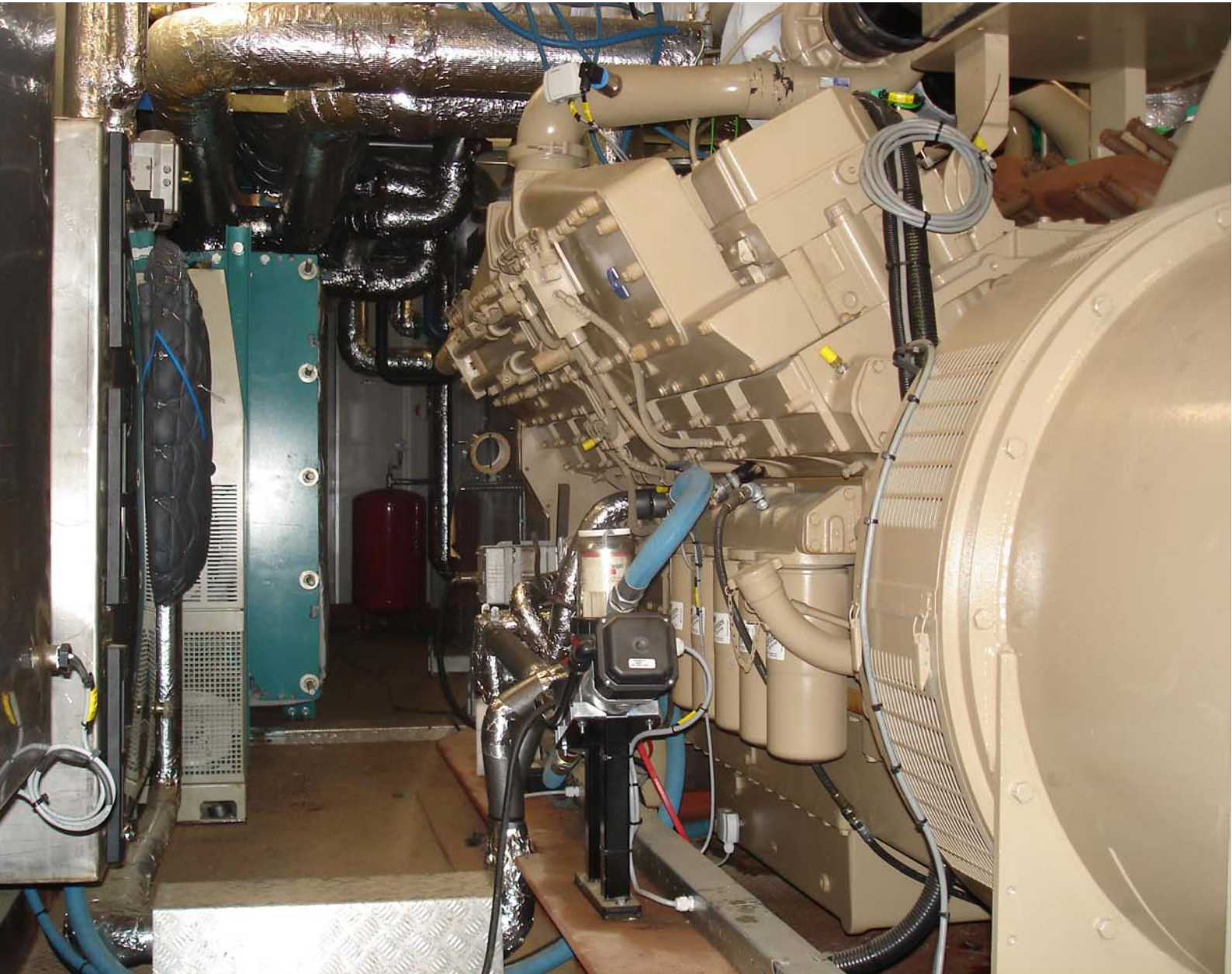


800 kW_e modular palm oil generator set

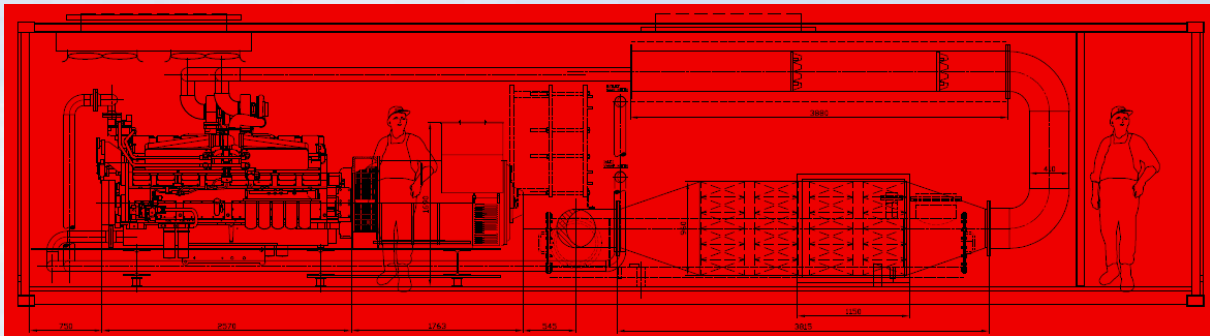


Innovation in powergen & cogen

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GENERAL

- description : diesel powered generator set / CHP-installation, modified for running on bio oil
- fuel : filtered pure palm oil (RSPO certified)
- $\eta_{\text{electr.}}$: $\pm 41\%$
- $\eta_{\text{therm.}}$: $\pm 45\%$
- total output : 800 kW_e



Example of 1 MW set

ENGINE

- brand : Cummins
- type : KTA50-G3
- power : 828 kW_m gros base power (calibrated for bio-oil)
- bore x stroke : $159 \times 159 \text{ mm}$
- swept volume : $50,3 \text{ liter}$
- no. of cylinders : 16, V-configuration
- fuel system : Cummins, with EFC governor
- cooling system : JWAC (Jacket Water After Cooled)

GENERATOR

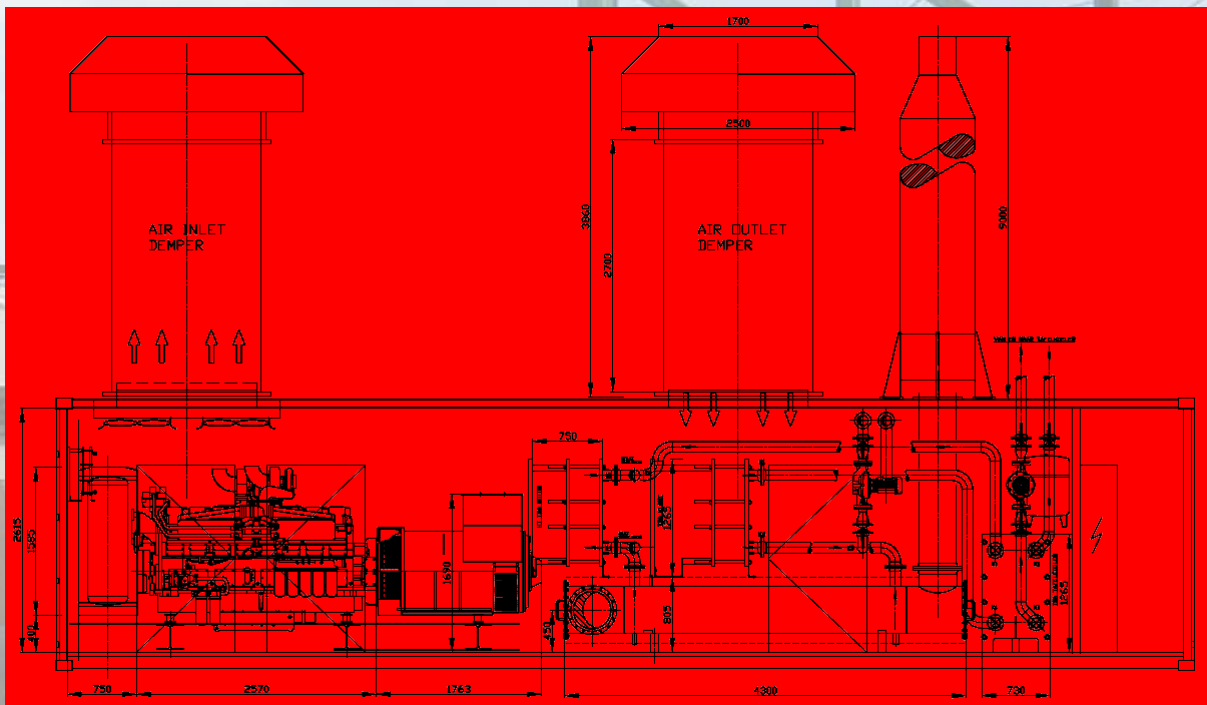
- brand : Stamford
- type : HCI634J (subject to final selection)
- output : 800 kW_e
- power factor : 0,9
- security : IP23
- isolation : klasse H
- regulation : AVR MX321

OPERATING SYSTEM

- hardware: : SAIA-Burgess PLC
- software : Dordtech
- communication : modem
- misc. : all necessary software licenses

PANEL

- housing : Rittal housing, dimensions 2000 x 1800 x 400 mm
- communication : 150 I/O units (total 250+ addresses)
: MODBUS communication
- power supply : battery charger with 2nd battery 12 V / 95 Ah in plastic battery tray
- synchronisation : GPC synchronisation unit
- security : UPS-unit (no break)
: generator safety switch with motor control for synchronisation
: emergency stop system with 3 external push buttons
: descending groups by means of automatic cut-outs
- misc. : motor starters for pump and fans
: starter for CV water pump



Example of 1 MW set

COOLING

- coolers : as desired roof placed horizontal coolers or next to the unit placed table coolers for the LT and HT cooling circuits. In case of a CHP unit ate these used as emergency coolers

EXHAUST GAS SYSTEM

- mufflers : exhaust gas mufflers
- piping : stainless piping and compensator(s)
- isolation : isolation blankets, internal of skid

EXHAUST GAS PURIFICATION

- purification : combined SCR (Selective Catalytic Reduction) / deNO_x catalytic converter, including governing system
- misc. : compressor for urea dosing

HOUSING

- container : 40' container with fully integrated installation, noise level 75 dB(A) / 1 m
- housing : noise reducing housing, 70 dB(A) / 1 m or 65 dB(A) / 1 m, to be specified for internal or outside placing, equipped with necessary doors, fans, noise dampers, etc. Dimensions 7500 x 4000 x 4000 mm (single set) or 9000 x 3600 x 3200 mm (double set)

FUEL SUPPLY

- tank(s) : to be specified 58, 100 or 150 ton tank, above ground, single wall. Including pump, heating spirals, ca. 8 m plumbing (incl. isolation and tracing), delivery and installation on present foundation
- misc. : a canopy is available at extra costs

ADDITIONAL OPTIONS

- CHP : the installation can be setup as a CHP installation, where the energy from the engine cooling water can be recuperated as heat. The efficiency of the installation will rise from 40% to 86%
- steam production : the CHP installation can be extended towards steam production by placement of a steam boiler in the exhaust
steam pressure 1000 kPa (10 bar)
steam pressure 3000 kPa (30 bar)

