

Manufacturing Fuel Cell Manhattan Project

Presentation to DOE Fuel Cell Manufacturing Workshop 2011

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MFCMP Objectives Completed

Final Report due out Nov 2010

B2PCOE
Montana Tech
SME's



Industry
Academia
Government
FC Consortia

- √ Identify manufacturing cost drivers to achieve affordability
- √ Identify best practices in fuel cell manufacturing technology
- √ Identify manufacturing technology gaps
- √ Identify FC projects to address these gaps



Fuel Cell Project Scope

Power ranges

- **<0.5 kW (man portable / man wearable)**
- **0.5 kW < Power range < 10 kW (mobile power)**

Fuels: Hydrogen and reformed hydrocarbons

- **Packaged Fuels < 0.5 kW**
 - **Near term solution**
 - **Move through the supply chain like batteries**
 - **Examples: methanol, ethanol, propane, butane, chemical hydrides, hydrogen**
- **Logistics Fuels > 0.5 kW (long term solution)**
 - **Long Term Solution**
 - **Examples: JP-8, diesel**



Target Applications

Soldier Power

Unmanned UAV

Emergency Power

Tactical Vehicle APUs

Material Handling

Aircraft APUs

Navy Stationary and
Shipboard Power: > 10 kW

MFCMP Study Scope:
1 W - 10 kW

Shipboard APUs

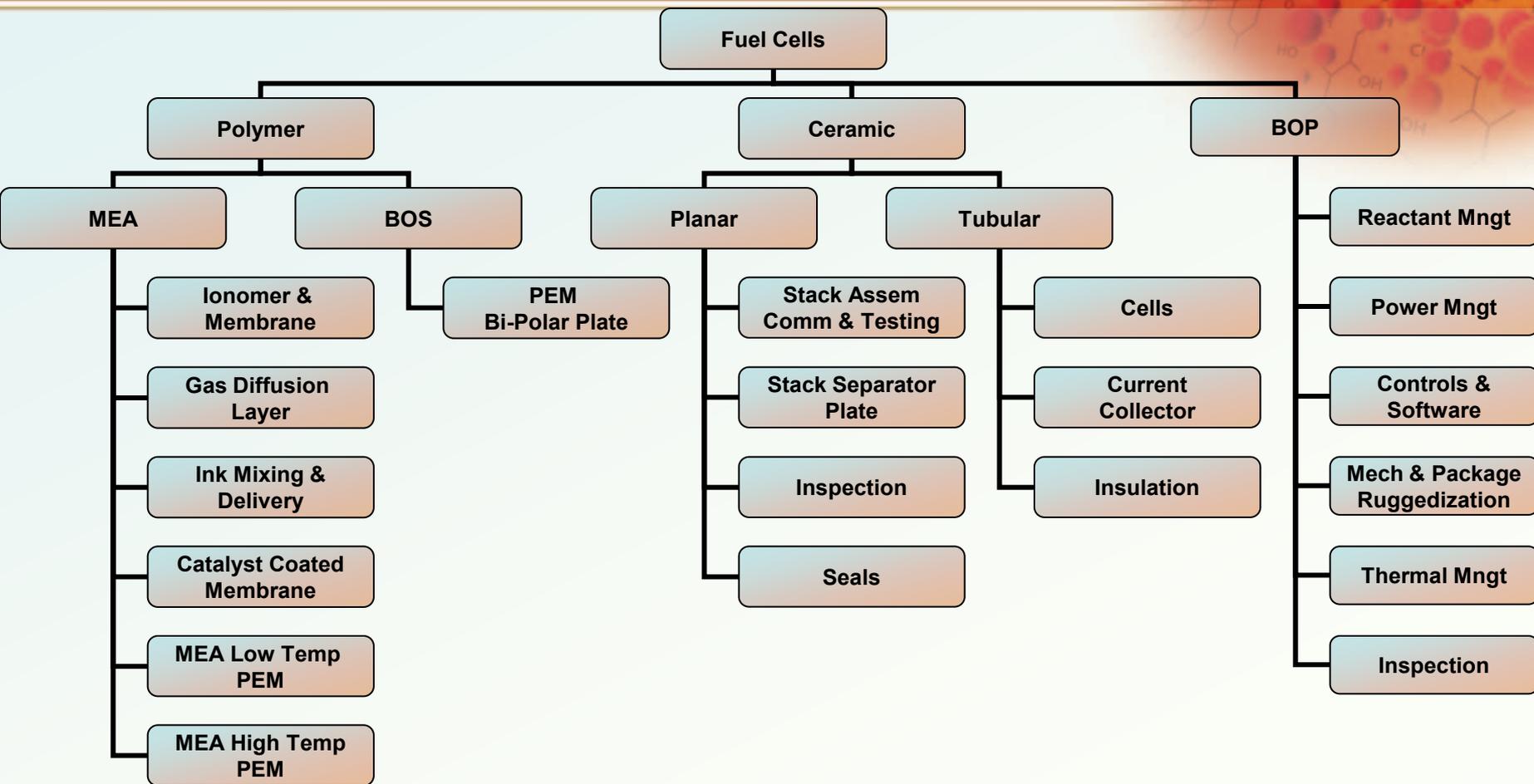
Distributed Stationary Power

System Power in Watts

1 10 100 1000 10000 100000 1000000



Manufacturing Fuel Cell Project Taxonomy



Manufacturing Technology Gap Categories

Manufacturing areas where projects have been identified to resolve gaps

- Production Automation
- Production Material
- QC during Manufacturing
- QC for Product
- BOP Hardware
- BOP Performance
- Materials
- Design Performance
- Design Controls

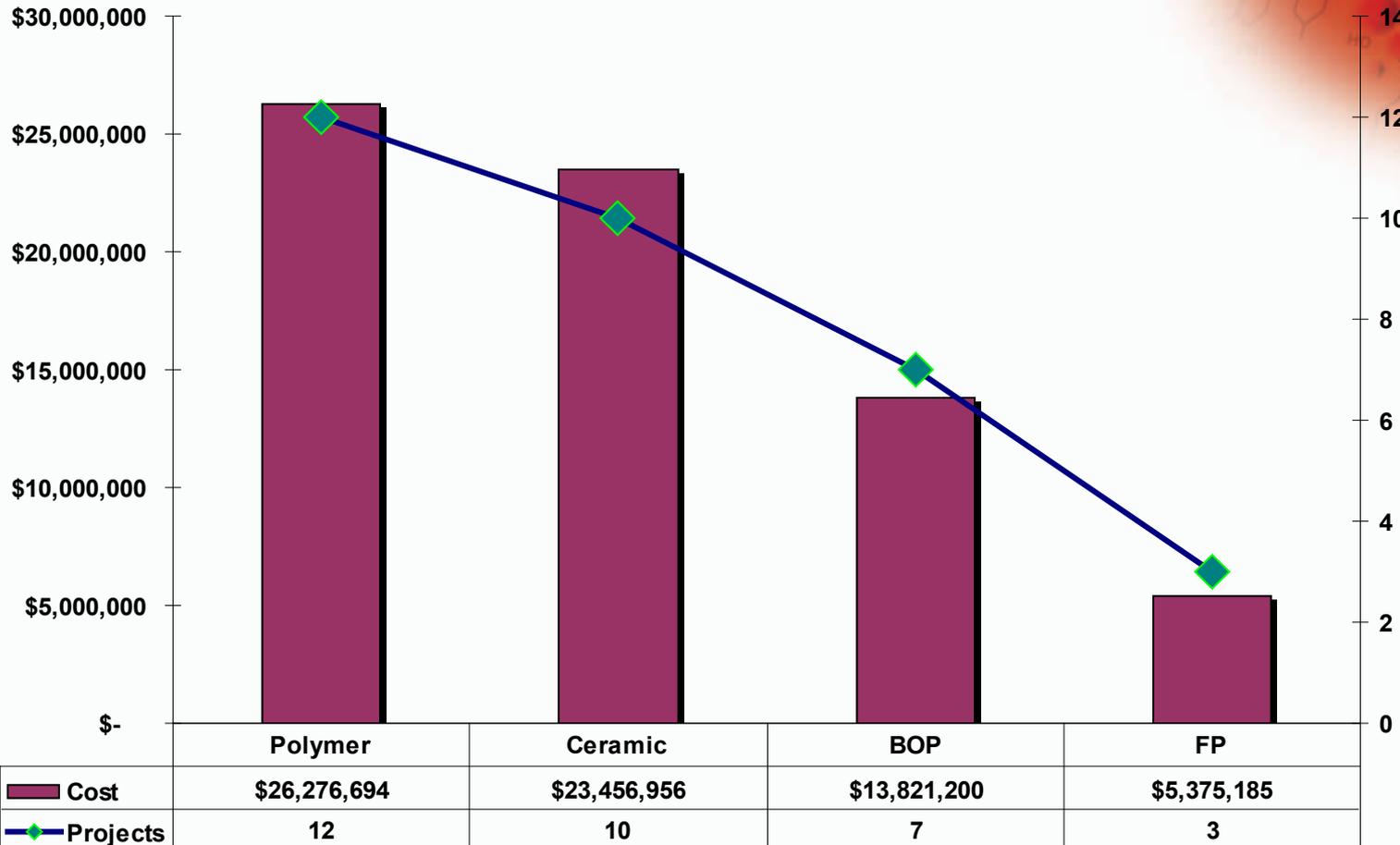
Total of 70 Gaps Identified



About 32 Projects
recommended to Address
Cost Savings



FC Area vs Costs by Projects



Fuel Cell Manufacturing Working Group

The Way Ahead

- **Continue collaboration and 'esprit de corps' developed in the MFCMP**
- **Forum for labs / academia to report on new developments related to manufacturing**
- **Capture manufacturing needs and issues for DoD and DOE consumption and action**
- **Group to be informed on DoD application requirements and developments by DoD fuel cell TWG**
- **Group possibly hosted by FCHEA or NDIA Manufacturing Division**



Q&A

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