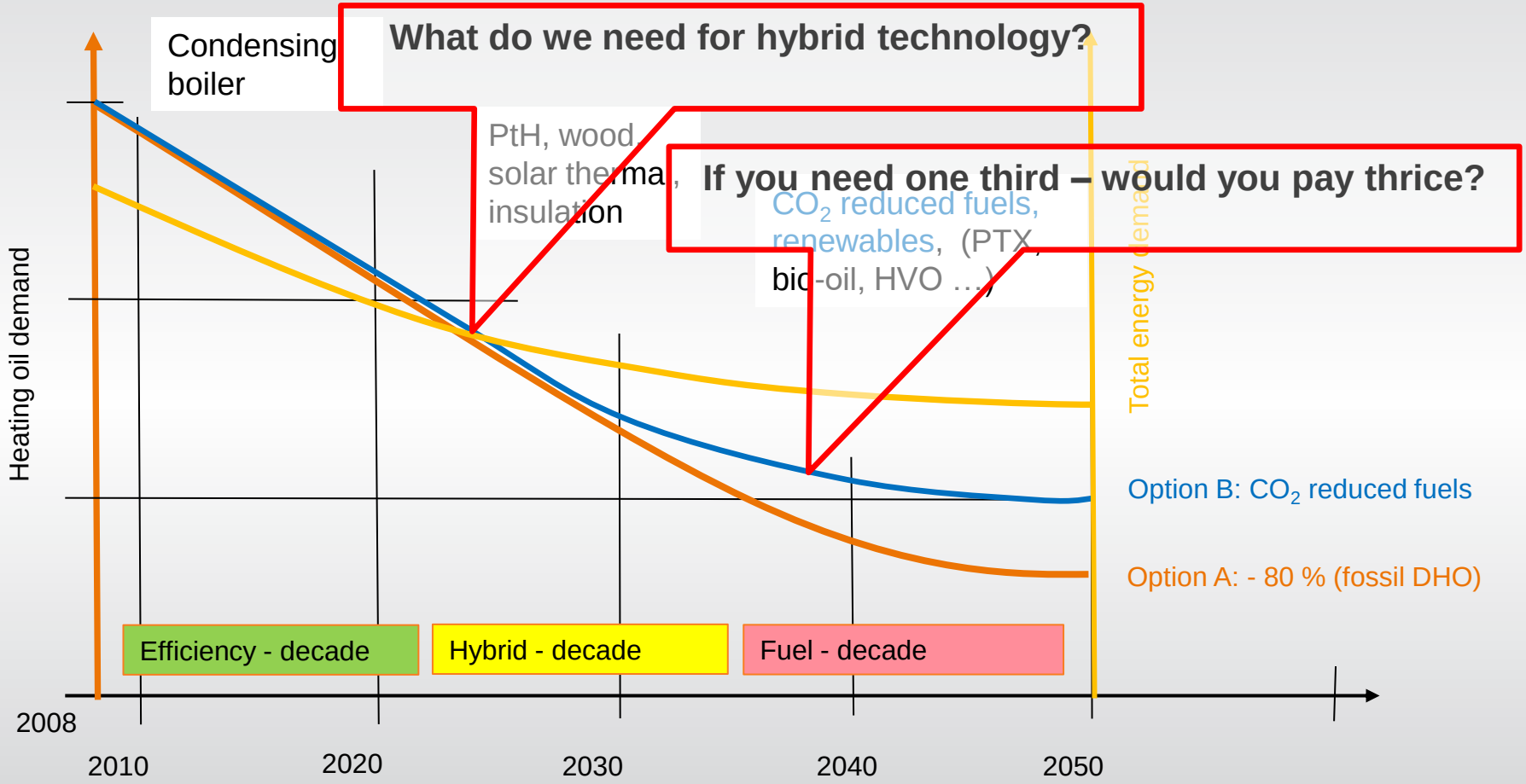
Institut für Wärme und Oeltechnik

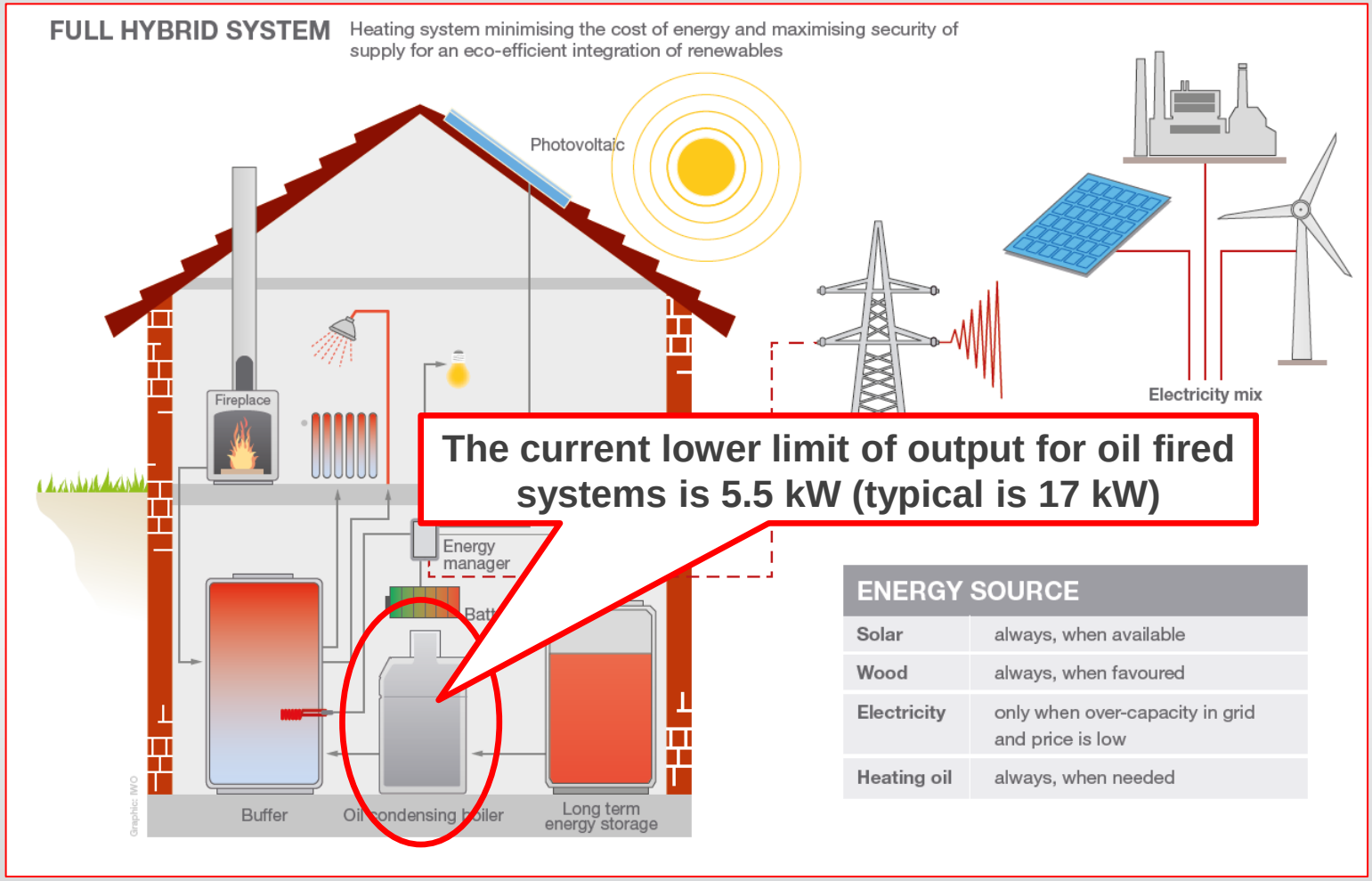
Development of the smallest modulating oil fired system with condensing technology and with a new service and maintenance concept

Efficiency – hybrid and beyond

Political goal: – 80% carbon dioxide until 2050 → 2 questions

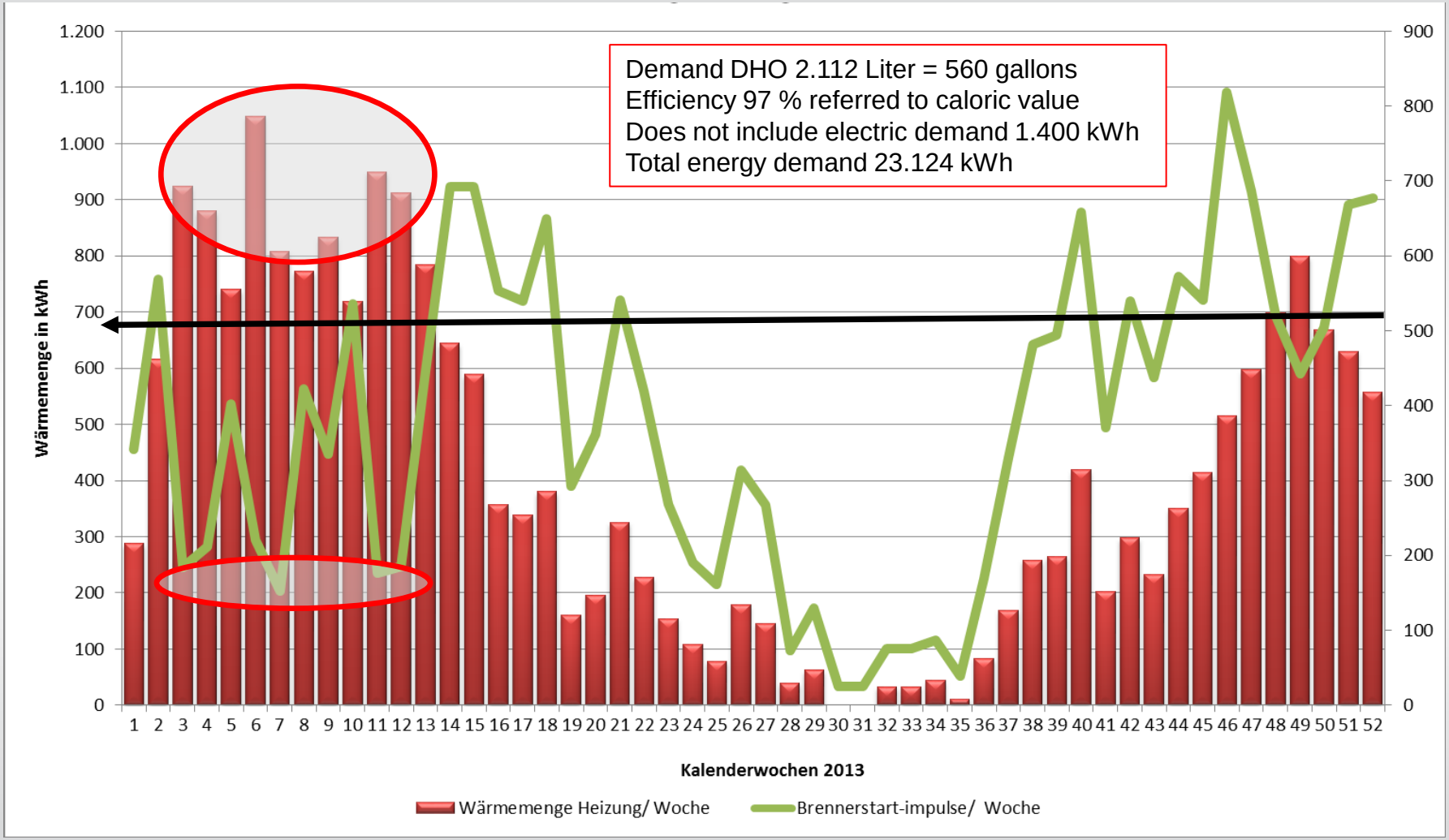


What does full hybrid heating system mean?

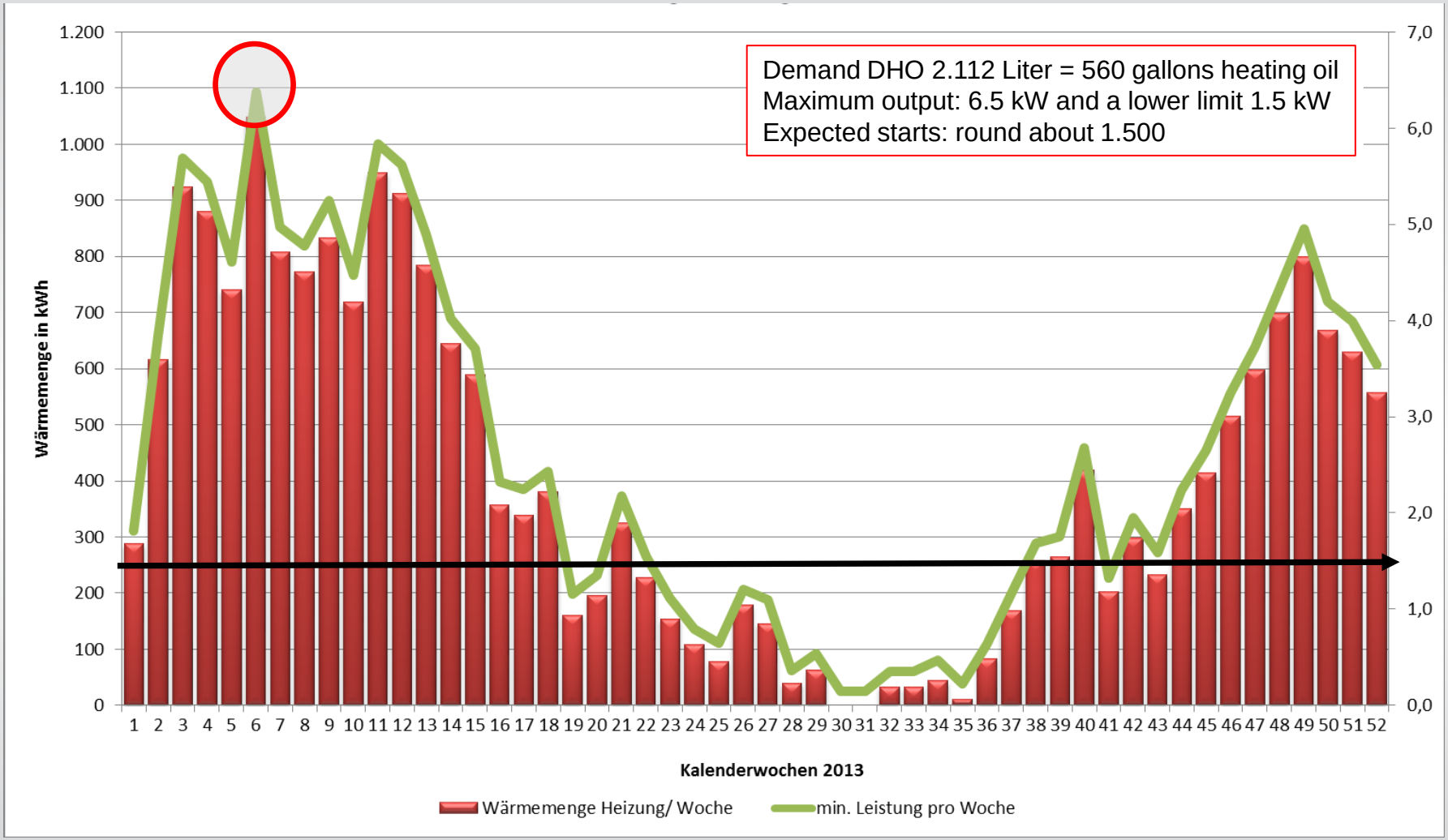


ENERGY SOURCE	
Solar	always, when available
Wood	always, when favoured
Electricity	only when over-capacity in grid and price is low
Heating oil	always, when needed

Field test with a modulating burner: 5.5 kW – 15 kW and 19.570 starts

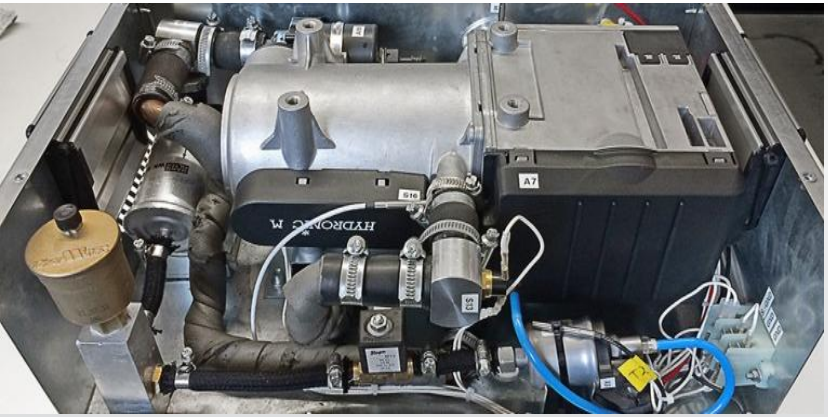


Needed output for „one“ start

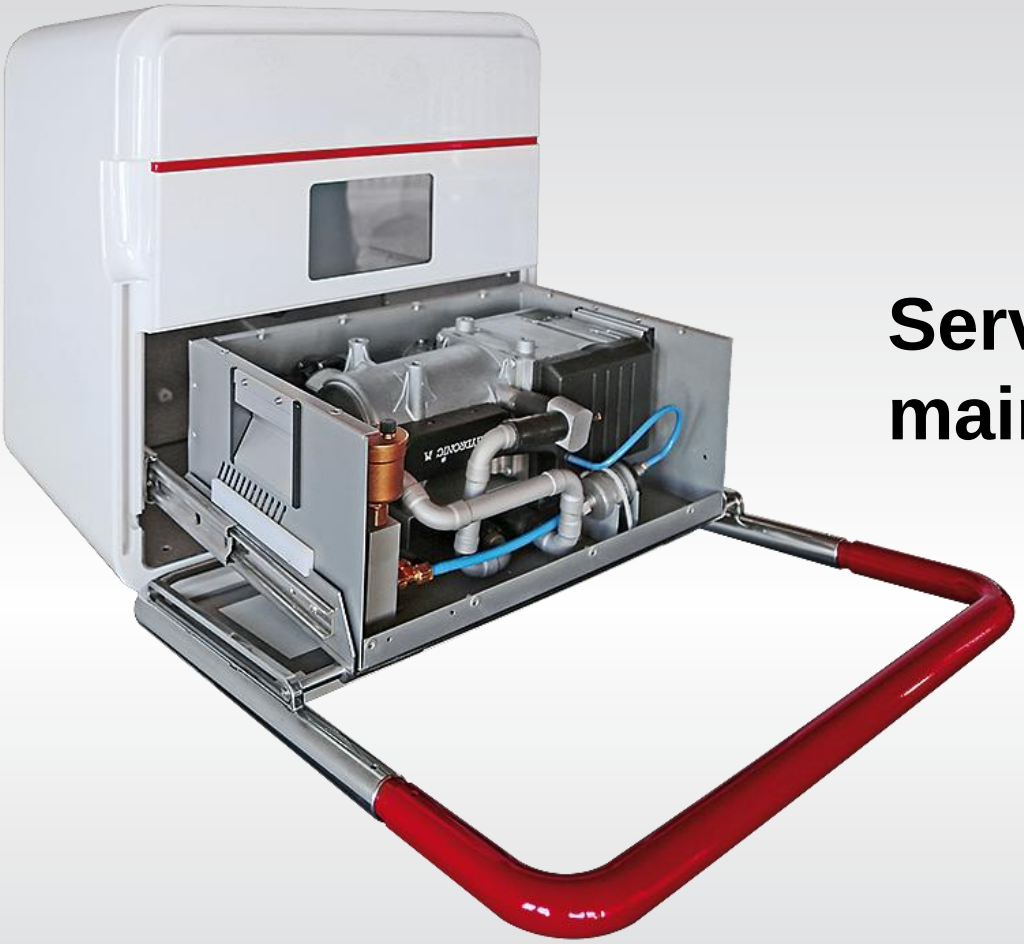


Preliminary development study

Four innovations



- The smallest modulating output from 1.5 to 10 kW
- An exhaust gas catalytic converter and graphite heat exchanger for condensing boiler technology
- Hybrid integration for surplus energy and photovoltaics with an additional 3 kW of capacity (Power-to-Heat)
- The 30-second service and maintenance concept by an exchangeable cartridge oil burner



Service and maintenance concept

Technical data exchangeable cartridge

- Heating output 1.5 to 10 kW
- Size (L x W x H): 331 x 138 x 219 mm
- Weight appox. 6 kg
- Designed for 6,000 operating hours
- Optional: 100 % biodiesel compatibility

- Simple exchange
- No tools required
- 30 seconds
- Plug and Heat cartridge exchange

How to change the cartridge

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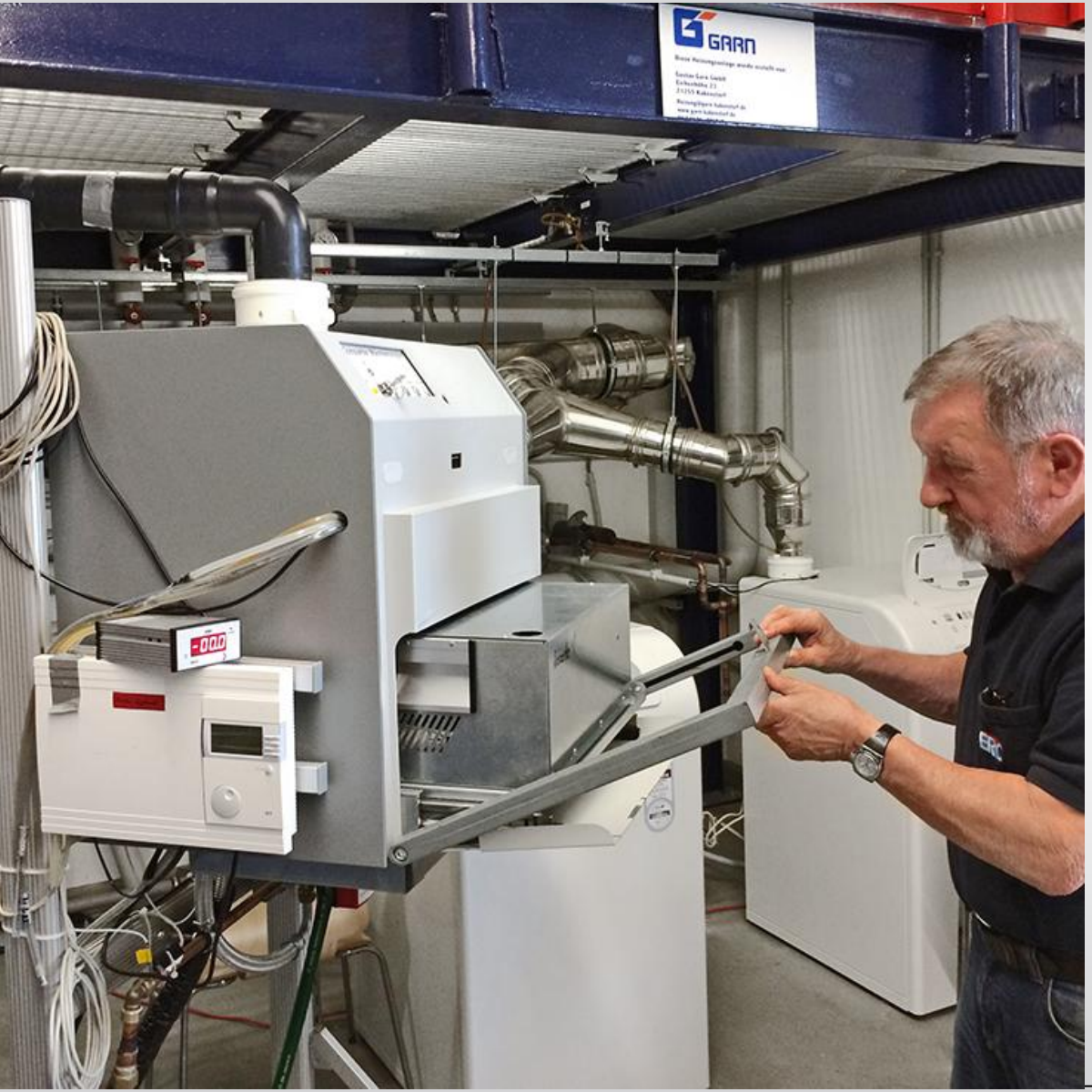

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Service within 30 seconds

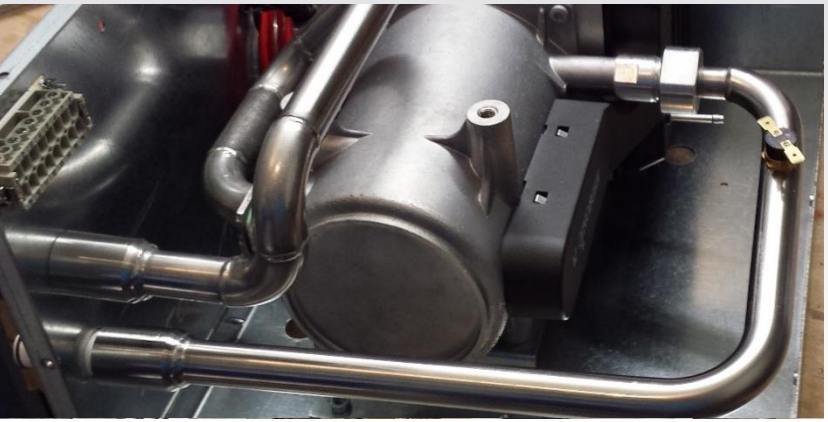
Next steps

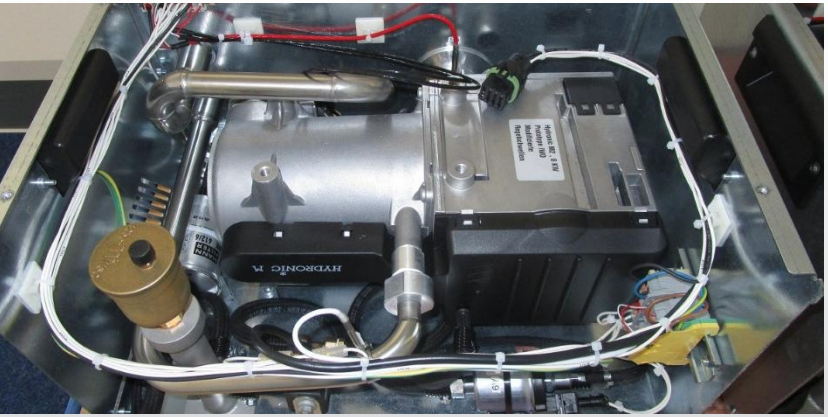
- Integration of burner and cartridge into an commercial condensing boiler from MHG Heiztechnik GmbH

Next steps

- Tender for a lab test over 6.000 hours

New cartridge





- This heating unit is a building block to the reduced consumption and a solution to integrate renewable power with an new service and maintrance concept

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