

We create living spaces for generations to come

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Viessmann Vitocalor



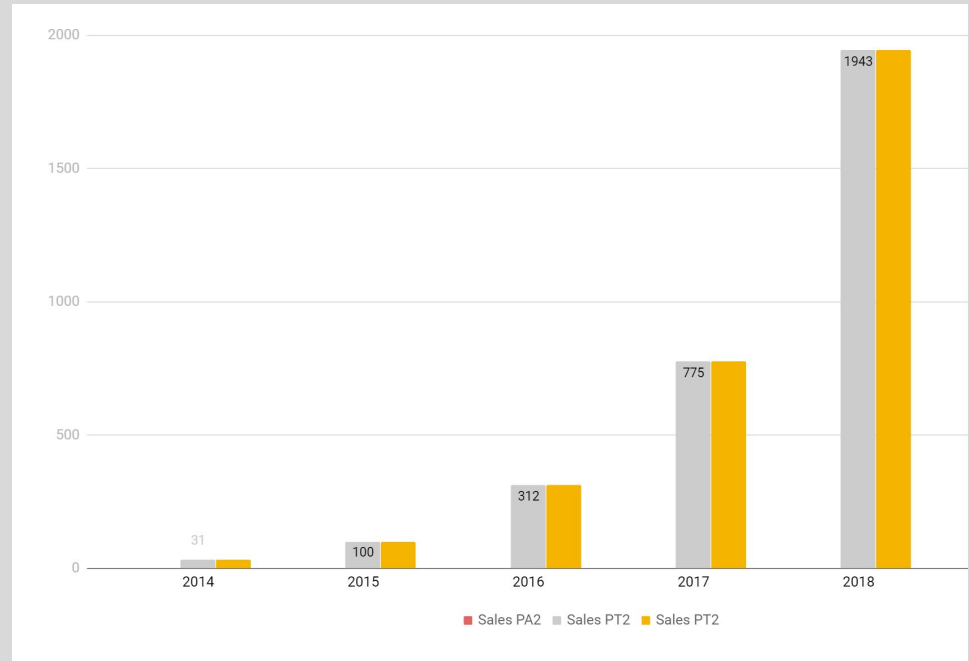
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Pathway to a competitive European Fuel Cell micro-CHP Market

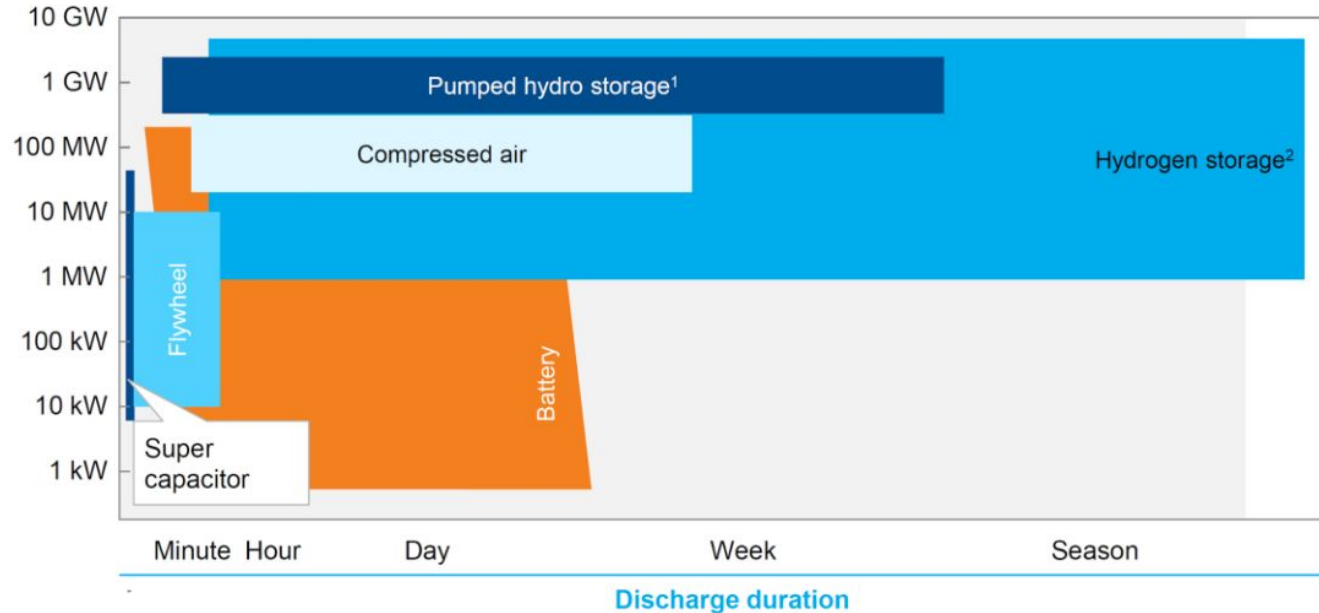
Fuel cell heating appliance : achieving the climate goals

- First launch in 2014 (for PACE in Dec. 2016)
- For single and small multi-family homes
- 95 % system efficiency
- 30% primary energy savings
(vs conventional heat & power generation)
- No pollutant emissions (NO_x, SO_x, PM)
- 75% sold in refurbishment
- Generates ~4,500 kWh/y = electricity demand of a family
- Over 4.500 units sold, incl. 710 under PACE (06.2019)
- Sold in DE, BE, FR, AT and the UK
- Technology readiness proven
- Strong potential for grid balancing



Sales result Vitovalor Germany

Technology overview in power and time



1 Limited capacity (<1% of energy demand)
 2 As hydrogen or SNG

Figure 2 - FCH JU, Hydrogen Roadmap for Europe (2019)

Graph: storage capacity of gas vs electricity (source: Hydrogen Europe [vision paper](#) on role of gas)

Conclusions & Recommendations

