

Association of the region's leading HVACR manufactures

The future of cooling: Evaluating trends based on recently registered patents



Content

- Patent search and classification
- **HVACR** patents classification
- Which is a second of the secon
- Conclusions



Patent search and classification Worlwide patents database

Espacenet offers free access to information about inventions and technical developments from 1782 to today

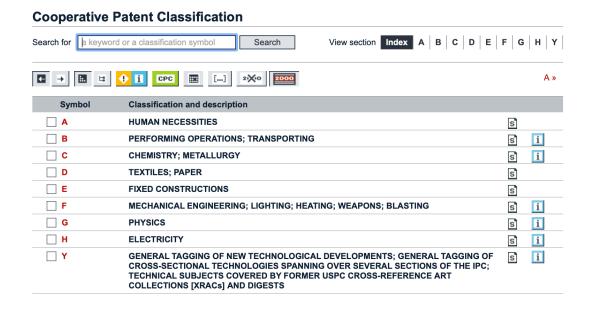
https://worldwide.espacenet.com
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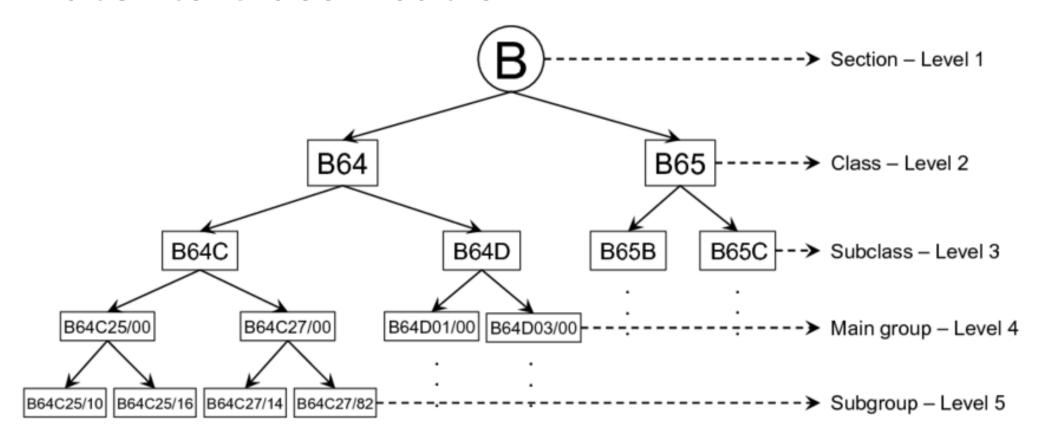
Patent search and classification Patents Classification

- The Cooperative Patent Classification system is a tool for classifying patent applications
- It divides technology fields into eight sections (A-H).
- The CPC consists of several hierarchical levels. Subgroup level is indicated by a number of dots: a higher number of dots represents a lower subgroup level.
- https://worldwide.espacenet.com/cla ssification?locale=en EP



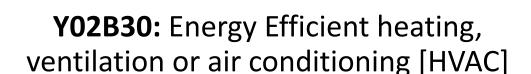


Patent search and classification Patents Classification





HVACR patents classification Two major families





F25B: Refrigeration machines, plants or systems; Combined heating and refrigeration systems; heat pump system



HVAC(R) patents classification

Y02B30: Energy efficient heating, ventilation or air conditioning [HVAC]

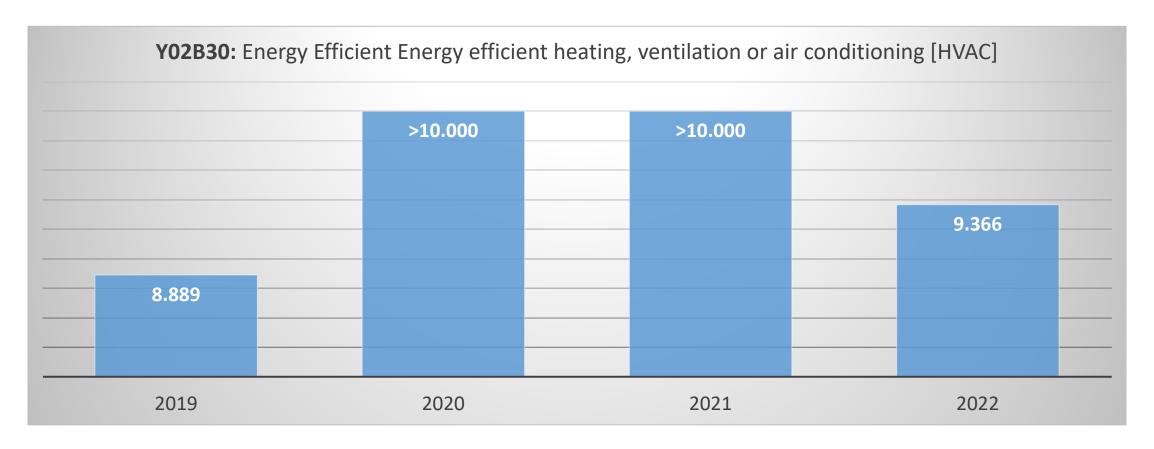
Y02B30/12/13: Hot water & air central heating systems using heat pumps

Y02B30/18/52/54/56:

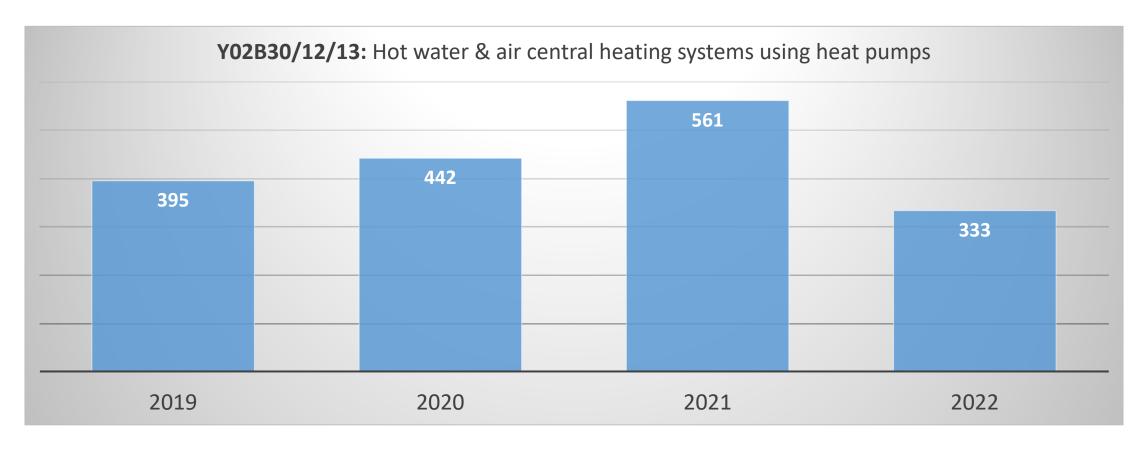
Domestic hot-water supply systems using recuperated or waste heat, Free-cooling systems & Heat recovery units

Y02B30/70: Efficient control or regulation technologies, e.g. for control of refrigerant flow, motor or heating

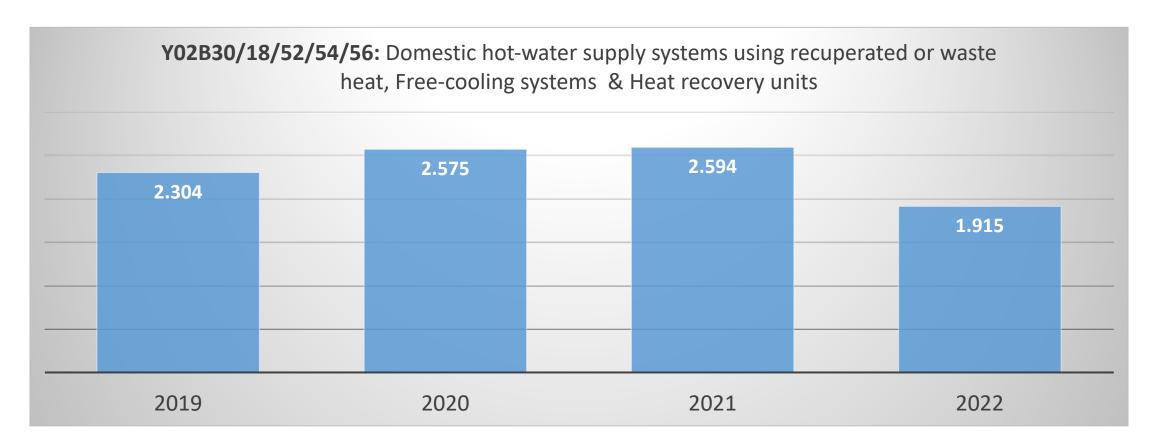




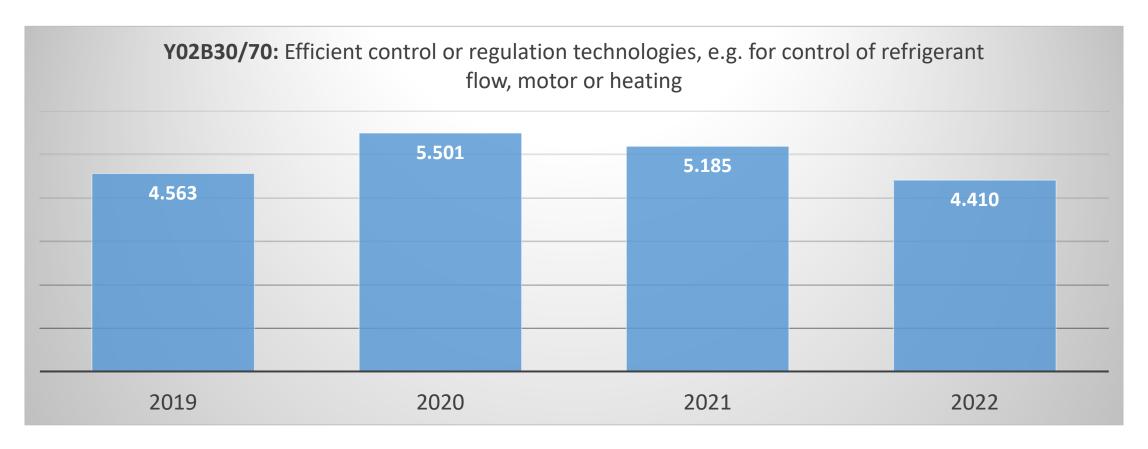














(HVAC)R patents classification

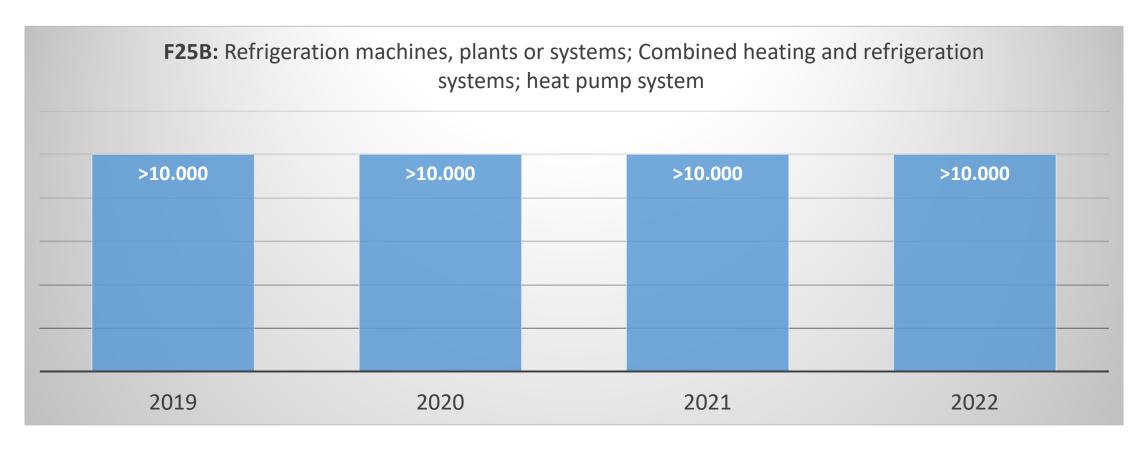
F25B: Refrigeration machines, plants or systems; Combined heating and refrigeration systems; heat pump system

F25B1/00: Compression machines, plants or systems with non-reversible cycle

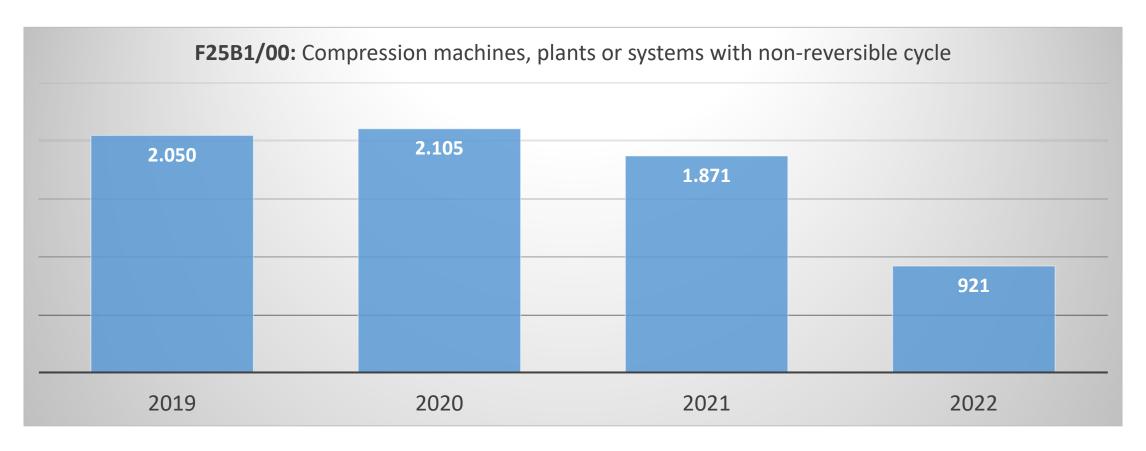
F25B13/00: Compression machines, plants or systems, with reversible cycle (defrosting cycle)

F25B6/00: Compression machines, plants or systems, with several condenser circuits

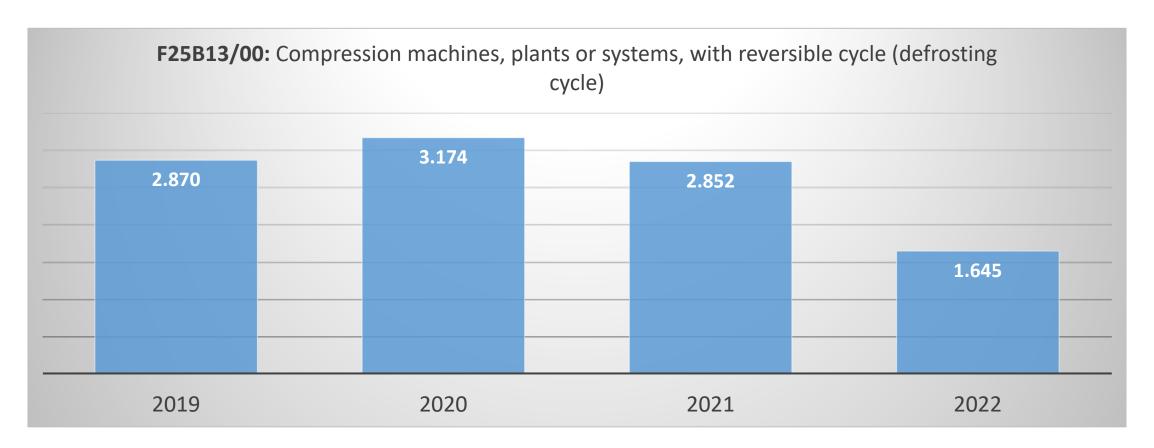




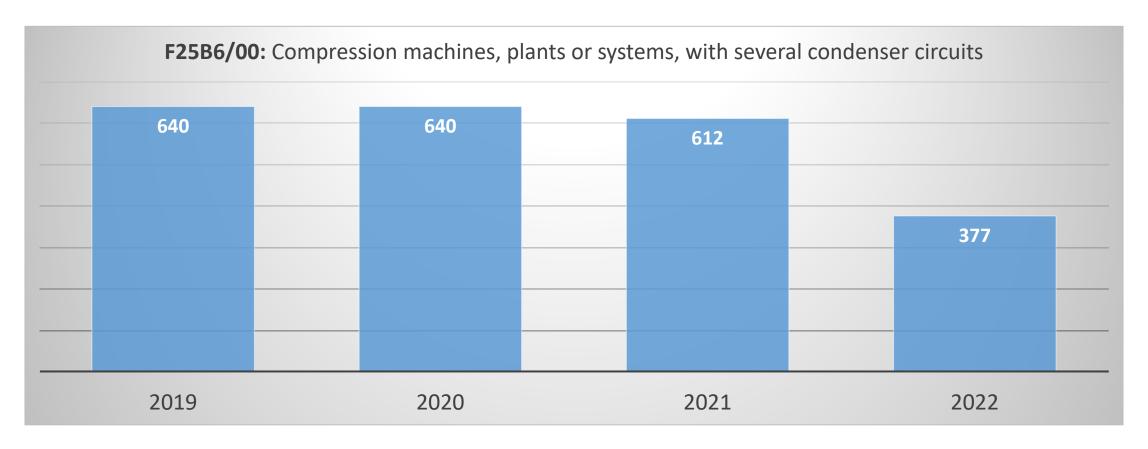














Conclusions Average number of deposited patents



Y02B30: Energy efficient heating, ventilation or air conditioning [HVAC]



F25B: Refrigeration machines, plants or systems; Combined heating and refrigeration systems; heat pump system

>10.000



ConclusionsOngoing innovation trends

Y02B30: Energy efficient heating, ventilation or air conditioning [HVAC]

<mark>5%</mark>

Y02B30/12/13: Hot water & air central heating systems using heat pumps

25%

Y02B30/18/52/54/56:

Domestic hot-water supply systems using recuperated or waste heat, Free-cooling systems & Heat recovery units

51%

Y02B30/70: Efficient control or regulation technologies, e.g. for control of refrigerant flow, motor or heating



ConclusionsOngoing innovation trends

F25B: Refrigeration machines, plants or systems; Combined heating and refrigeration systems; heat pump system

17%

F25B1/00: Compression machines, plants or systems with non-reversible cycle

26%

F25B13/00: Compression machines, plants or systems, with reversible cycle (defrosting cycle)

6%

F25B6/00: Compression machines, plants or systems, with several condenser circuits



ConclusionsKey takeaway

- Both the Refrigeration and Climate Industry are at the forefront of the innovation
- Efficient control or regulation technologies of refrigerant flow, motor or heating played, play and will play a major role within the Climate Industry
- F25B13/00: Compression machines, plants or systems, with reversible cycle played, play and will play a major role within the Refrigeration Industry



Thank You!