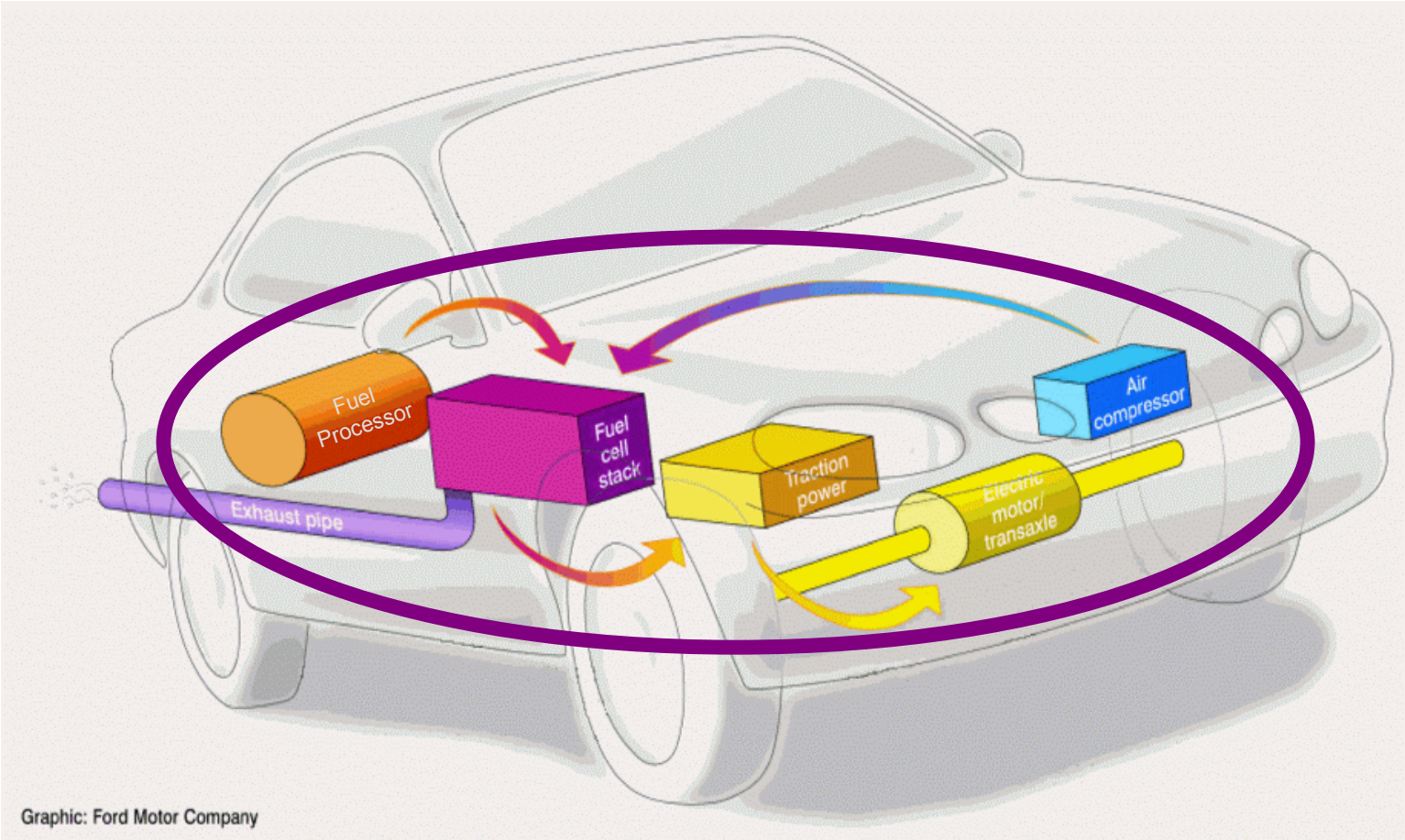
# Fuel Cell Power Systems Analysis

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# Barriers

## Integrated Power Systems

- Balance-of-plant (compressors, humidifiers, heat exchangers, sensors, controls)
- Cost reduction
- Integrated modeling activities

# Targets and Status

50 kWe (net) Integrated Fuel Cell Power System

| Characteristics | Units | 2003 status | 2005 | 2010 |
|---|---|---|---|---|
| Operating on Tier 2 gasoline containing 30 ppm sulfur, average | | | | |
| Power density | W/L | 140 | 250 | 325 |
| Cost | $/kW | 325 | 125 | 45 |
| Durability | Hours | 1000 | 2000 | 5000 |
| Operating on direct hydrogen | | | | |
| Power density | W/L | 400 | 500 | 650 |
| Cost | $/kW | 275 | 125 | 45 |
| Durability | Hours | 1000 | 2000 | 5000 |

# Projects
## Fuel Cell Power Systems Analysis

| | |
|---|---|
| • Fuel Cell Systems Analysis | ANL |
| • Fuel Cell Vehicle Systems Analysis | NREL |
| • Cost Analyses of Fuel Cell Stacks/ Systems | TIAX |
| • DFMA Cost Estimates of Fuel Cell/ Reformer Systems at Low, Medium, & High Production Rates | Directed Technologies, Inc. |
| • Assessment of Fuel Cell Auxiliary Power Systems for On Road Transportation Applications | TIAX |
| • Precious Metal Availability & Cost Analysis for PEMFC Commercialization | TIAX |

# Posters

| | |
|---|---|
| • Non-Destructive Study of $H_2O$ Transport Mechanism Inside Operating PEMFCs Using Neutron Imaging Techniques | NIST |
| • Advanced Underground Vehicle Power & Control Fuel Cell Mine Locomotive | Vehicle Projects LLC |

# Discussion Points

- Program focus on component development
- Continued importance of modeling
- Benchmarking will be used to measure progress
- Air management will continue as a major focus area