

# Three Industry Leaders Join Hands in LIFE+ K12 Project

The K-12 Project focuses on developing a new insulating technology to offer 20% energy improvement for domestic appliance insulation.



EU Directive 92/75/EC, replaced by Directive 2010/30/EU, established an energy consumption labelling scheme for household refrigerating appliances specifying an energy efficiency index EEI, based on annual power consumption, storage volume and type of appliance. EEI is rated with classes from A to G on the label, A being the most efficient. Categories A+, A++ and A+++ have been later assigned too, to acknowledge additional efforts from the industry.



The commitment of the appliance makers is mostly focused in the fields of new insulation technologies (new Polyurethane formulations, wide use of vacuum insulated panels, massive improvements in gasket design, material joints and reduction in leaks and thermal bridges) and cooling circuit technologies. All these steps have been achieved in compliance with Montreal and Kyoto Protocols, moving forward with reduction of Greenhouse Effect and Ozone depletion caused by refrigerant coolants handling.

Within this scenario, **Dow Italia, Whirlpool and Cannon Afros are partners of the LIFE+ Project K-12 (LIFE13 ENV/IT/001238)**, aiming to **demonstrate and show-case an innovative refrigeration technology to significantly improve the energy efficiency and reduce the carbon footprint of the Cold Appliance industry.**

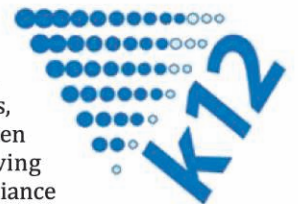


For further information, visit: [www.dow.com/en-us/k-12](http://www.dow.com/en-us/k-12)

**DOW ITALIA, WHIRLPOOL AND CANNON AFROS PARTNERED IN 2015 FOR THE LIFE+ K-12 PROJECT, AIMED AT THE DEFINITION OF AN INNOVATIVE "ENHANCED INSULATION TECHNOLOGY FOR THE REFRIGERATOR OF THE FUTURE". THE PROJECT WILL BE EXECUTED WITH THE CONTRIBUTION OF THE LIFE FINANCIAL INSTRUMENT OF THE EUROPEAN COMMUNITY.**

The household sector is one of the largest users of electrical energy in Europe, consuming approximately 29% of total electrical energy, 25% of which by refrigerators and freezers. The challenge to lower the energy consumption, stimulated by the EU legislation has been carried out through a fine balance between the use of new designs, chemical formulations and their impact on the environment. The energy labelling has significantly contributed to reduce the cold appliance energy consumption of about 65% from 1980 to 2015; although these consistent and continued technical improvements have been offset by the increase in use.

The K-12 project connects new chemistry with technology innovations, avoiding any use of Green House Gases as blowing agents with a new appliance production technology driven by reducing the carbon footprint of manufacturing operations, addressing any technology requirements and regional needs. Dow, Whirlpool and Afros have therefore initiated the K-12 Project which long-term overall objective is to contribute to drastic energy saving in cold appliances demonstrating the feasibility of an innovative technological solution able to hugely impact the thermal insulation market, starting from households cold appliances.



K-12 project combines the expertise of Dow, leading science and technology global company, Whirlpool, largest appliance-white goods global company, and Cannon Afros, a World leading engineering and Polyurethane equipment technology company, to bring radical innovation to the manufacturing process of household appliances, insulated by a microcellular high-efficient Polyurethane foam able to achieve about 30% reduction of thermal conductivity, thus significantly improve the energy consumption of refrigerators and freezers. New breakthrough technology processes to manufacture the K-12 foam are right now under development by Whirlpool and Afros.

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