

**Preparation of Abstract for
2014 IERE-GDF SUEZ Brussels Workshop
“Energy at home”**

**NEW EFFICIENT GAS SOLUTIONS AND RENEWABLE ENERGIES
COUPLING FOR LOW ENERGY RESIDENTIAL BUILDINGS IN FRANCE**

Fabrice PIETRE-CAMBACEDES
GDF SUEZ, CRIGEN*, Saint-Denis, France.

Keywords: low energy, efficiency, solar, gas, boiler, hybrid, heat pump, regulation, renewable energies, modulation,

Abstract

This Arising from the “Grenelle Environment”, a round table for civilians and public services representatives to discuss environmental concerns, a new thermal regulation for new residential buildings (RT 2012) has been established in 2012 in France. Besides the low energy consumption target of a yearly maximum consumption of 50 kWh/m² on primary energy, these new standards introduce also a renewable energy requirement in new houses. Consequently, heating and water heating equipments are deeply affected by the RT 2012.

For reaching the objective to offer a gas technology perfectly suitable of these new low energy residential buildings, GDF SUEZ Group works with European manufacturers to develop new technologies.

The development of a condensing boiler with a high modulation rate (minimum power of 0,8 kW and a maximum power of 28 kW for the hot water needs) is a first answer to these new residential buildings with a weak value of maximum heat loss (around 2 o 3 kW for 7°C). The development in progress of the ability of the boilers to be installed and operated automatically in a high range of pressure of combustion products will contribute also to an improved efficiency of the gas condensing boiler.

The development of more efficient and cheaper thermal solar heaters, coupled with gas condensing boilers, is also another way to respect new requirements and keep competitiveness. But geographical or architectural constraints for example do not allow these solutions as the most relevant in all cases. Thus, electrical heat pumps for heating or only for domestic hot water producing have a real place on the market, with different kind of coupling with condensing boilers: “Mono-bloc” or “bi-bloc” hybrid boilers, or simple association between domestic hot water heat pump and boilers, with an optimized control, represent relevant combinations to respect the new requirements (50 kWh/m² on primary energy, and renewable energy requirement) in the short term. In the longer term, GDF SUEZ is also working with manufacturers to develop gas sorption heat pumps, which represent the boiler of tomorrow combining natural gas and renewable energy.

The high level of requirements of this new french thermal regulation induced new improvements and innovative solutions achieving a high energy efficiency, encouraged and promoted by GDF SUEZ; but also more choices and more complexity for the french customers and installers. A comparative approach in technical, economical and regulation terms is essential to choose the most adapted solutions for low energy residential buildings.