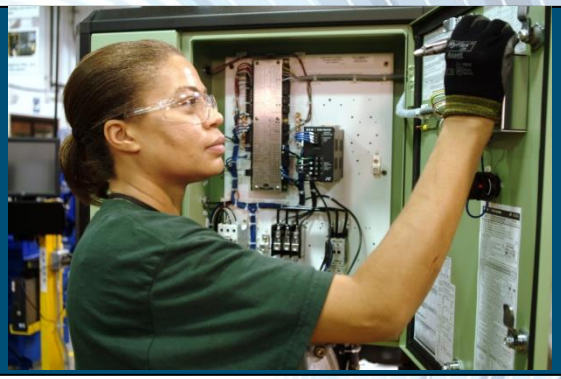

Haskel/BuTech/PPI

Presentation

For

Argonne National Laboratory

SULLAIR®
Always air. Always there.™

MILTON ROY

Sundyne

Products

Pumps, Boosters, & Diaphragm Compressors & Systems

- 100,000psi Liquid Pumps
- 37,000psi Gas Boosters
- 15,000psi Diaphragm Comp
- 4,500psi Air Amplifiers
- 150,000psi Valves, Fittings, and Tubing
- 15,000psi Sub-Sea Valves (1” orifice)
- Air Pilot Switches & Relief Valves

Hydraulic Gas Booster

Valves, Fittings & Tubing

Challenges

- Global Material Regulations
  - KHK Japan recommends A286 & 316 SS with high nickel content
  - Europe recommends 316SS
  - North America does not appear to regulate
- Global Certifications
  - CE & ATEX
- Low Inlet vs. High Outlet (Suction vs Discharge)
  - Multiple compression stages
  - Elevated temperatures
- Varying flow requirements
  - Fluctuation in vehicle fills per hour
- H2 Storage
  - Inability to store at 12ksi impacts flow requirements
- High Outlet pressure (High Discharge)
  - Seal Wear
  - Design Costs
  - Product limitations
  - Durability

Haskel MILTON ROY

RD&D Cost Reduction

- Global Material Regulations
  - Test H2 impact in compressor applications
    - Small portion of time at high pressure
    - Compressors do not store
  - Reduced embrittlement impact?
    - Reduction of material costs
- Low Inlet vs. High Outlet
  - Technologies to improve H2 output of Reformers and Electrolizers
- High Outlet Pressure
  - Find solutions to reduce need for 12ksi
    - More efficient Fuel Cells

Haskel MILTON ROY