

# Siemens Energy

**SIEMENS**



**10<sup>th</sup> Annual SECA Workshop  
Pittsburgh, PA  
July 15, 2009**




**Joseph Pierre  
Siemens Energy  
Fossil Power Generation  
Stationary Fuel Cells**



Copyright © Siemens Energy Inc. 2009. All Rights Reserved

## Answers provided by 15 Divisions in three Sectors

**SIEMENS**

Sectors	Divisions	Former Groups
<b>Industry</b> 	<ul style="list-style-type: none"> <li>Industry Automation</li> <li>Drive Technologies</li> <li>Building Technologies</li> <li>Osram</li> <li>Industry Solutions</li> <li>Mobility</li> </ul>	<ul style="list-style-type: none"> <li>Automation and Drives (A&amp;D)</li> <li>Industrial Solutions and Services (I&amp;S)</li> <li>Siemens Building Technologies (SBT)</li> <li>Osram</li> <li>Transportation Systems (TS)</li> </ul>
<b>Energy</b> 	<ul style="list-style-type: none"> <li>Oil &amp; Gas</li> <li>Fossil Power Generation</li> <li>Renewable Energy</li> <li>Service Rotating Equipment</li> <li>Power Transmission</li> <li>Power Distribution</li> </ul>	<ul style="list-style-type: none"> <li>Power Generation (PG)</li> <li>Power Transmission and Distribution (PTD)</li> <li>Industrial Solutions and Services (I&amp;S OGM)</li> </ul>
<b>Healthcare</b> 	<ul style="list-style-type: none"> <li>Imaging &amp; IT</li> <li>Workflow &amp; Solutions</li> <li>Diagnostics</li> </ul>	<ul style="list-style-type: none"> <li>Medical Solutions (Med)</li> </ul>

Copyright © Siemens Energy Inc. 2009. All Rights Reserved

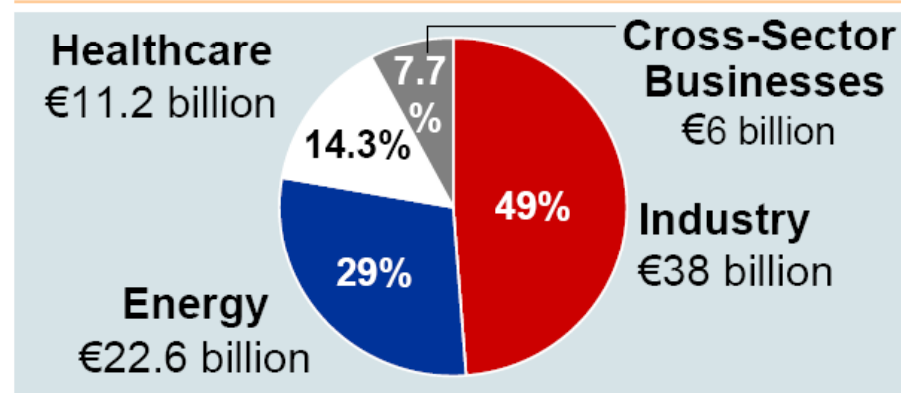


## Energy is an essential part of our daily lives

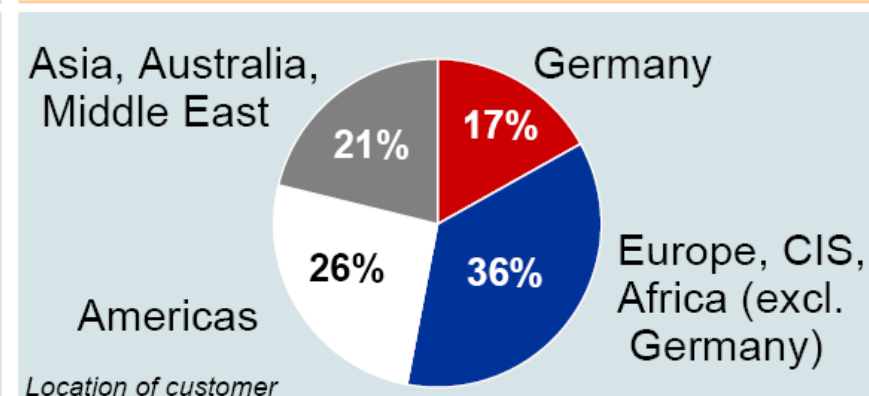


## Siemens is committed to profit and growth

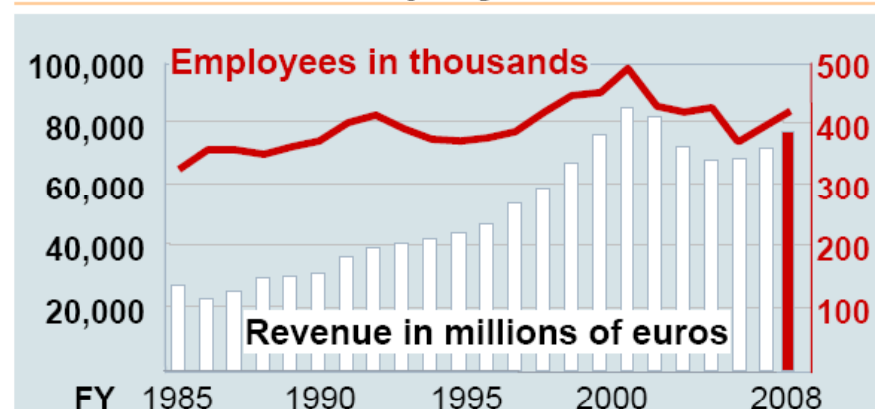
### Active in three Sectors



### Revenue by region



### Revenue and employees



### Key figures

Continuing operations (in millions of euros)	FY2008	FY2007
<b>Revenue</b>	77,327	72,448
<b>New orders</b>	93,495	83,916
<b>Income</b>	1,859	3,909
<b>Free cash flow</b>	5,739	6,755
<b>Employees</b>	<b>427,000</b>	<b>398,000</b>



## Siemens around the world: Snapshot



### U.S. Fast Facts Fiscal Year 2008:

Revenues	\$22.4 billion
Orders	\$26.3 billion
Employees	69,000
R&D Employees	7,760
Global HQs	9
Patents	13,200

Slide 5

July 2009



10<sup>th</sup> Annual SECA Workshop



### Worldwide Fast Facts Fiscal Year 2008:

Revenues	\$116.6 billion
Orders	\$140.9 billion
Employees	428,000
R&D Employees	32,300
Countries of Operation	190
Patents	55,000

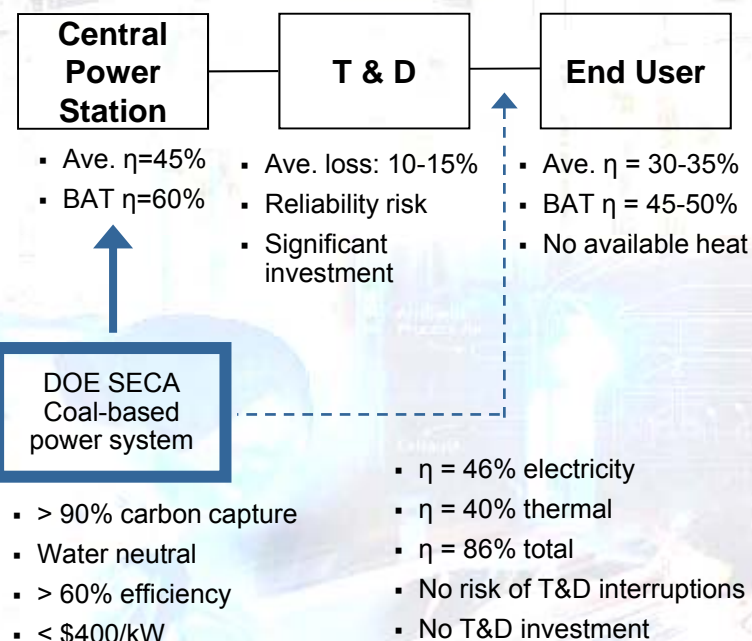
E F NT SFC

## Solid oxide fuel cells offer great value proposition ...

### Trends / Drivers / Benefits

- Green technology
  - Low emissions
  - CO<sub>2</sub> capture potential
  - Renewable fuel
- High quality heat & power
- High efficiency
- High reliability/availability
- Low O&M cost, minimal moving parts
- Low degradation
- No water consumption (except startup)
- Quiet (65 DBA @ 10 m)
- Recyclable at the end of useful life
- Siting flexibility, easily permitted
- Enhances energy independence and security

### Value Proposition



**SOFC is the best solution for cost effective, secure & robust electricity supply**

... but achieving cost targets are their hurdle to commercialization

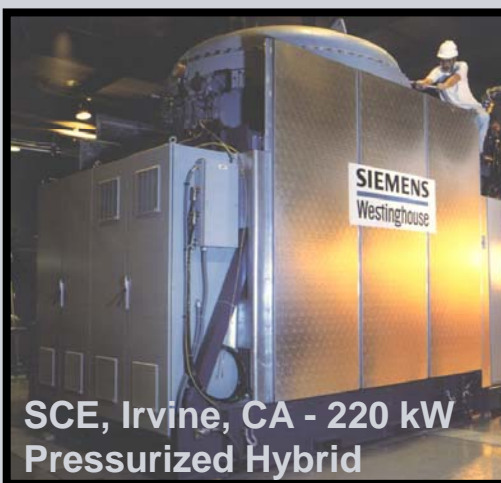
## Welcome to SFC Headquarters



**George Westinghouse Science and Technology Park**



# SFC Technology has demonstrated Best-in-Class performance

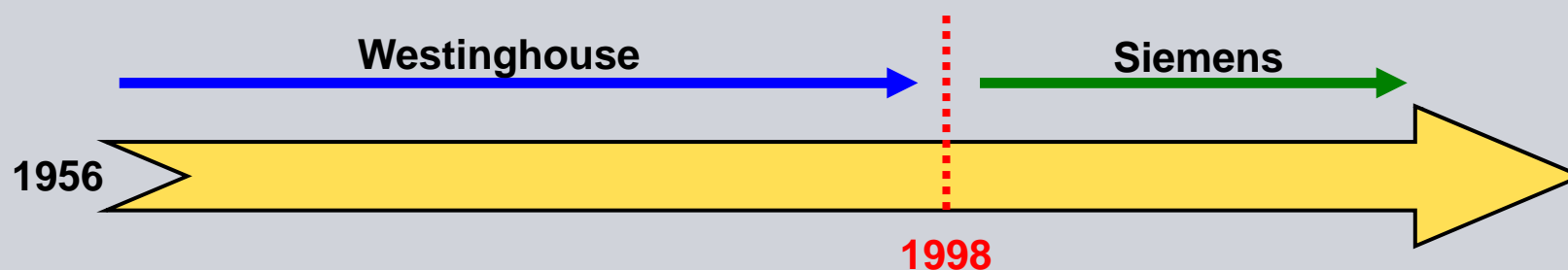


Developed over 25 fully integrated SOFC power generating systems, including the world's first pressurized hybrid demonstration unit



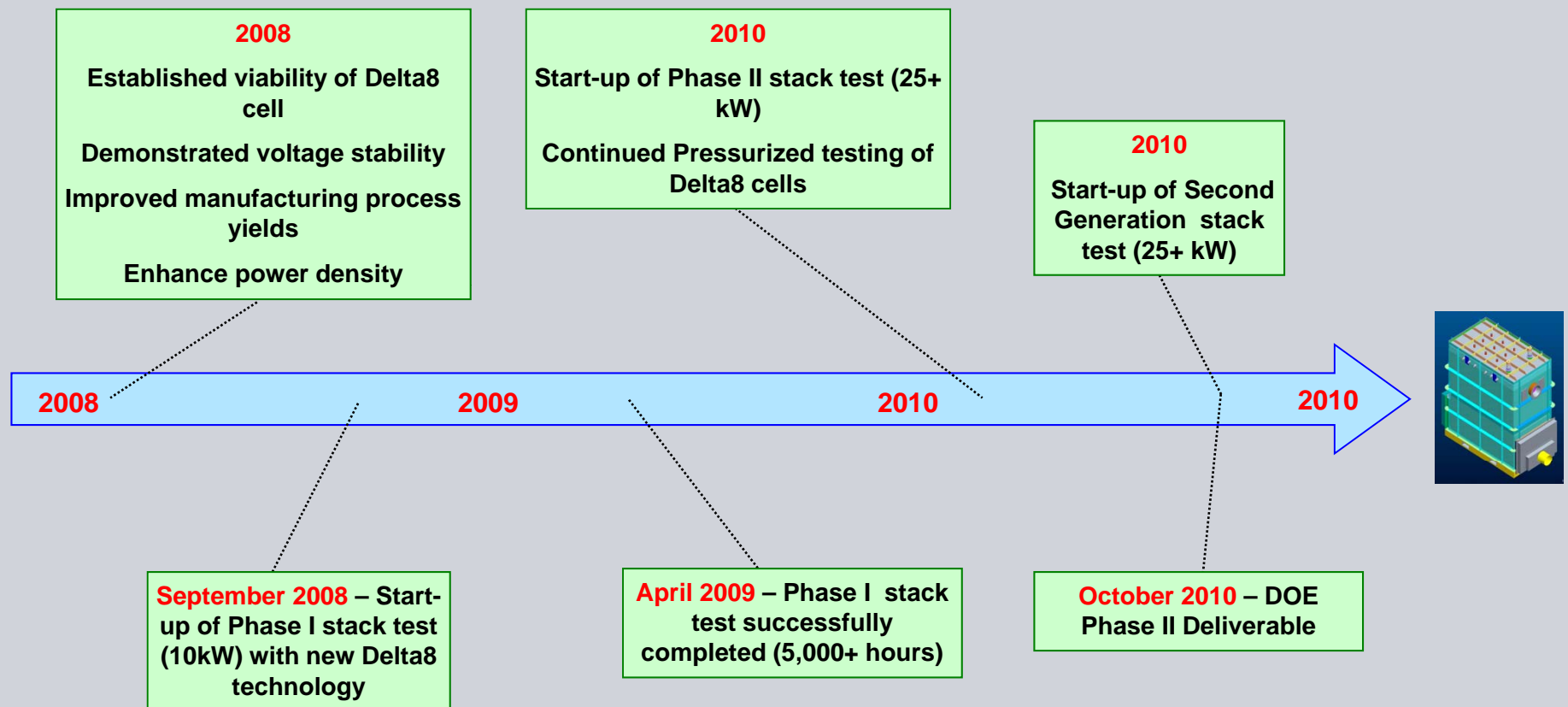
## What are our origins?

- Siemens Fuel Cell (SFC) has been the leading developer of Solid Oxide Fuel Cell (SOFC) technology since the 1950s



- Westinghouse and Siemens have provided a rich scientific / R&D ancestry
- Commitment to SOFC development has led to many scientific milestones
- Key personnel and development team intact for 20+ years
- SFC has operated within Siemens largely as a standalone unit
- U.S. Department of Energy (DOE) has been a partner in developing the technology for 20+ years**

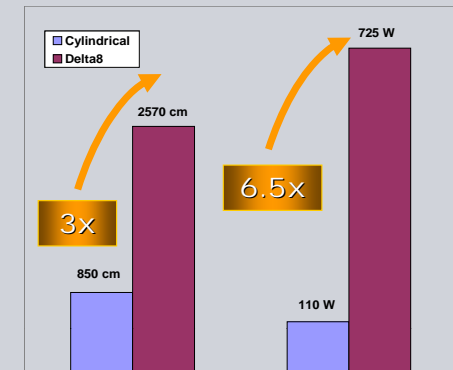
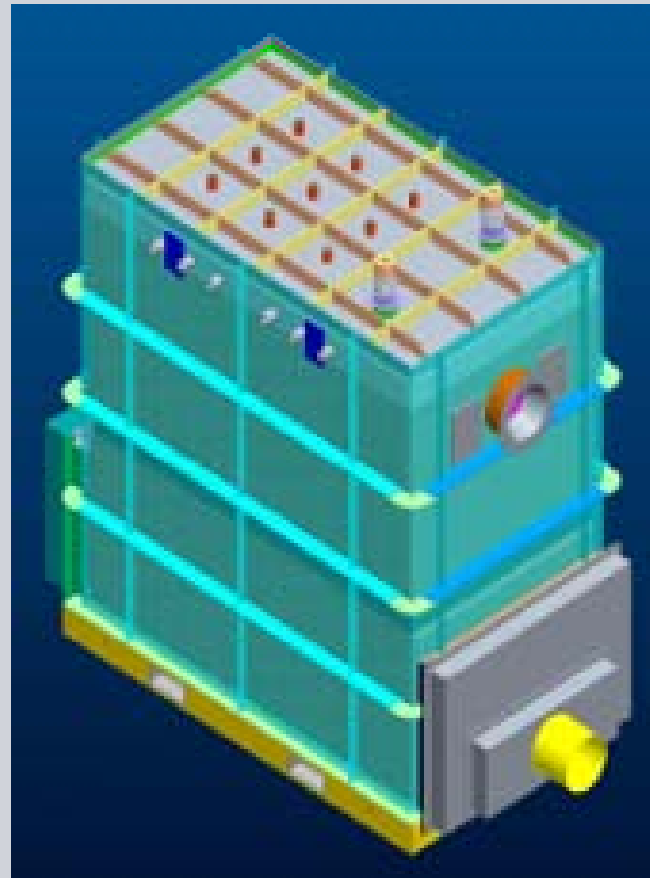
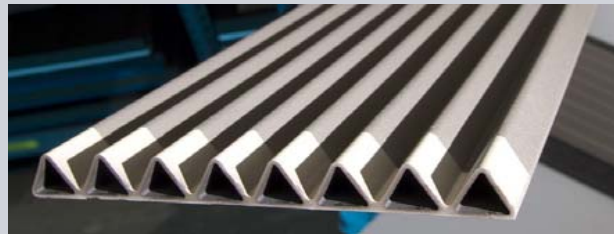
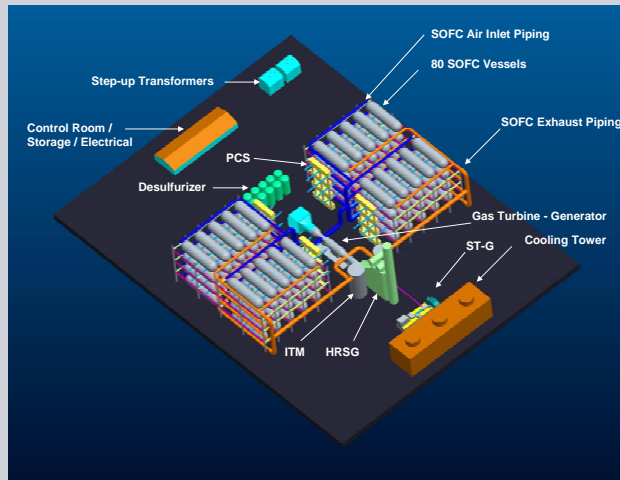
## Where are we heading?



The SFC technology roadmap is closely aligned with the DOE SECA Coal-based Systems Program

# SFC SECA Coal-based program highlights and accomplishments

**SIEMENS**





## **Acknowledgements**

- **DOE-NETL. Contact No.DE-FC26-05NT42613**
- **Wayne Surdoval, Travis Shultz, Heather Quedenfeld - NETL**
- **Siemens Stationary Fuel Cells Team**