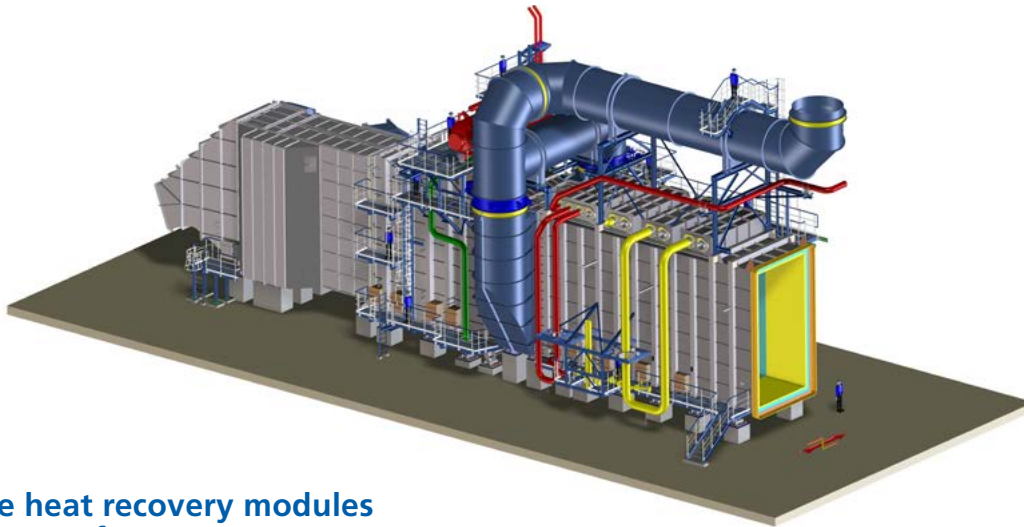


REFERENCE SHEET

Heat recovery modules following steam reformers



BETTER MODULAR DESIGN



Custom-made heat recovery modules following steam reformer

For decades we've supported customers worldwide with heat recovery modules for their hydrogen / methanol / ammonia / carbon monoxide production plants. When planning new systems and revamps, licensors and operators want assurance that a supplier knows how to avoid unwanted bypass flows, thermal expansion problems, hot spots, vibration damage, relaxation cracks, long-term embrittlement, etc. Our experience with more than 60 new plants and revamps since 1990 provides that assurance and better solutions.

With our individual and customer-oriented design and optimal layout, we avoid unplanned shutdowns for our customers. At the end of the service life or when improvements are planned, sometimes only individual modules are replaced. Here we provide support with root cause analysis and feasibility studies of improvements based on the drawings of the existing heat recovery system. Our core competencies are the detailed design of upgraded modules and collaboration with specialized manufacturing partners.

Whether in horizontal, vertical or a combined layout, we've executed heat recovery systems (WHRS) following reformers in many variations and design code combinations. Customer specifications are checked and evaluated for possible better technical solutions prior to the contract.

Scope of Supply

- Design beginning with heat engineering / root cause analysis (revamps)
- 3D and 2D planning, workshop drawings
- Manufacturing of module(s) with refractory lining already installed
- Auxiliaries: expansion joints, piping, quench cooler, etc.
- Pre-acceptance and shop test with notified body, stamping
- Seaworthy packing and transport to jobsite or FOB North Sea port
- Final documentation with detailed assembly manual

Technical Data	
Design codes	ASME I / ASME VIII Div.1 & S/U stamps / PED, EN12952
Thermal power of WHRS	up to 170 MW
Flue gas flow	up to 660,000 kg/h
Steam flow	up to 570 t/h
Steam pressure	up to 140 bar (g)
Pressure part materials	347, 321, 304, P91, low alloyed, alloy 800H, CS
Weight of single modules	up to 125 t

