

LOW ENERGY HEATING SYSTEM BASED ON JOULE EFFECT



Begoña Galindo, Ph.D.

bgalindo@aimplas.es





Objectives

Objective	Means of verification
Development of a nivel and innovatibe heating system based on the use of Joule Effec in thermoplastic sheet ans thermoset coating. Reduction of energy consumption of at least 30% in comparison with current PTC heaters	Maximum power installed 800W







- * Joule Heating (or resistive heating):
 - Process by which the passage of an electric current through a conductor releases heat.
 - Two systems are developed:
 - 1) rigid multilayer sheets in a thermoplastic matrix:
 - Recyclable
 - Fast and cheap production process
 - 2) fabrics with a heating coating in a thermoset resin:
 - Flexibility
 - Higher heating capacity













1) Thermoplastic conductive panels

- Conductive particles are dispersed in a thermoplastic polymer matrix
- The panels are produced via cast extrusion process
- Panels can be reprocessed again in the same or an alternative product









1) Thermoplastic conductive panels



2 min to heat up







1) Thermoplastic conductive panels

Advantages:

•Uniform heating and efficient as the aim is to warm the passengers instead of heating the air inside the vehicle

- •Lightweight
- Recyclable

15x15 cm

•Customizable heating performance varying plastic formulation and panel geometry











2) Heating fabrics

The use of electrically conductive nanoparticles offers improved electrical properties that are transferred to the fabric through a coating process by means of a colloidal dispersion specially designed.











1) Thermoplastic conductive applications







Parts of the car in direct contact with the passenger or near the passenger





2) Heating fabrics







2) Heating fabrics - Heating up behavior







2) Heating fabric aplications



Steering wheel

Car seat





Car arm rest

Rubber mat floor





Laminate flooring



Mat floor







Thank you!! www.jospel-project.eu Info@jospel-project.eu



The JOSPEL project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement n^0 653851. The sole responsibility for the content of this presentation lies with the JOSPEL project and in no way reflects the views of the European Union.