

PV Inverter Trends



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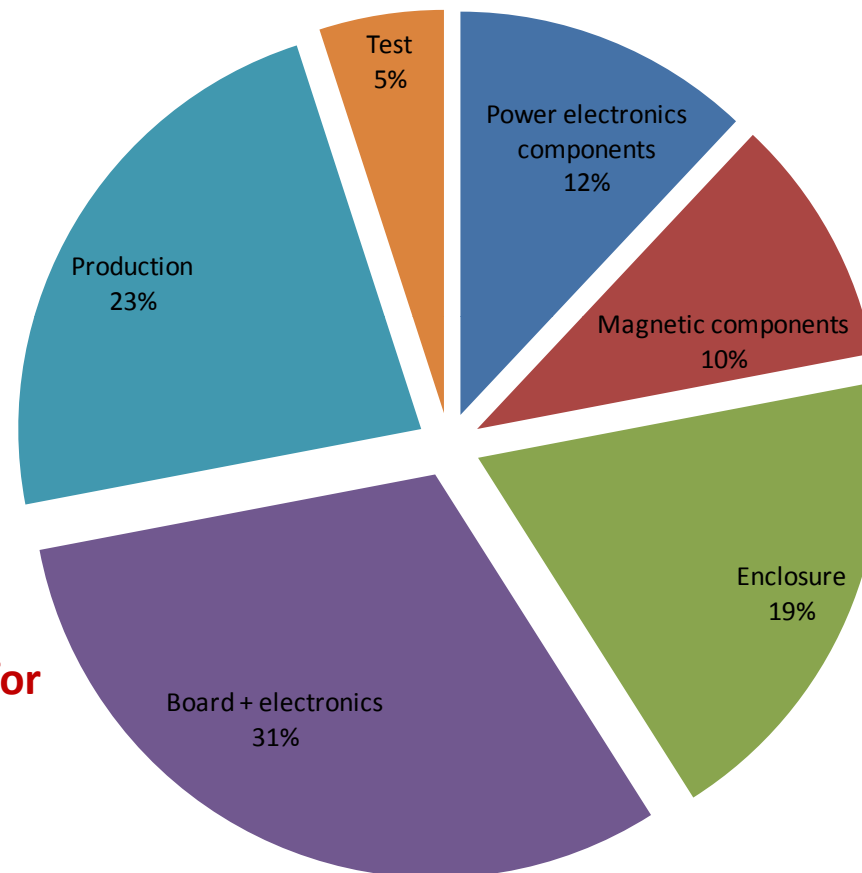
PV inverter: the system

Cost

Cost breakdown of a single string inverter for residential application

- We consider a 3 – 5kW transformerless inverter, which **ASP is typically: 1000€.**

2009 cost breakdown of a single string inverter for residential application



Breakdown is also available for solar farms central inverters

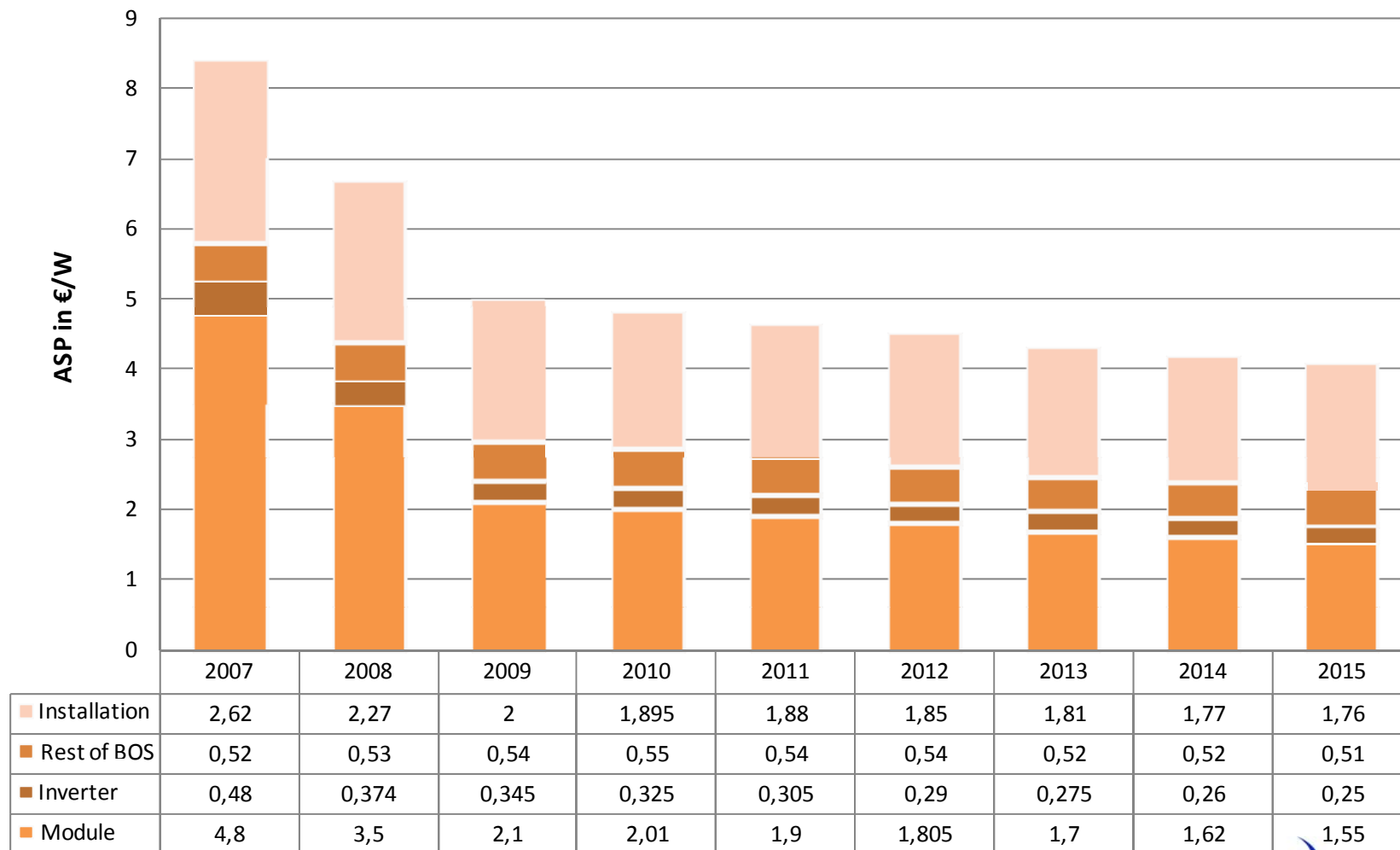
PV inverter: the environment

Topologies

Residential PV plant – Cost breakdown

Breakdown is also available for solar farms

ASP breakdown evolution in residential installations



PV inverter: the system

Integration of functionalities

Monitoring roadmap

Source: Yamaichi Electronics



Cell-level monitoring

Source: National (SolarMagic)



Panel-level monitoring

Source: SMA



String-level monitoring

Source: Sensicast



Inverter-level monitoring



Source: SMA

Precision
of
monitoring

Roadmap for integration of electrical protection
is also available

2006

2007

2008

2009

2010

2011

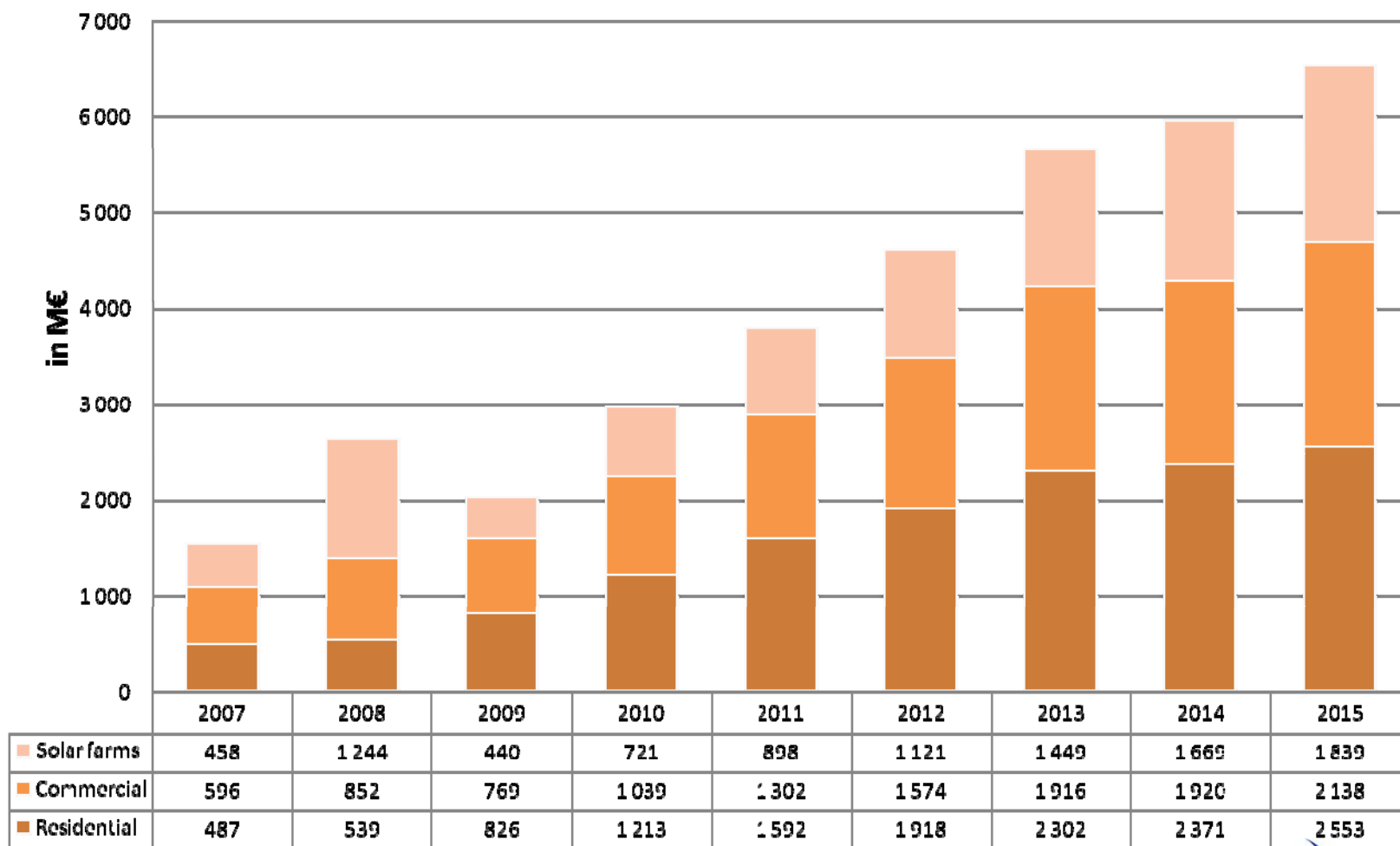
2012

PV inverter: the market

Worldwide market per market segment

- The total market in 2008 was of about €2.5 billion
- Mainly due to Spain limitation, the 2009 PV inverter market will almost reach €2.0 billion

Worldwide PV inverter market per market segment



PV inverter environment

Impact of micro-inverters solution

- As well as classical PV inverter which tend to centralize and increase **the efficiency of the whole installation** (and not of the PV inverter itself), micro-inverters are improving efficiency of the installation: however the implied decentralization goes to the contrary of the general PV inverter industry trend.

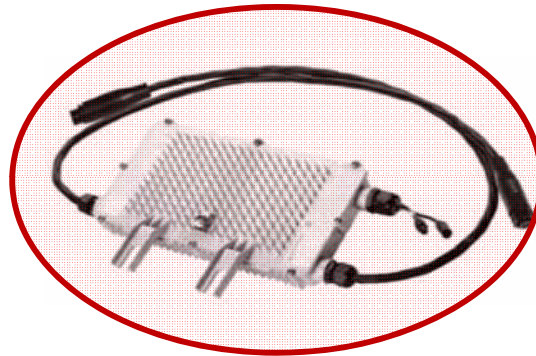
Micro-inverter status is changing the global trend of PV inverter business

Efficiency of the global plant

Efficiency of the inverter

Decentralization of the plant

Centralization of the plant



General trend of PV inverter business

