

## **Experimental characterization of a Scroll and a piston compressor working with R22 and propane (R290) as refrigerant**

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### **Abstract:**

In this experimental work two compressor of similar size, a commercial type refrigeration Scroll unit and a positive displacement hermetic refrigerant piston compressor type compressor, with a nominal capacity of around 6 kW, have been characterized using R22 and pure propane (R290) as refrigerant in a specifically designed - ISO 917 compliant - characterisation test rig. The same oil was used for both refrigerants. Test results were used to provide a complete picture on modifications in volumetric efficiency, isentropic efficiency, thermal transfer characteristics amongst others. Regarding the conclusions, refrigerating capacity is lowered by the use of propane in both type of units, but at the same time there is an increase in COP, in isentropic efficiency and lower thermal losses appear due to the substantially lower discharge temperatures of propane.