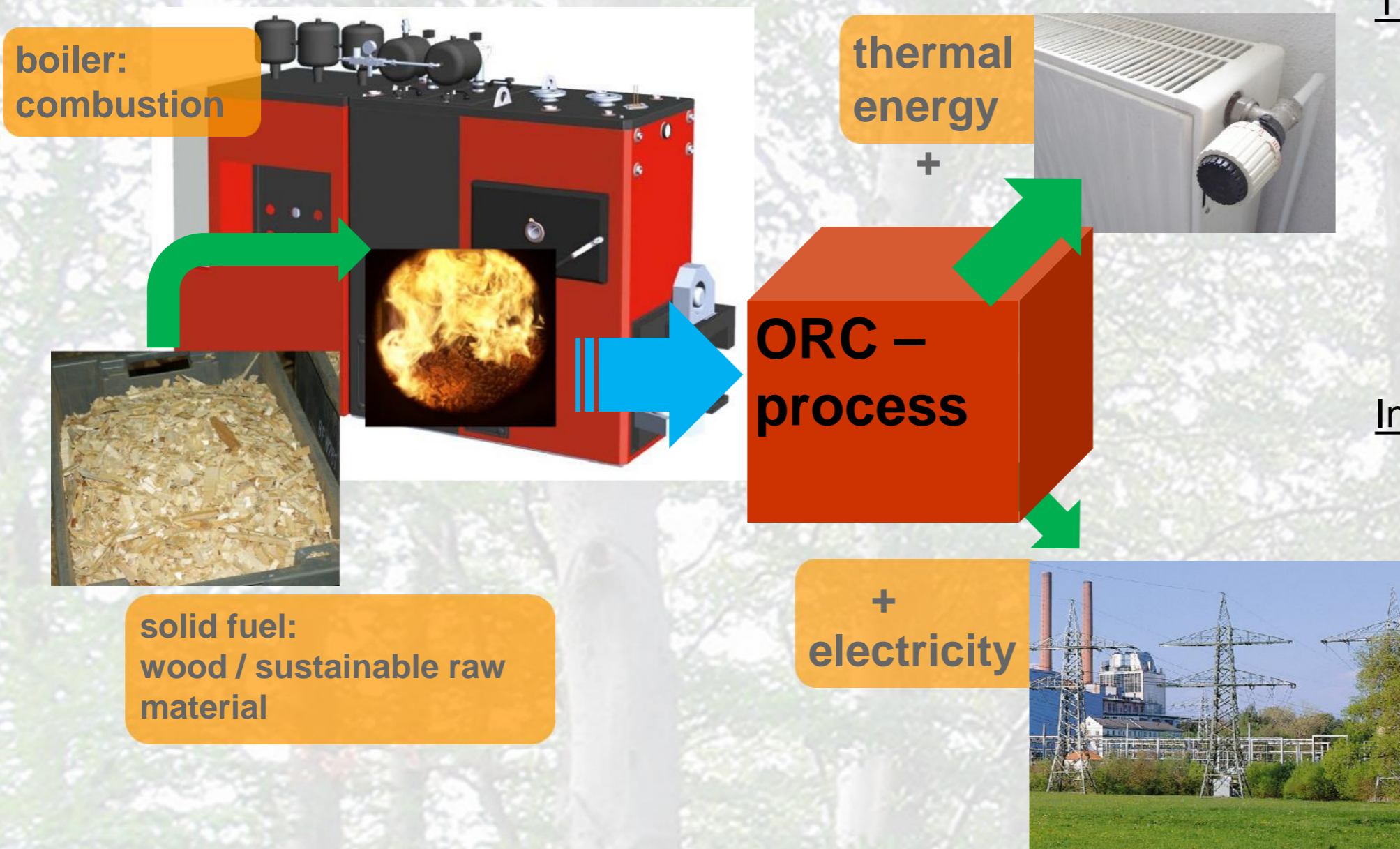


## R&D – project „BioStrom“ – CHP – plant with small power\*



### Target:

Functional biomass – complete system with combined heat and power in micro scale  
 Application of ORC-technology (organic Rankine cycle) with biomass combustion

### Innovations

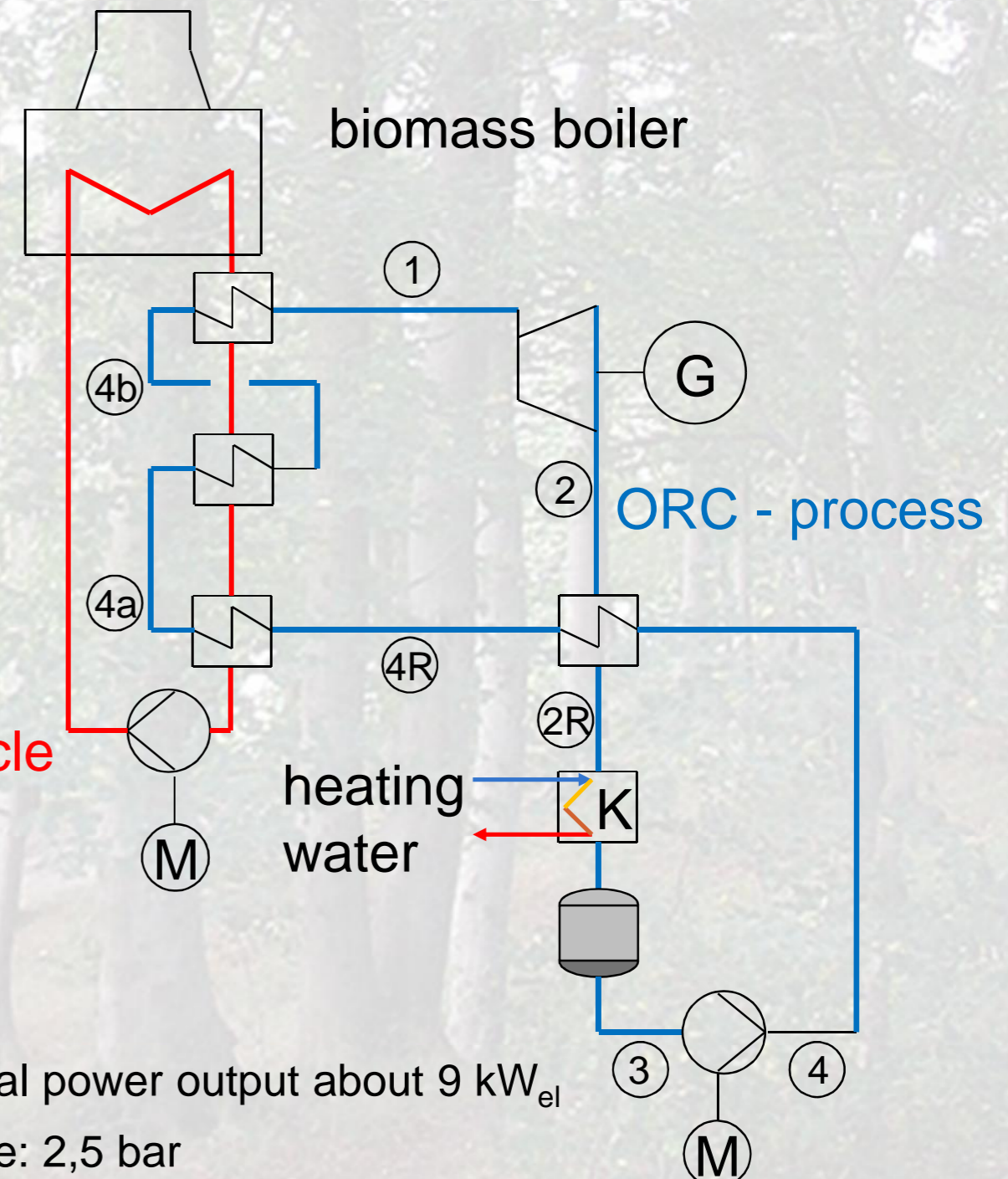
- Biomass - boiler & ORC as fixed unit under inclusion of the combustion technology
- Investigation and minimization especially of critical emissions
- $P_{el}$  5 ..10 kW
- New biogen fuels beside wood

### Sustainable energy sources:

Transfer of the ecological advantages of biomass furnaces to the area of micro - CHP- applications with a power range  $< 10 \text{ kW}_{el}$

Process point Nr.	Description
1	expansion inlet
2	expansion outlet
2R	recuperative heat exchanger, outlet hot flow
3	condenser, outlet
4	condensate pump, outlet
4R	recuperative heat exchanger, outlet preheated flow
4a	warming, boiling curve
4b	evaporation, condensation curve

thermal oil - cycle



### Important results:

- With thermal-oil-boiler of **ALA•TALKKARI** stabile power output of 80 kW on 220°C feasible
- Design points: e.g. thermal power output 50-60  $\text{kW}_{th}$  - electrical power output about 9  $\text{kW}_{el}$
- Pressure level: high pressure side: 15,9 bar; low pressure side: 2,5 bar
- Refrigerant: nonflammable, nontoxic
- Filling capacity: 50 liter
- GWP: 1
- Drive pump: piston-membrane-pump
- Special-turbine, DEPRAG; speed: 15.000 rpm
- Economic advantages: coasts of fuel

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