Home Energy Management System Solutions for the European Grid

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Panel Discussion: End User Energy Management System in the Near Future
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Definition of „Home Energy Management“

Proactive, organized and systematic coordination of procurement, conversion, distribution and use of energy within a privately used residential area with the goal of providing services and meeting requirements of the inhabitants, taking into account environmental, economic and social objectives.

1 Combined Definition from VDI-Guideline 4602 and German standardization roadmap Smart Home & Building
Why bother with Home Energy Management?

Estimated home automation market values by 2020¹:

~ 48 – 115 Billion US-$ (Global)
~ 8 – 22 Billion US-$ (USA)
~ 14 Billion US-$ (EU)

Commonly known barriers:

Technical: Lack of…

• Smart meter infrastructure
• Home automation controllers
• Smart home appliances
• Interoperability with smart grid actors
• Manufacturer Independence
• Plug-and-Play Solutions
• According Standards

Non-Technical:

• Customer privacy threatened
• Customer does not understand or is not interested
• Customer fears loss-of-control
• Lack of trust in energy suppliers and governments
• Unfavorable regulatory and political conditions

HEMS Components: a generic view
# HEMS Comparison – Selected Products and Middlewares

<table>
<thead>
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<th>Aim</th>
<th>Product Class</th>
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<th>Standard Conformity</th>
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<th>App Runtime Env.</th>
<th>DIY support</th>
<th>Online community</th>
<th>Blog</th>
<th>Gamification</th>
<th>Smart Grid Interface</th>
<th>Metering Interface</th>
<th>Online Software store</th>
<th>Developer support</th>
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1: Only for selected partners – 2: Online software store not yet established
HEMS Comparison – Summary of Findings

- > 30 market ready solutions with different aim and focus
- Often featuring:
  - do-it-yourself
  - plug-n-play
  - radio based sensors / actors

- Initial investment cost 100 - 2000 €
- Subscription fees are rather unusual

- “Social Energy Networks” emerging, but potential of Gamification not yet fully used
- App-based extendability, Online software stores, Developer support and open-source licensing are rare

- Support of complex intelligent appliances still missing
- Approx. half of the solutions rely on online operation, but holistic privacy / data security standards are still missing
HEMS based on open source platform „OGEMA 2.0“ (currently used in R&D projects EEPos, SEMIAH, …)

www.ogema.org