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**Abstract Format**

**Title: Disruptive Heat Pump Boiler integrated with smart solutions**

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**Abstract**

BoostHEAT designs and manufactures gas heat pumps of a new generation with very high efficiency based on a breakthrough innovation: the thermal compression.

BoostHEAT first product enables the production of heat and hot water with the power rating of 20kW. It provides an annual efficiency of 175% for domestic hot water and heating (high temperature heating 55°C – EN 12309), from an air-source heat pump, without the need for expensive geothermal wells or solar panels.

The lecture starts with the presentation of the boostHEAT Heat Pump Boiler emphasizing on the new Thermal Compressor that activates an air-water CO<sub>2</sub> heat pump, fuelled by natural gas and renewable energy.

Service-oriented business models are a way to support smart integration of such a disruptive technology.

Indeed, boostHEAT is currently collaborating with utilities all around Europe, fostering a digitalized and service-oriented approach to optimize the current energy value chain. In order to capture the value created by the high-energy efficiency, boostHEAT heat pump can be included in an Energy-As-A-Service offer for domestic hot water and heating, helping utilities reducing customer acquisition cost, increasing loyalty and generating increased net revenue.

The lecture also proposes the study of a business case that leans on the idea of Energy As A Service: comfort subscriptions and Decentralized District Heating (DDH). The DDH is a network of pre-selected households that have co-subscribed to a heating service bundle. The heating flow for households is managed by a utility-like operator service. In this way, the free energy captured by boostHEAT's thermal compressor is considered as energy injected into the heating network and is billed with an advantageous tariff structure. Besides, DDH allows the optimization of the current value chain in terms of installation and maintenance while data analysis permits the prediction of homes behaviors thus targeting relevant customers. The model encourages the incremental installation of extremely efficient heating units in homes, while reducing the rebound effect.

In addition to the description of these business models, the presentation answers why the characteristics and the features of the boostHEAT Heat Pump fit perfectly within these models.