

Compressors and Chillers

Johnson Controls

Sabroe is a long established industrial compressor manufacturer, now part of Johnson Controls. The product range includes reciprocating and screw types delivered as packaged compressor sets, and a full range of industrial chillers, utilising mainly welded plate heat exchangers.

The factory and headquarters at Aarhus in Denmark is the centre for ongoing R&D keeping the company at the forefront of industrial refrigeration technology.

Refrigerants

Whilst not ignoring HFC developments, the focus is firmly on ammonia, CO₂ and hydrocarbons. This is partly tempered by Danish regulations and taxes whereby HFCs are banned from new equipment containing a charge of more than 10kg and an environmental tax brings the cost of R404A to approximately £60/kg.

Reciprocating compressors in particular play a key role ensuring that high efficiency systems with new refrigerants are commercially viable.



At work in the Test Centre at Aarhus

Variable Speed

Over the years Sabroe have built up experience with oxygen, air and many others. With variable speed drive, each parameter affecting the efficiency and boundaries of operation is carefully explored. Screw types benefit from economisers and slide valve control, and combining this with high speed operation gives tremendous flexibility – fully exploited by the chiller control system.



Part of Sabroe's extensive R&D facilities in Aarhus

Testing is vital

The Aarhus facility allows development work on all sizes of machine to be verified in the test house.

R&D work currently involves over 20 projects. Measurement and mapping of compressor valves in operation has provided a superior understanding of valve behaviour and enabled the development of new valve geometry. A substantial body of new research and testing has developed a new design of base frame and coupling that allow reciprocating compressors to be operated over a wider range of speeds and without any 'black spot' frequencies that traditionally have had to be avoided. These are just two examples.