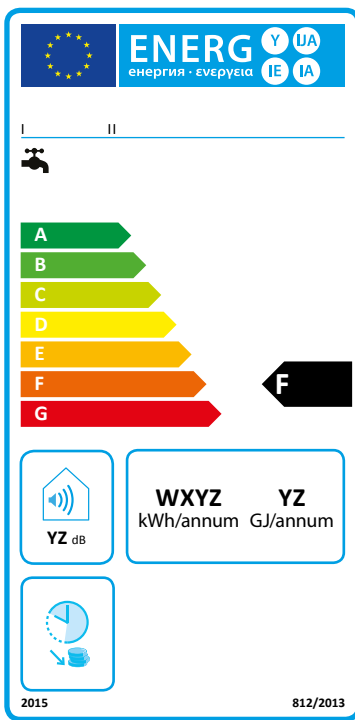


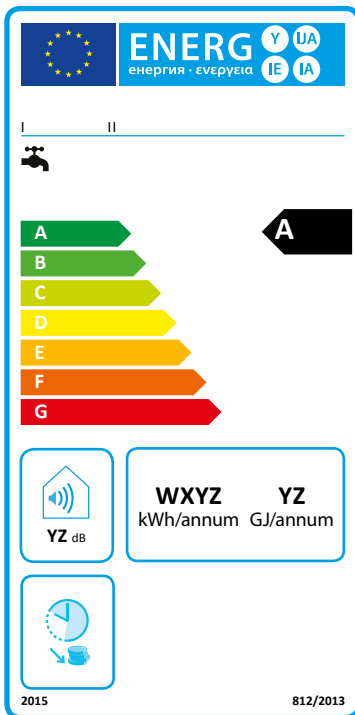
HOT WATER PRODUCTION

A NEW TECHNOLOGY FOR THE DOMESTIC HOT WATER : HEAT PUMP



DHW electric boiler

- Widely spread in France, 13 Million units, with an annual flow of more than 1 Million
- Reliable technology, but with low performance – direct heating and large storage volume
- Used to consume low-price electricity during the night, 20 TWh/y
- Big and mature market as it is installed in both individual houses and multi-family blocks
- Available in many volumes – from 50 L up to 300 L for one-family house and up to 2000 L in buildings
- Today, not accepted in new buildings and sells decrease
- Energy label place most of these boilers on F



Heat Pump for Domestic Hot Water

- Renewable DHW system with high efficiency, $COP \geq 2$
- Various energy sources : outside air, ambient air (technical room), ventilation, solar, ground
- Most of the DHW HP have an electric back-up heaters for temperatures below $-5^{\circ}C$
- Systems mainly for single-family house with limited heating capacity (max 5 kW th)
- Market sell increases with 30% in 2013 reaching 46 000 units, same trend for this year
- 60% take the place of an electric boiler and 40% goes into the new buildings
- Very good energy label A and well valued by the French building legislation (RT2012)
- Today in France, only two products dedicated to multi-family buildings : Heliopac with unglazed solar collector, and recently Eerie Technology (with recovery of gray water energy losses)

