



Coldinnov

COOL INTELLIGENCE

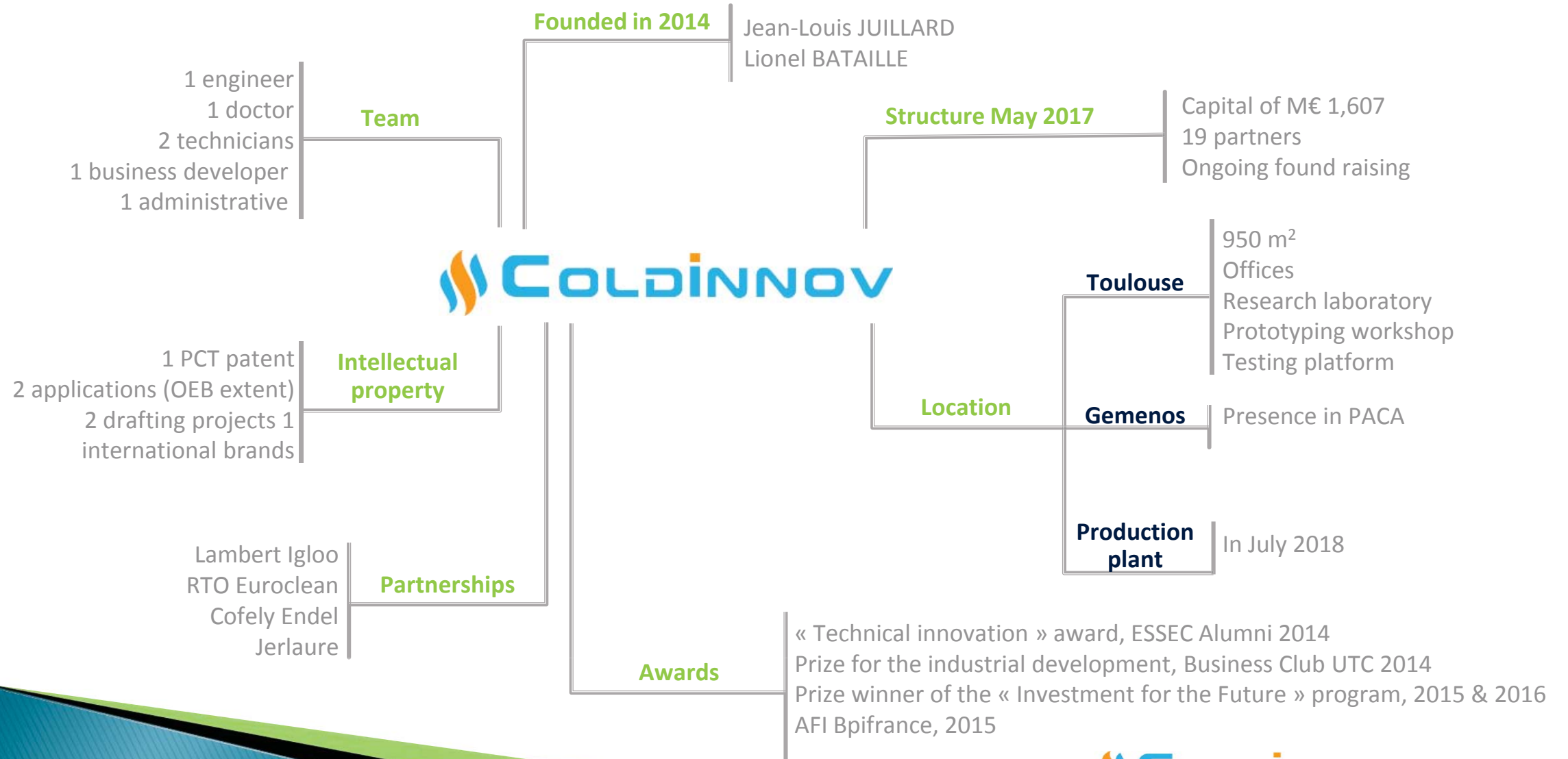




- ▶ **Refrigeration, the largest consumer of electricity**, excluding heating
- ▶ **The European Directive F-gas** for low-carbon refrigeration technologies
- ▶ **The waste heat recovery, a key factor of COLDINNOV's competitiveness** regard to compression systems



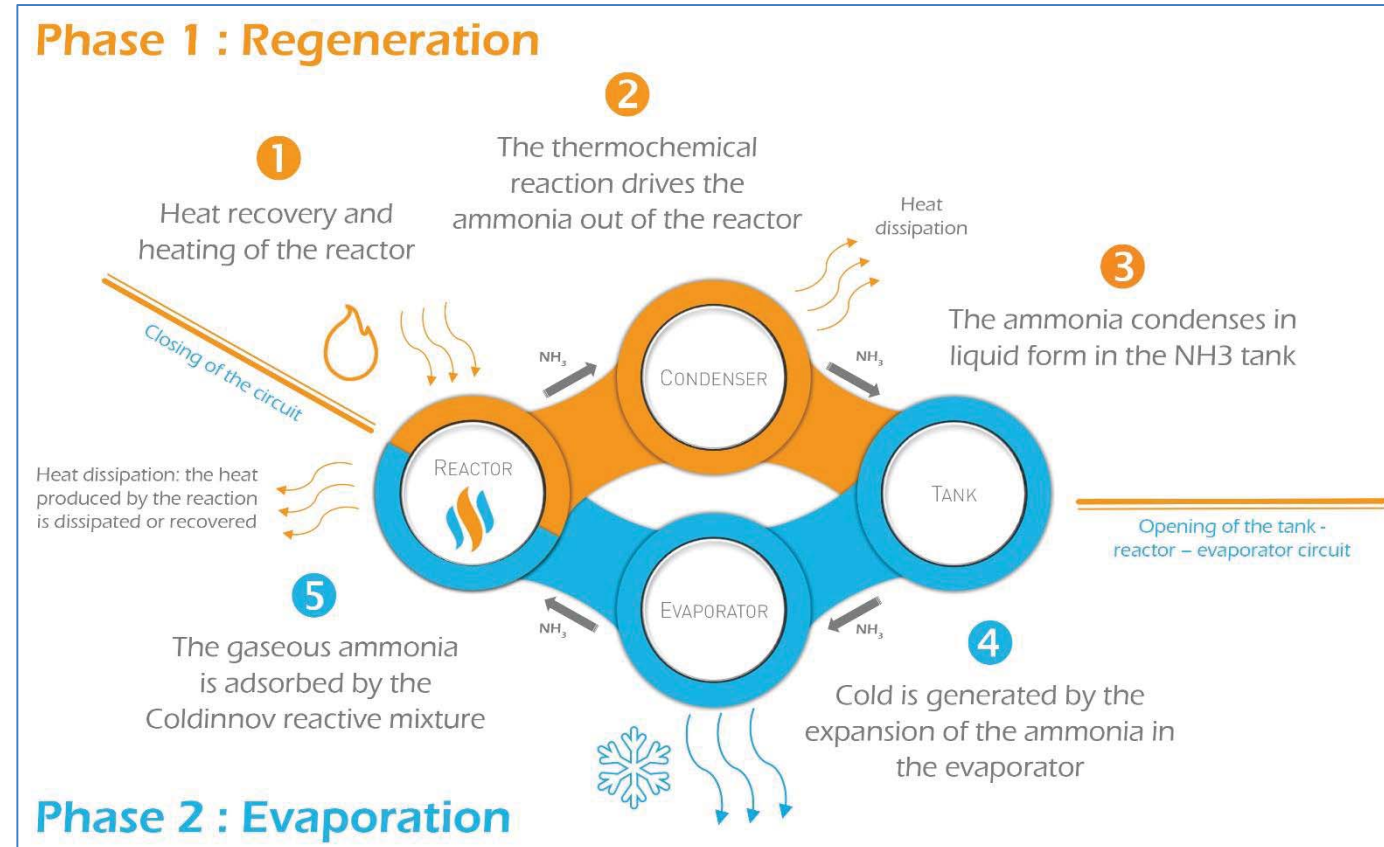
The company



COLDINNOV Technology - Description



- ▶ Thermochemical refrigeration through a reaction between ammonia and a reagent compound designed by COLDINNOV
- ▶ Energy supply by waste heat recovery
 - Heat of industrial processes
 - Combustion engines
 - Alternative and renewable heat sources (solar heat, waste burning, biogas, ...)
- ▶ Characteristic of COLDINNOV technology
 - Scalable power from 2 kW to more than 500 kW



COLDINNOV Technology - Benefits



- ▶ Recovers residual heat as an energy source



- ▶ Generates energy savings by over 80% compared with a compression system



- ▶ Cooling effect to above- or below-freezing as soon as it is started up



- ▶ Uses a natural refrigerant fluid with no impact on the environment



- ▶ Reduces maintenance costs thanks to the absence of moving parts in the reactor



- ▶ Allows for direct conversion of heat into cold or for its storage in chemical form



*COLDINNOV test reactors (3.3 ft each)
« Prototype V2 » – January 2016, Toulouse*

The adsorption of the gaseous ammonia by a specific mixture of expanded graphite and salts in the reactor is used to produce cold temperatures.



French and international development & marketing of new and eco-friendly refrigeration production equipment :

- ✓ **Thermochemical reaction solid-gas**
- ✓ **Waste heat recovery**

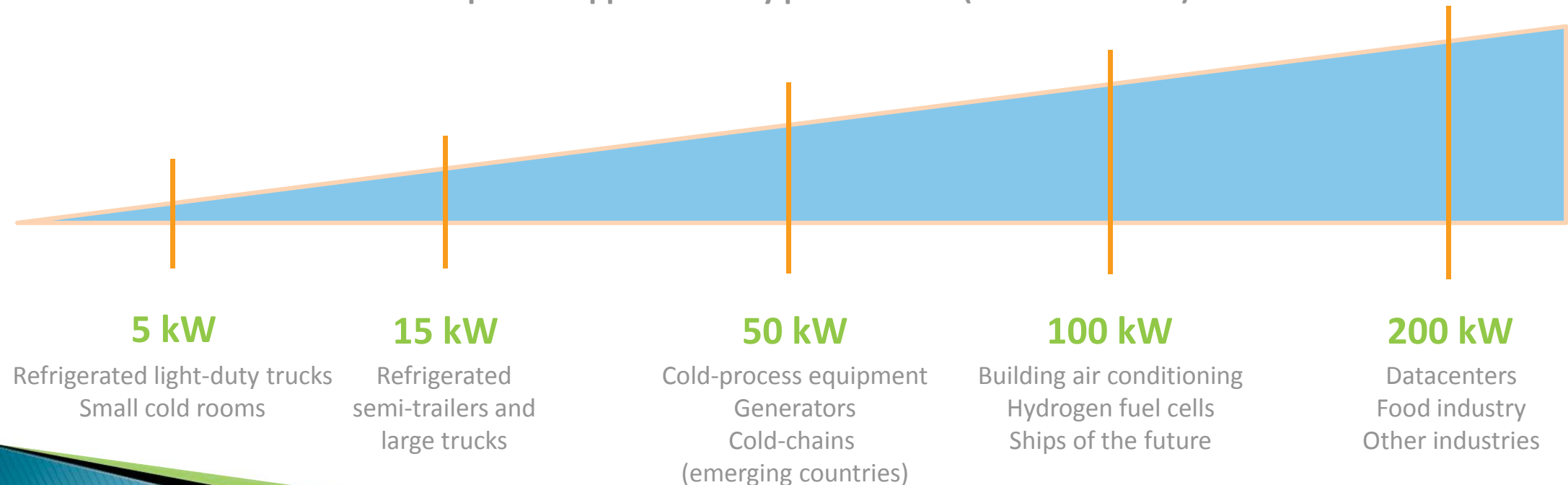
Versus standard compression systems



An adaptable technology to several cooling power levels

↙ **Wide range of applications**

Examples of applications by power levels (non-exhaustive)





In February 2016, COLDINNOV takes over the 100 % solar cold system of FREECOLD®



- ✓ Refrigeration, freezing and air conditioning processes 100 % photovoltaic, without need for additional power source
- ✓ 3 to 4 days of self-sufficiency
- ✓ FREECOLD® products are suitable for many domestic, professional and medical applications
- ✓ An international activity to meet the needs of people in emerging countries



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