

# Micro-CHP: Global Industry Status and Commercial Prospects

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# Introducing Delta

- Specialist decentralised energy research and consulting company
- Research products include:
  - Micro-CHP Service
  - Mid-Scale Decentralised Energy Technologies and Markets

# Agenda

## Micro-CHP today

Micro-CHP in 2007

Micro-CHP by 2010

# Micro-CHP Products on the Market in 2005



ECOWILL 1 kW  
ICE



SenerTec 5 kW  
ICE



Ecopower 5 kW  
ICE



Yanmar 5 kW ICE

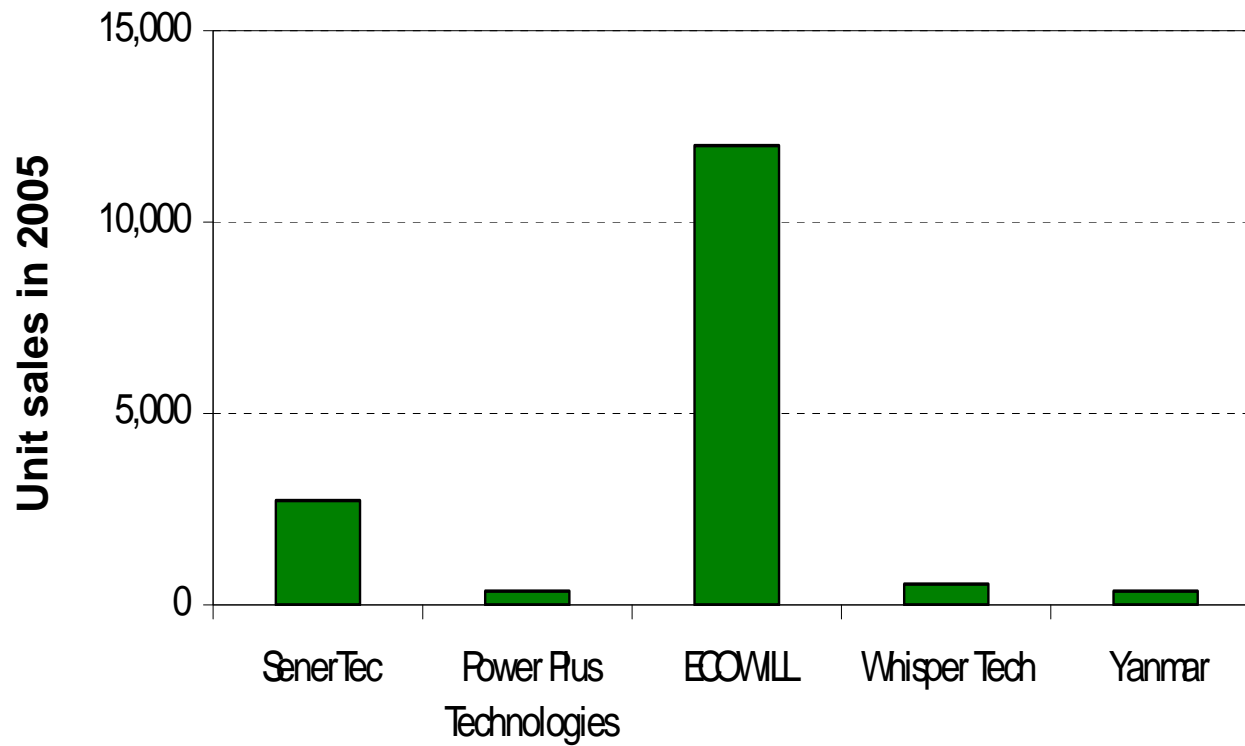


Whisper Tech 1kW SE

**Sources:** Osaka Gas,  
Sener, Tec, Vaillant,  
Whisper Tech, Yanmar

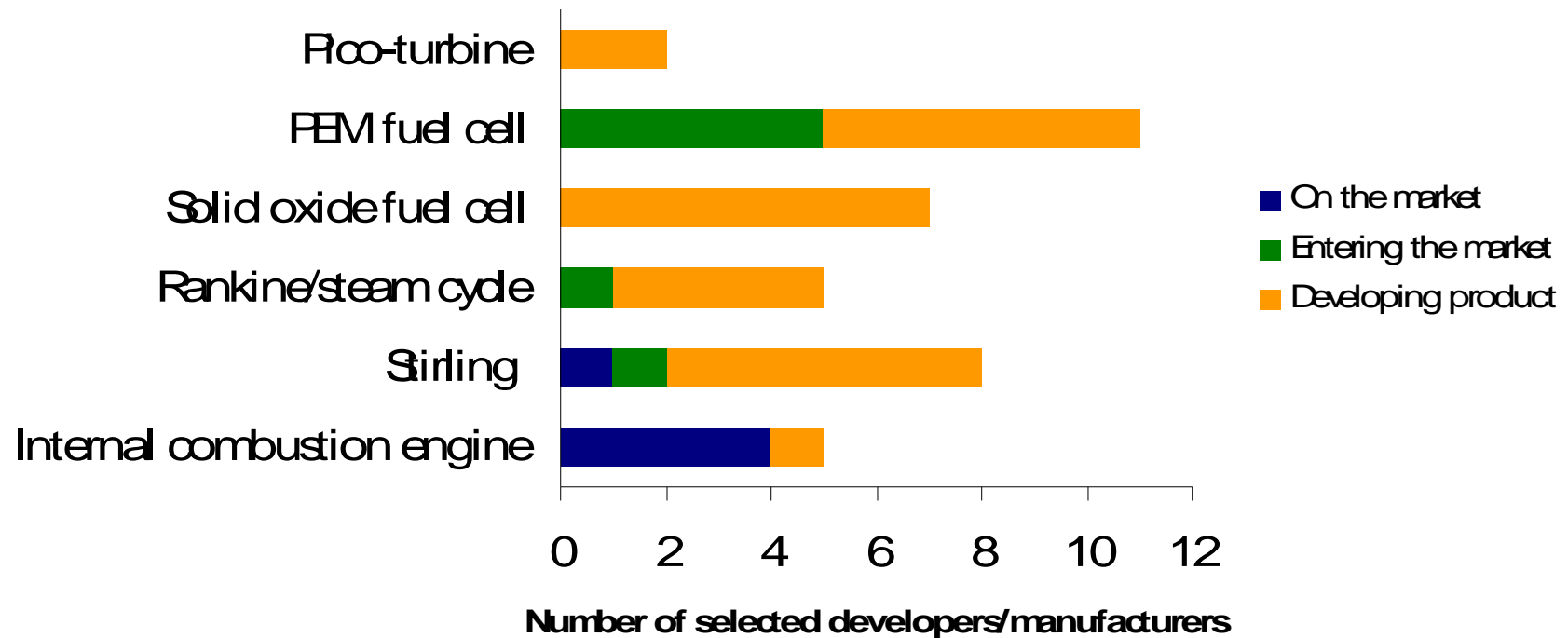
**Note:** Aisin Seiki, Sanyo,  
Yanmar and SOLO have  
products between 5 kW  
and 10 kW

# Micro-CHP Sales in 2005

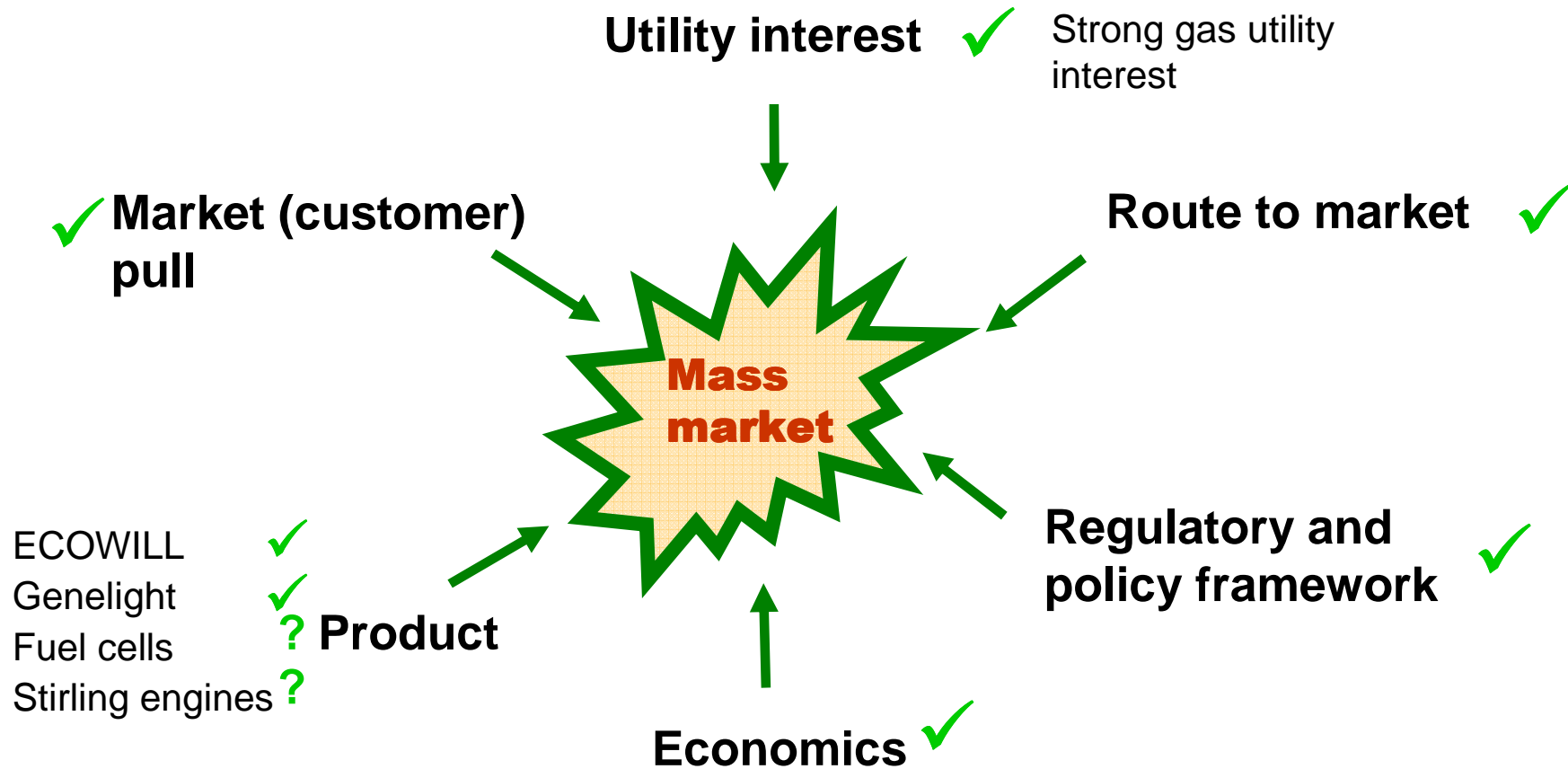


Note: Micro-CHP defined as 5-kWe and below

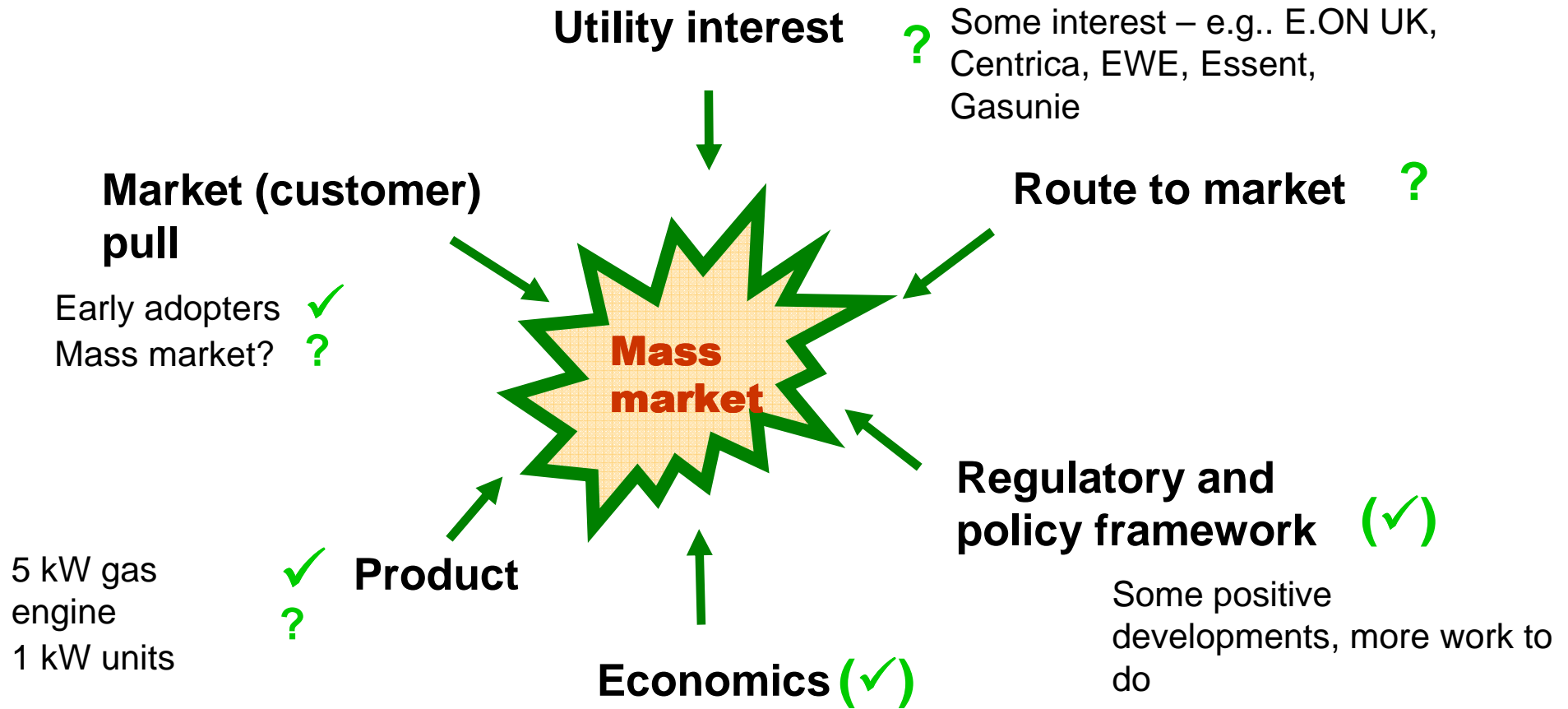
# Selected Micro-CHP Product Developers and Manufacturers



# Japanese Market

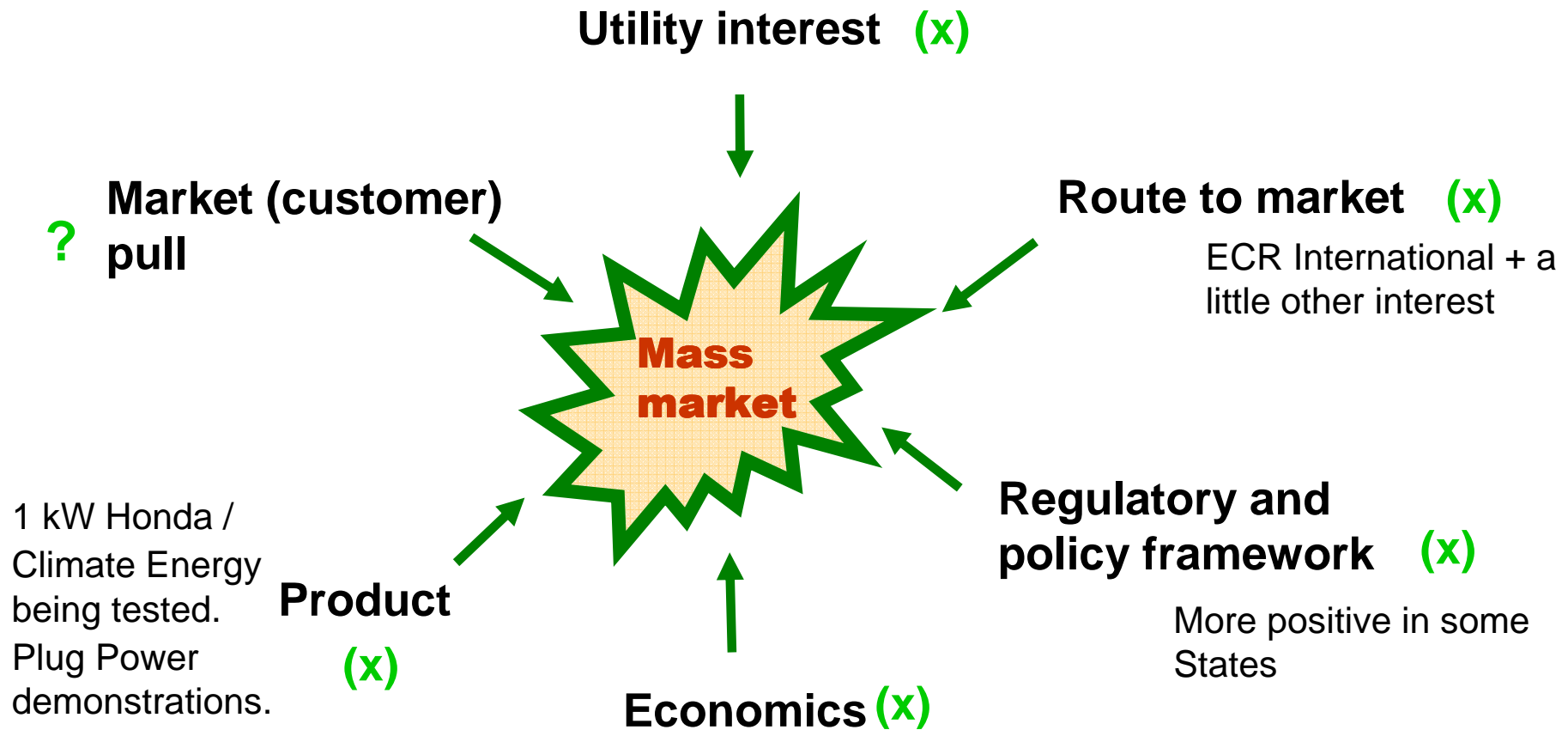


# European Market





# North American Market



# Agenda

Micro-CHP today

**Micro-CHP in 2007**

Micro-CHP by 2010

# Gradual Growth in 2007

## North America

- Honda/Climate Energy unit on the market

## Europe

- Gradually increasing sales of 5 kW units
- WhisperGen sales increasing?
- Developing policy/regulatory framework
- A few 1 to 3 kW products reaching markets

## Japan

- More fuel cell demonstrations
- Increasing ECOWILL and Genelight sales

# Agenda

Micro-CHP today

Micro-CHP in 2007

**Micro-CHP by 2010**

# Japan by 2010

- Established micro-CHP markets
  - ECOWILL
  - Genelight
- More products
  - Fuel cells (PEM and solid oxide) – several thousand units sold?
  - Stirling engines introduced?
- Strong gas utility marketing
  - Battle with electric utility promotion of all-electric homes

# Europe by 2010

- Steady growth for 5 kW products
  - But not mass markets for these products
- 1 to 3 kW products introduced
  - Internal combustion engines (Honda + others?)
  - Stirling engines
  - Rankine cycle engines
  - Fuel cells?
  - Pico-turbine?
- **Mass market development critically dependent on:**
  - **Utility involvement**
  - **Boiler manufacturer actions**

# North America by 2010

- Gradual growth for Honda/Climate Energy unit
- Possible (limited) introduction/demonstration of
  - Stirling engines
  - Rankine cycle engines
  - Fuel cells

# What to Watch in the Next Three Years

- Fuel cells in Japan
- Utility and boiler manufacturer actions in Europe
- Policy and regulation in Europe
- New product introduction (Stirling engines, Rankine cycles)
- Changes in utility / HVAC manufacturer / policy in North America





**Thank you for your attention**

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