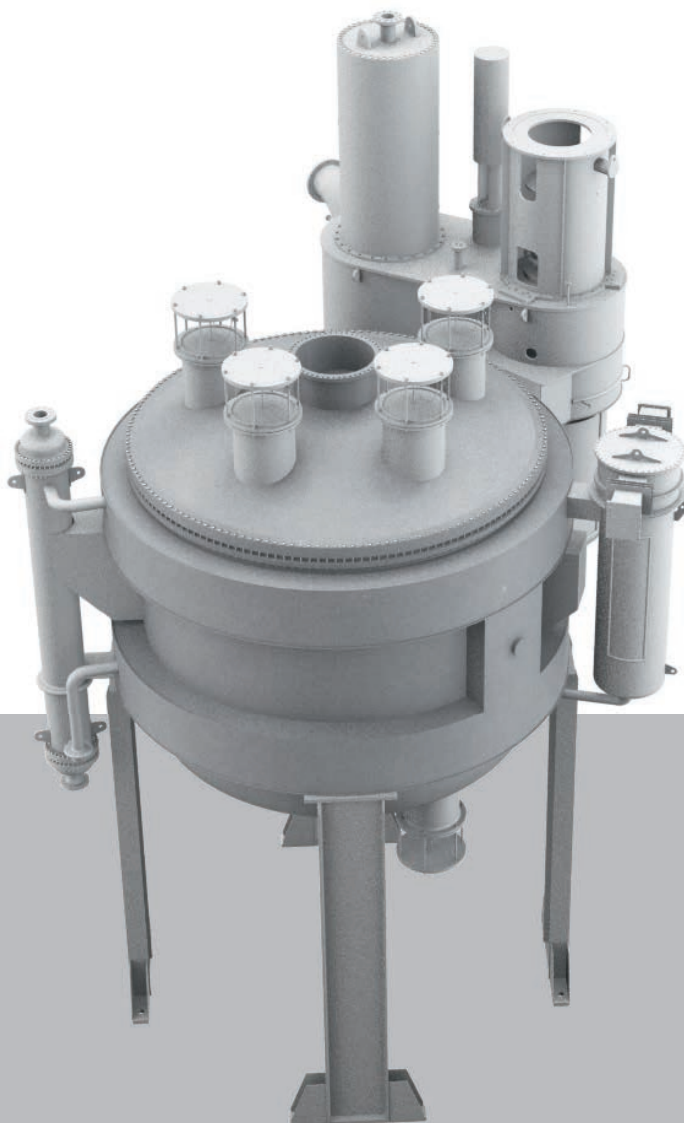


# Salt operated reactors

## Acrolein



**DWE® – global no. 1 in tubular reactors**

- First reactor in 1955
- More than 750 contracts
- up to 45,000 tubes
- heat removal up to 40 MW
- Salt flow up to 11,000 m<sup>3</sup>/h
- More than 750 catalytic gas phase tubular reactors for 54 products and use of 77 different processes
- 28 Deflagration pressure containment design reactors
- Up-scale from pilot test (1-2 tube) to commercial reactor size with same salt temperature conditions



# Market leader for AC reactors

- 20+ reactor systems manufactured until today
- AC via Propylene
- Loading
  - Propylene 8 - 10 Mol %, space velocity max. 150 1/h
- Type of construction
  - with integrated quench (reaction and quench in one tube)
  - with separate quench (quench flanged to reactor) - "Unique DWE®-Design"
- Biggest tube number: up to 50,000

# Acrolein (AC) reactor

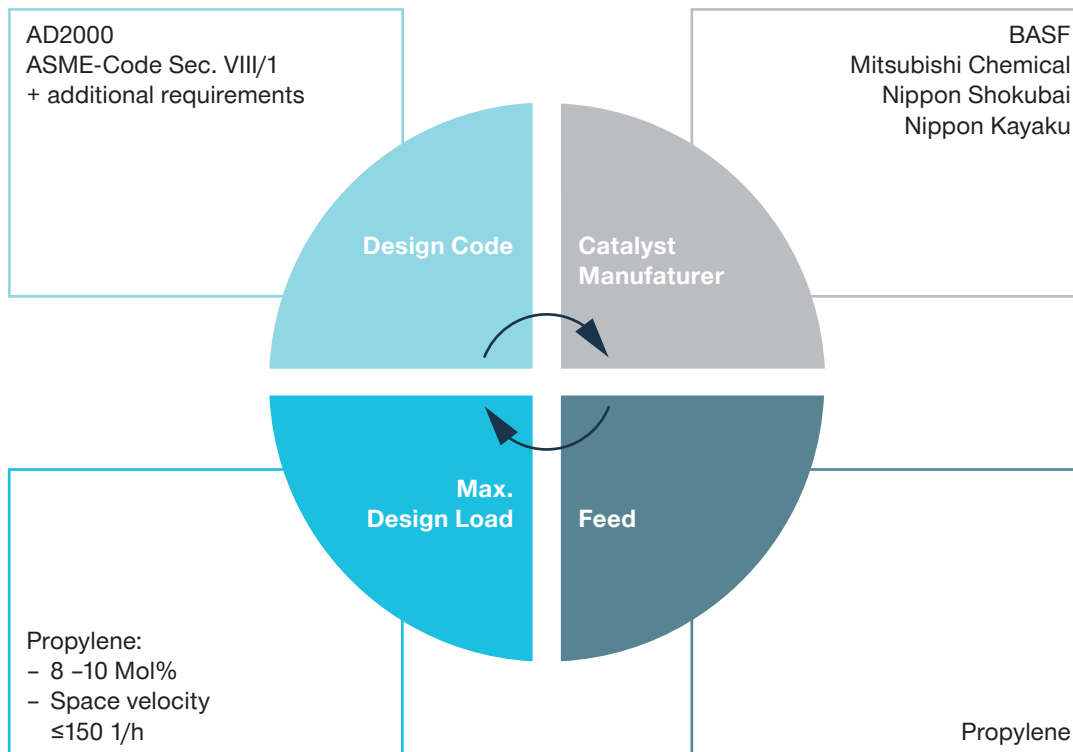
## Technical data

### Standard design data

Pressure/temperature	Design	Operating
Pressure tube side	2.5 barg – 4.0 barg	1.0 barg – 1.4 barg
Temperature tube side	390 °C – 420 °C (tubes 450 °C)	300 °C – 360 °C
Pressure shell side	static + pump	static + pump
Temperatur shell side	390 °C – 420 °C	300 °C – 360 °C

### Characteristic design data

Design data	Feed: Propylene)
Space velocity	max. 150 1/h
Inner tube diameter	ID21 mm – ID27 mm
Tube length over tube sheets (incl. quench)	approx. 3,800 mm – 5,100 mm
Tube length between tube sheets (incl. quench)	approx. 3,300 mm – 4,700 mm
Amount of heat to salt per tube	max. 1,100 W
Yield	80 % – 85 %
ACS per tube and hour	0.3 kg – 0.55 kg
Max. tube number per reactor	50,000



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