Canada is committed to reducing its greenhouse gas emissions (GHG) by 40 to 45% below 2005 levels by 2030. This target means that the country must imperatively move away from fossil fuels and shift toward clean electrification for every sector of the economy.

That is why Canada participates in Annex 58, to seize the opportunity to exchange on the development and application of leading-edge heat pumping technologies. These technologies will play a key role in a low carbon industrial sector – a sector that currently accounts for about 37% of Canada’s GHG emissions and that relies heavily on fossil fuel to meet its high-temperature process heating demands.

Canada is represented in Annex 58 by 4 organizations:

**CanmetENERGY**, a Natural Resources Canada research centre located in Varennes, QC, is the lead organization of the Canadian national team. With over 200 scientists, engineers, technologists, managers and support staff, CanmetENERGY in Varennes (CEV) manages R&D programs aimed at developing efficient science and technologies for a low-carbon future. Its laboratories and pilot plants are equipped to develop, test and demonstrate clean energy solutions applicable to the buildings, smart grids and industrial sectors.

The Centre has a strong expertise in heat pumping technologies and systems that use low global warming potential refrigerants. It also has a long history of participating in Annexes within the heat pump technology collaboration program (HP TCP). CEV is currently participating in Annex 55 – Climate & Comfort Box as well as in the IETS-TCP Task 19 (Industrial Electrification).

**Université de Sherbrooke** is involved as a research institution through the Natural Science and Engineering Research Council of Canada (NSERC) chair on industrial energy efficiency, established in the mechanical engineering department. Its research activities involve experimental, numerical and theoretical approaches dedicated to fundamental or applied research in the following areas: components of refrigeration and thermal systems like supersonic ejectors, heat exchangers, magnetic refrigeration, vortex tubes, energy storage systems, transcritical CO₂ heat pumps, high-temperature heat pumps with natural refrigerant, etc.
The Energy Technologies Laboratory (LTE), a research centre of Hydro-Québec (electric utility), carries out projects aimed at optimizing energy use in homes, institutions, businesses, and industrial firms. LTE’s leading-edge facilities and equipment are also used to conduct tests and trials to develop new technologies and to assess the performance of promising energy-efficient solutions.

LTE is a stakeholder in Canada in the development of heat pumps and control logic of heat pumps to optimize performance with natural refrigerants like CO₂ (R744) and water (R718).

Emerson, founded in 1890, is headquartered in St. Louis, Missouri, with operations in 200+ countries. The company is one of the world’s largest manufacturers of compressors, components and system solutions for use in a wide range of HVAC&R applications. It is continually engaged in the assessment and development of compressors and HVAC systems with natural refrigerants, leading-edge technologies and system solutions to expand product portfolios and meet the needs of global industries.

Emerson has a strong interest in high-temperature heat pump technologies and, although the company is represented under Canada’s national team in Annex 58, it will leverage the expertise and knowledge of its global R&D team (mainly USA & China).

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