

Introduction to PACEAS TECHNOLOGIES LTD.

Innovation through creative excellence

Our differentiating strategy

At PACEAS we strive to adopt a differentiating business strategy based on a pragmatic approach while still positioning ourselves for growth.

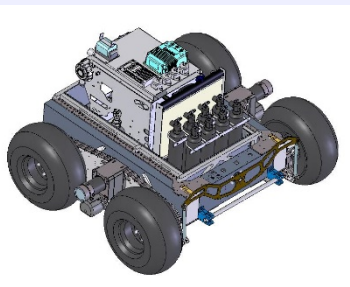
- Initially focus on high value, niche applications systems integration work, build relationships, provide learning and increase PACEAS' sustainability in the short-term.
- By being a player in the alternative energy sector it allows the company to constantly identify the needs of the marketplace for products or technologies that are lacking.
- Be positioned to identify and provide "enabling" technologies to accelerate the shift towards a sustainable environment and clean energy technologies.
- Be positioned with the right mix of products and technologies when renewable and alternative energy systems move towards mass adoption.
- Minimize cash burn by having access to sub-systems and technologies by leveraging strategic relationships with related companies and the global supplier base.

Business Focus

As a company pursuing clean energy technologies, our market focus is three pronged.

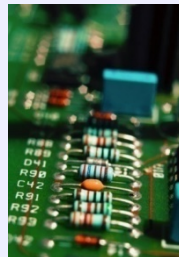
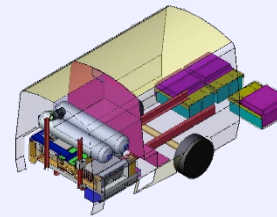
HYDROGEN SYSTEMS

Hydrogen energy based technologies for stationary and mobile power



SYSTEMS INTEGRATION

Custom engineered systems for early adopter markets.



ENERGY STORAGE

- Li-Ion systems.
- Scalable high capacity storage



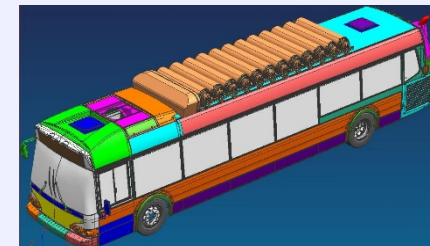
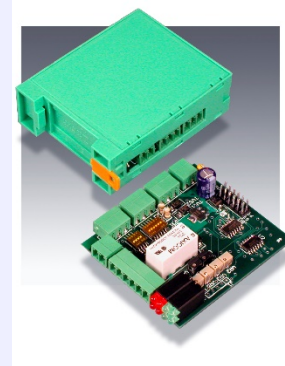
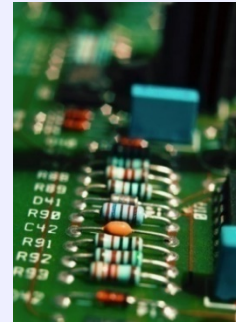
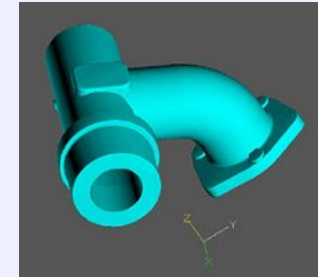
Products and Services

At PACEAS we are focussed on offering our customers the best engineered solutions for their exacting needs. We are positioning ourselves as the "Go To Company" and a "One-stop Shop" for all custom engineering and product development needs by leveraging our collective experiences in the areas of technology development, fabrication, prototyping, testing and field-deployment.

SYSTEMS INTEGRATION

PACEAS specialises in the value added systems integration of incumbent and advanced technologies.

- Fuel cell systems (PEM)
- Hybrid systems using batteries, ultra-capacitors etc.
- Specialty and Advanced Battery Systems
- Energy management systems
- Hydrogen generation systems
- Hydrogen storage systems
- Photovoltaic (PV) systems integration
- Wind energy systems integration
- Power electronics and power conditioning
- Test and diagnostic equipment for hydrogen-based power plants
- UPS and back-up power systems
- Auxiliary Power Units (APUs)



Industry experience

PACEAS' competence is based on many years of collective experience of its team in realising complex engineering projects as well as extensive corporate experience in finance and business development.

Product development

- Fully integrated hydrogen fuel cell power packs for Class 1 and Class III forklift trucks.
- 4, 8 & 16 kWe fuel cell back-up power systems for outdoor telecom applications.
- Fuel Cell Automated Test Stations for systems up to 100 kWe.
- Fuel cell test platform software .
- Automation language and compiler for fuel cell test stations.
- Support instrumentation for fuel cell stacks and systems development.
 - Embedded multi-cell voltage monitoring system.
 - Complex impedance spectroscopy unit.
 - Current interrupt based internal resistance measurement system.
 - In-situ HFR (high frequency resistance) measurement system.

Technology development

- Technology development program for Fuel Cell Power Modules and associated sub-systems.
 - Balance of plant development.
 - Embedded control systems development.
 - Control software algorithms development.
- Hybrid technologies and energy management technologies development including adaptive energy management for hybrid applications.
- Power electronics sub-systems development/integration up to 200kWe.

Industry experience (cont.)

Pre-commercial systems / Technology demonstrators / Turn-key Projects

- Scandinavia's first all electric Ferry in Norway
- A Fuel Cell fitted Lunar Mobility Platform (Lunar Rover) for the Canadian Space Agency.
- A 400kWe back up power system installation for a major US merchant transaction services provider.
- 500 kWe PEM fuel cell sub-system development for a major European military OEM (2006/2007).
- Regenerative Fuel Cell APUs for a Light Armoured Vehicle (U.S.Military).
- We fuel cell integrated back up power system for outdoor applications. A successful 12 month test deployment in collaboration with Emerson and Bell Canada.
- 40' urban transit bus using a 195 kWe fuel cell and Ultracapacitor hybrid architecture (Partly funded by NRCan).
- 6.5 ton hybrid step van incorporating a 65 kWe fuel cell and battery combination. Partnership with Purolator Courier Ltd. of Canada as part of its 'Greening the Fleet' initiative.
- Two 2.5 ton capacity fuel cell + Ultracapacitor powered forklift trucks in 'real world' service at GM Canada's plant in Oshawa, ON, Canada over Jan – Feb 2005.
- Fuel cell + Ultracapacitor conversion of an NEV.
- 10 kWe grid connected system comprising of a PV array, electrolyser module, hydrogen storage system, fuel cell power module and a grid-tie inverter in collaboration with Hitachi-Zosen. This was successfully integrated and demonstrated at Mie, Japan.
- 30' fuel cell and battery hybrid bus for the Hickam AFB, Honolulu. Contracted by the HCATT (formerly HEVDP) (2003/2004).
- Fuel cell based minivan (Phoenix Project) in collaboration with Adam Opel AG and PATAC, Shanghai, China (2001).

Our Customers and Collaborators



Canadian Space Agency
Agence spatiale
canadienne



Natural Resources
Canada



Nedstack
PEM FUEL CELLS



E-Trucks Europe



TASQ
TECHNOLOGY

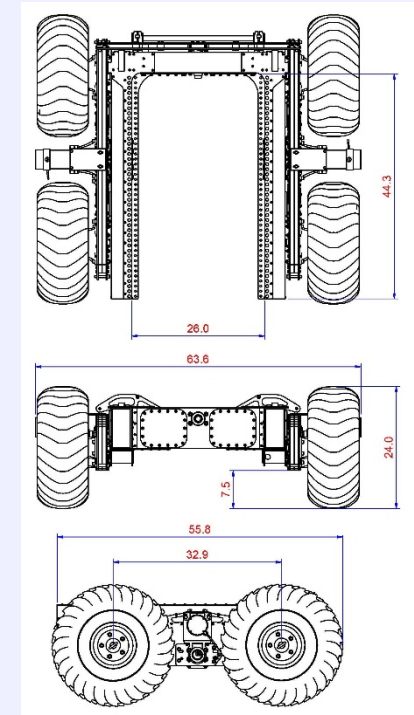
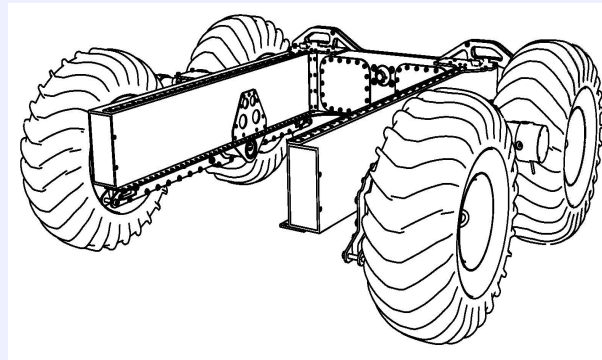


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Engineering Services UG

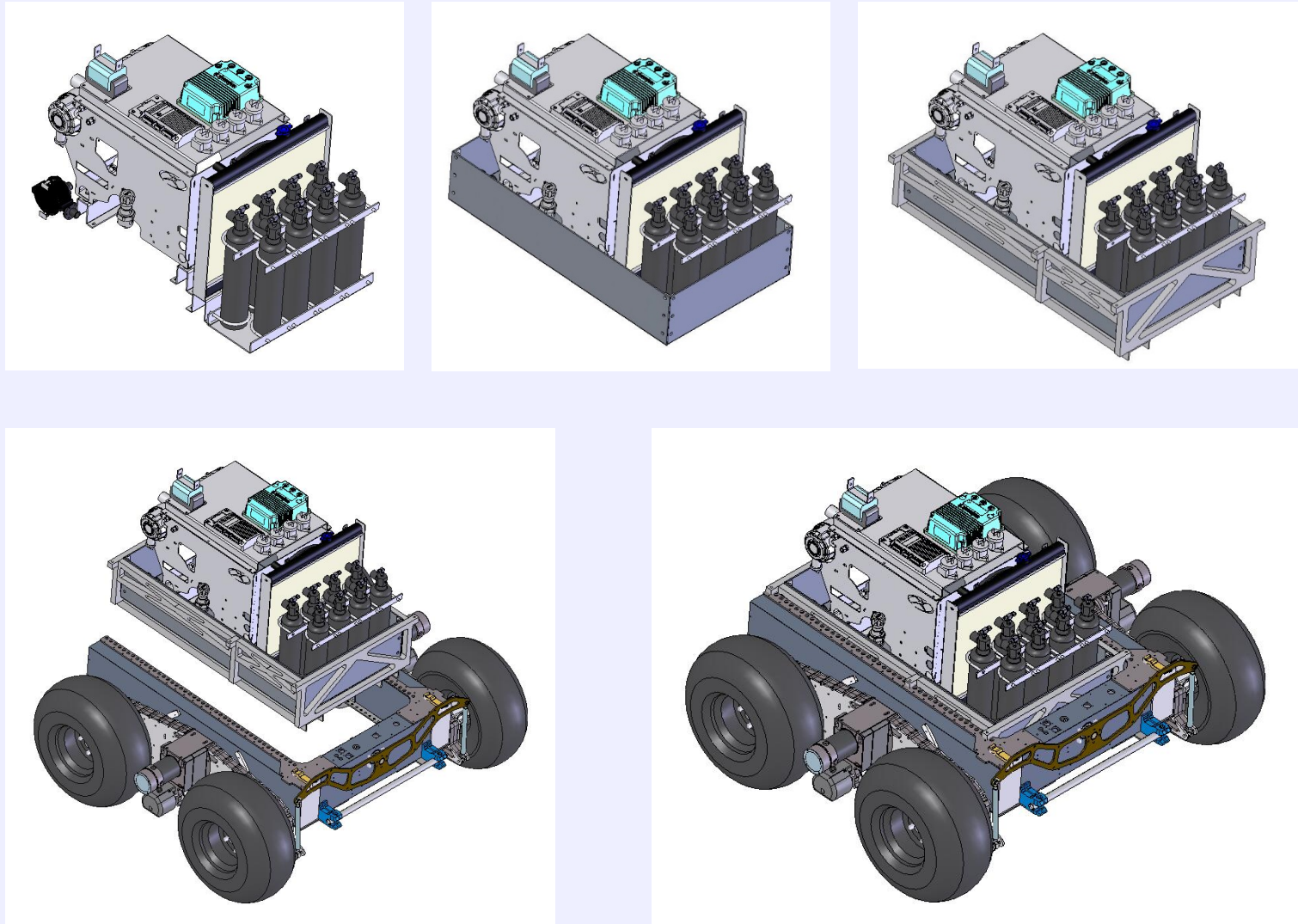


H₂ Fuel Cell Powered Lunar Rover for ISRU

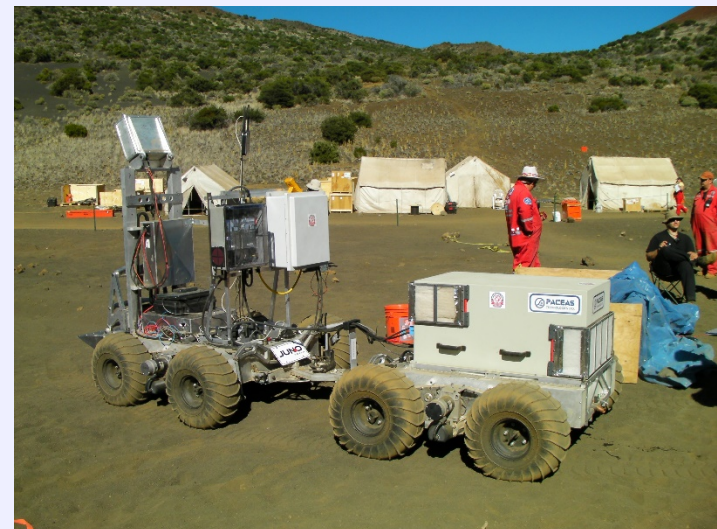
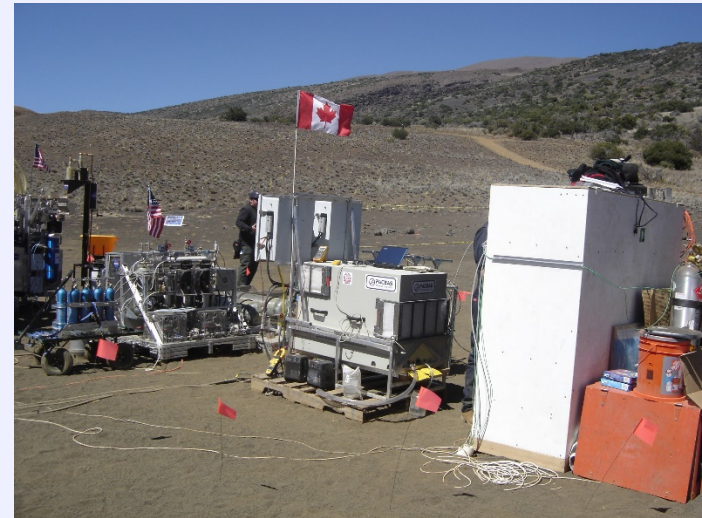
- Part of the In-Situ Resource Utilisation program that is currently being worked on by NASA and the CSA.
- NASA will provide the systems used to convert local tephra to produce oxygen and Hydrogen.
- CSA and NORCAT will provide a tephra excavator/delivery system.
- The fuel cell powered the excavator and the rover is the mobile platform for the excavator.
- The purpose of the Fuel Cell Rover is to evaluate the integration of NASA and CSA systems used to close a key ISRU cycle.
- In order to demonstrate the closed loop cycle, the intent is to recover the water produced by the fuel cell for electrolysis into hydrogen and oxygen.



Packaging concept



The deployment



Contact us

How can we help you?

We can be reached by any one of the following means



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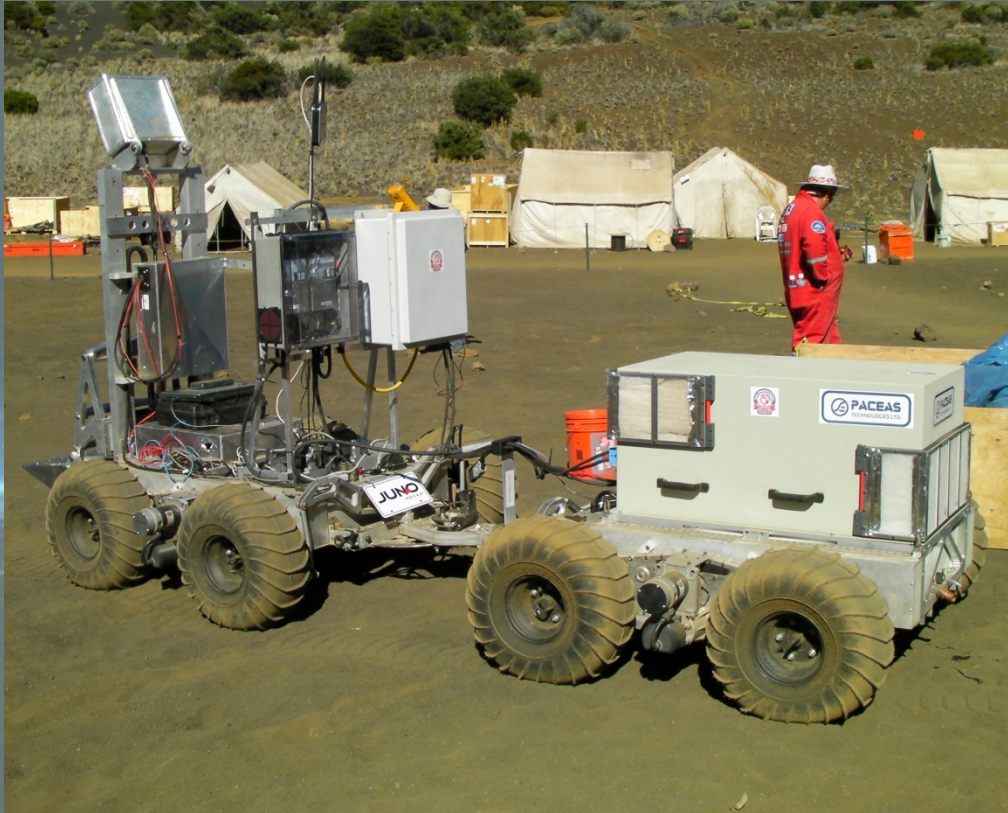
System Integration



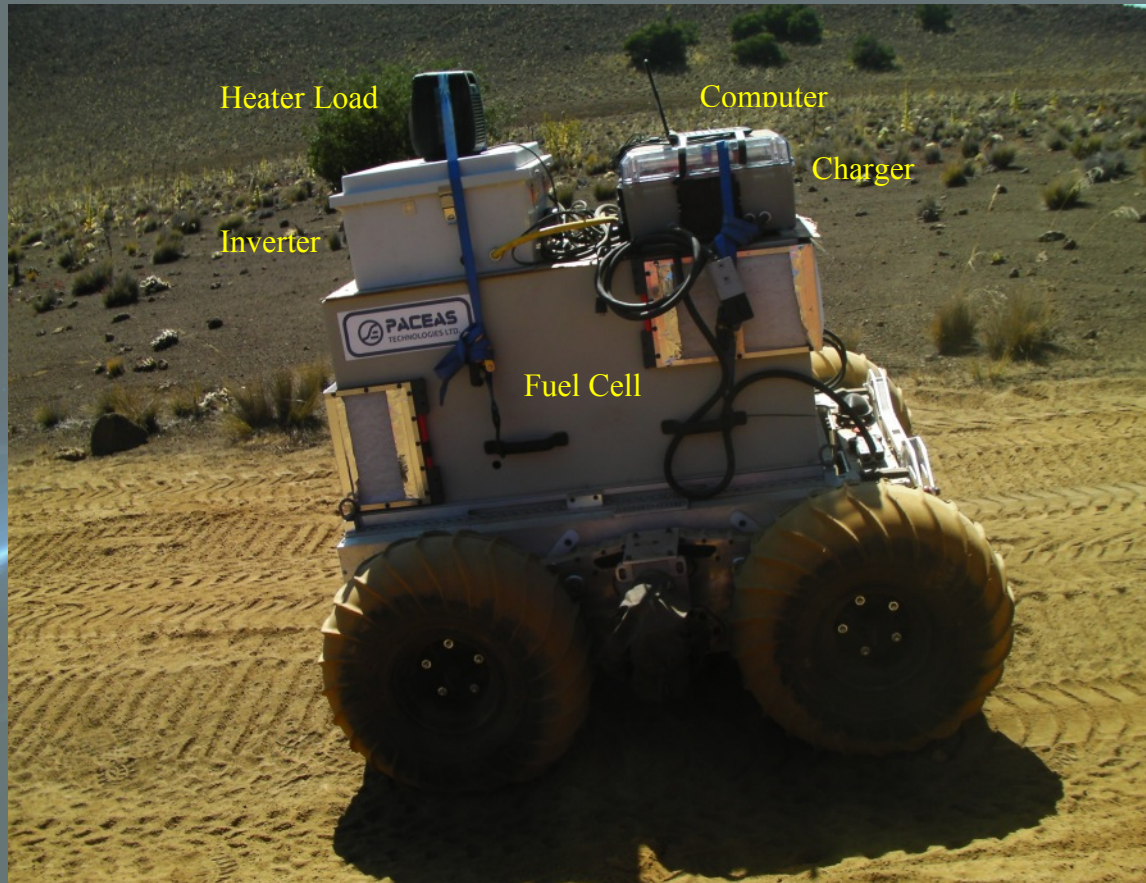
System Integration



System Integration



System Integration



Questions?