

## Sabroe ECSQ shell-and-tube cascade cooler

ECSQ is designed for R717/R744 operation. It has an integrated liquid separator and a capacity range between 60 kW and 6,000 kW.

The ECSQ series combines Sabroe's smart boiling and condensing heat transfer technology using a horizontal shell-and-tube heat exchanger for in-tube condensing and boiling on the shell side.

The exchanger is primarily designed to condense R744 on the tube side and evaporate R717 on the shell side. However, there is full compatibility with other refrigerants that comply with the materials.

ECSQ cascade coolers shown with welded and flanged end covers

### Range

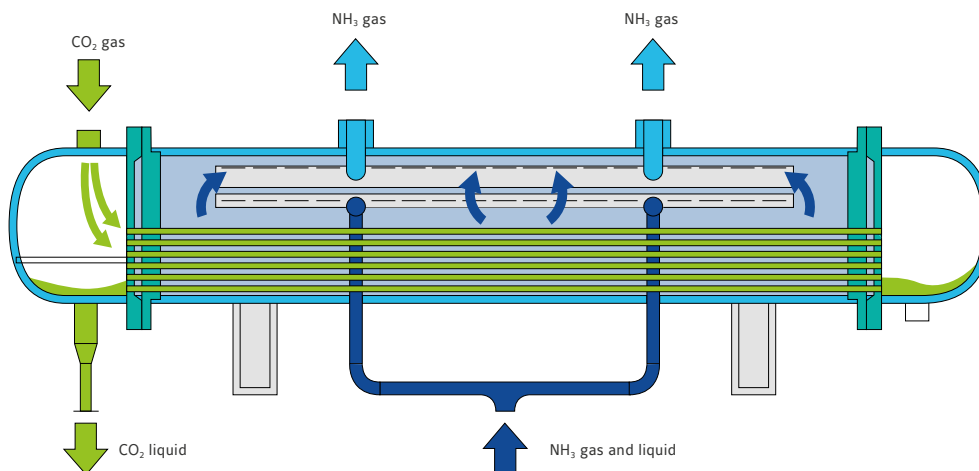
The ECSQ cascade heat exchanger is available in more than 100 different configurations. The configuration of the series is based on 125 years of unrivalled experience in the supply of refrigeration components and systems.

The ECSQ cascade heat exchanger is approved for operation between 50°C and -40°C and 21/-1 barg on the shell side, and between 100°C and -40°C and 40/-1 barg on the tube side.

| Features  | Benefits  |
|---|---|
| Integrated liquid separator on the evaporating shell side | It eliminates the need for a conventional liquid separator and reduces the overall footprint of the installation                            |
| Ø 10 mm pipes and internal flow guides                    | There is minimal refrigerant charge and highly efficient heat transfer on the shell side in contrast to conventional shell-and-tube designs |
| Calculation and product selection via COMP1               | Simplified product selection and evaluation of thermal performance in part-load conditions  |



## ECSQ working principle



## ECSQ – Capacity and product range

| Type   | Shell diameter<br>mm | Shell length*<br>m | Tube side passes | Shell side inlet |       | Shell side outlet |       | Tube side inlet |       | Tube side outlet |       | Capacity range**<br>kW |
|--------|----------------------|--------------------|------------------|------------------|-------|-------------------|-------|-----------------|-------|------------------|-------|------------------------|
|        |                      |                    |                  | Size             | Count | Size              | Count | Size            | Count | Size             | Count |                        |
| 4020A1 | 390                  | 2/3                | 1/2              | DN25-DN32        | 1     | DN40-DN50         | 1     | DN25-DN40       | 1     | DN50-DN26        | 1     | 75-165                 |
| 5020A1 | 492                  | 2/3/4              | 1/2              | DN32-DN40        | 1     | DN65-DN0          | 1     | DN40-DN65       | 1     | DN65-DN100       | 1     | 100-350                |
| 6020A1 | 594                  | 2/3/4/5            | 1/2              | DN32-DN65        | 1     | DN65-DN100        | 1     | DN40-DN80       | 1     | DN65-DN125       | 1     | 175-600                |
| 7030A1 | 684                  | 2/3/4/5/6          | 1/2              | DN40-DN65        | 2     | DN80-DN125        | 2     | DN65-DN100      | 1     | DN100-DN150      | 1     | 350-975                |
| 8030A1 | 793                  | 2/3/4/5/6          | 1/2              | DN50-DN80        | 2     | DN80-DN125        | 2     | DN80-125        | 1     | DN100-DN150      | 1     | 450-975                |
| 9030A1 | 890                  | 2/3/4/5/6          | 1/2              | DN50-DN100       | 2     | DN100-DN150       | 2     | DN80-DN150      | 1     | DN125-DN200      | 1     | 450-1275               |
| A040A1 | 992                  | 4/5/6              | 1/2              | DN65-DN100       | 2     | DN125-DN150       | 2     | DN100-DN150     | 1     | DN125-200        | 1     | 900-2000               |

\* Unit length (excluding end covers)

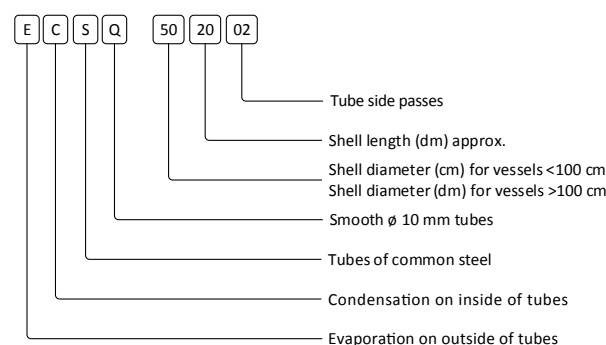
\*\* Capacity range: R717 shell side evaporation at -10°C, R744 tube side condensation at -5°C.

Standards: PED (DNV, LRS as options).

All Sabroe shell-and-tube heat exchangers follow a standard key for naming and identification. For the ECSQ product line, the name of a given configuration can be identified by the key below.

### Options

- Double tube-plate for leakage protection and leakage detection
- Flanged or fully welded end covers
- Non-PED approvals on request (DNV, LRS, etc.)
- Oil drain or oil sump for oil return



All information is subject to change without notice.

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