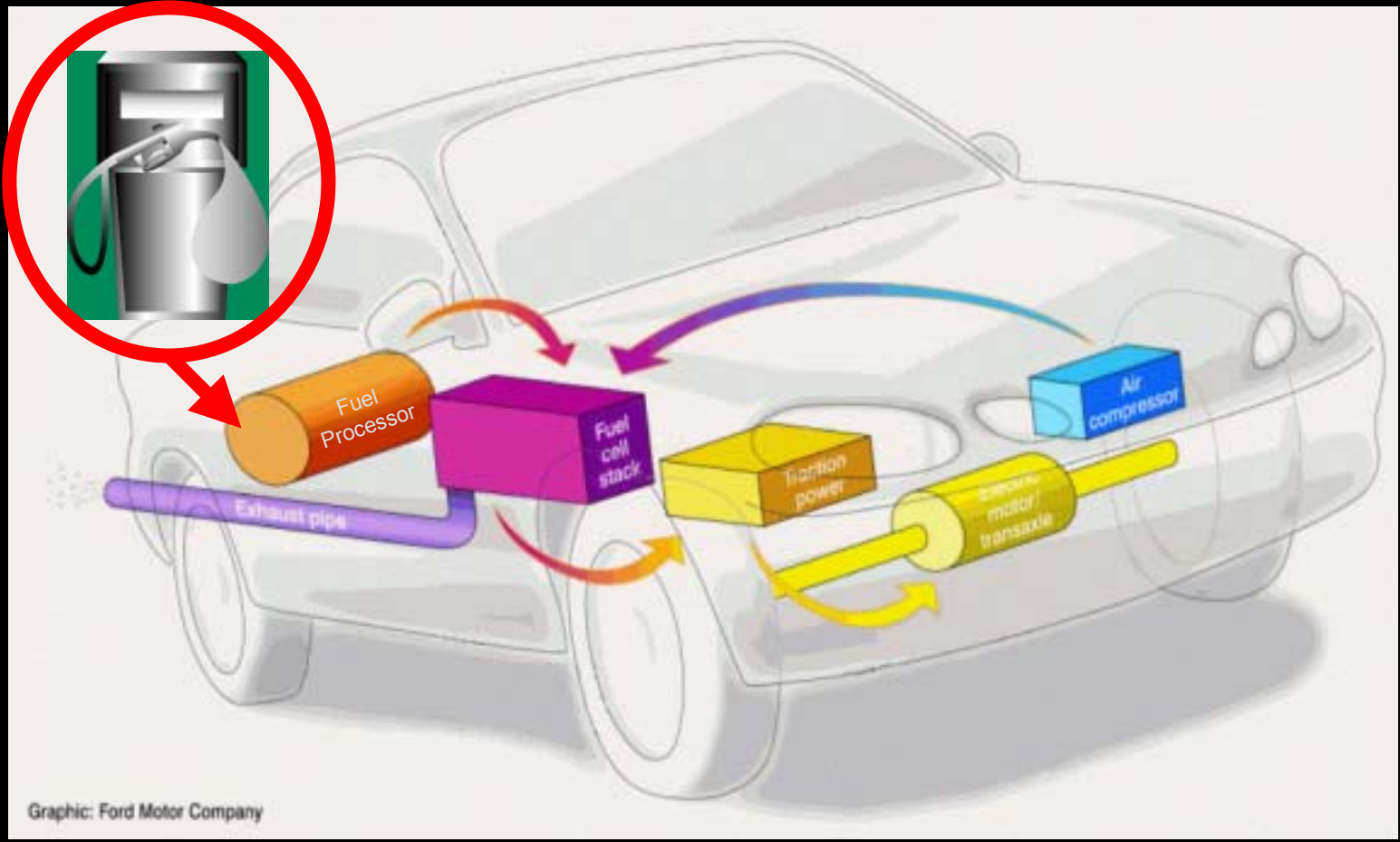
Fuels Effects

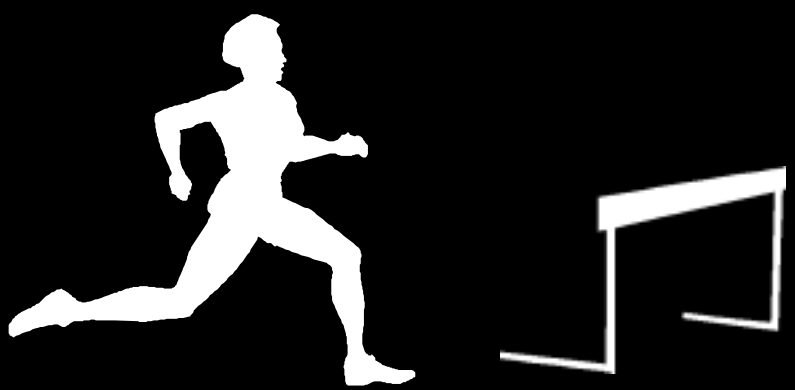


Pete Devlin

Fuels for On-board Fuel Processing Objective & Challenges

CHALLENGES

- Technical data on fuel effects
- Impacts of fuel impurities on durability
- Emissions and environmental issues
- Advanced fuel production processes, specifications, costs
- Health and safety
- Fueling infrastructure for advanced fuels



OBJECTIVE

Identify and evaluate fuels for fuel cells and develop efficient refueling systems

Fuels Projects

National Lab Projects

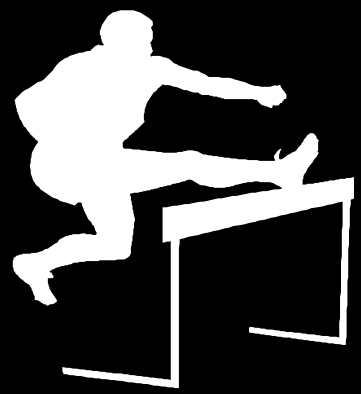
- Effects of Fuel Compositions on Fuel Processing (LANL/ANL)
- Durability Studies (LANL)
- Fuels CFD Model Analysis (ANL)

Industry Projects

- Fuel Effects Projects (CRADAs)

Industry Interactions/ Technology Transfer

- Conducted extensive CFD analysis on CRADA supplied fuels (ANL)
- LANL fuel formulations provided by Phillips Petroleum



Discussion Points

- Durability limitations
  - Origin and identification of poisoning chemical species
  - Limits of durability in fuel processor or fuel cell stack.
  - Fuel sulfur effect
  - Carbon Formation - *in situ* and post monitoring
  - Ammonia formation
- Effect fuel composition has on water balance
- impacts of fuel composition non-uniformity on reforming (CFD analysis)