

HyPM™ and HyPX™ Mobile Certifications in Europe

- Various authorities, products, markets and applications



Achievements - State of the Art in Hydrogenics

1. Zero Humidification leading to more stable, reliable and durable operation
1. Long life stack > 10.000 hours operation
2. Unlimited Start-Stop-Cycles
3. Shock resistant
4. Standard anti-freeze shutdown routine
5. Freeze start capability down to -10°C
6. Compact Power Module with high power density
7. Power Pack: Ease of integration

STILL R60-25 2.5-ton FC Lift Truck



Demo site:
Hamburg Hafen
& Logistik AG

HyPX™ 1-855



STILL Rx60-45 4.5-ton FC Lift Truck



HyPX™ 1-855



Demo site:
Hamburg Hafen
& Logistik AG



Linde E30 S Class 1 Counterbalance Forklift



HyPX™ FCPP
80 V with 12 kW
HyPM™ FCPM

Deployment Examples

General Motors, Oshawa, Canada



- After initial prototype demo in 2005, GM decided to proceed with an expanded 20 unit pilot project
- 20 units in Field test at GM for 2 years operation



HyPX™ FUEL CELL POWER PACKS



Deployment Examples

- Warner Robins Air Force Base, Georgia, USA
 - 20 units are delivered and are operational at the base since Q1 2009 for 2 year deployment
 - Project Managed by CTC
Concurrent Technologies Corporation



MB-4 Airport Tow Tractor

- Hydrogenics 65 kW Fuel Cells
- Lead Integrator: CTC (Concurrent Technologies)
- Enova electric drive system
- 120,000 lbs towing capacity (as the original diesel version)
- Enough to pull a C-130, any fighter or regional jet



STILL R07 25 ton Fuel Cell Tow Tractors



Operator:



Linde PureMotion P250 Fuel Cell Tow Tractor



Conclusion

- HyPX™ Fuel Cell Power Pack is a clean power solution that:
 - Releases no harmful emissions
 - Increases lift truck uptime through:
 - Dramatically reduced refilling time
 - Extended run-time between fills
 - Providing consistent and abundant power
- And it:
 - Fits within the existing battery compartment
 - while meeting or exceeding the performance of a battery-only solution



Thank you

