Korean Visit-

Summary of technical products of interest

August 26th – 3rd September 2010

Overview

A visit to Korea to attend the ENTECH trade fair in Busan Korea was undertaken by WA SEA staff, which also involved introductory meetings with a number of Korean companies, including LG Electronics and Hyundai Heavy Industries in Seoul and Ulsan respectively. WA SEA was assisted by KOTRA, AusTrade, the WA Department of State Development and Swan Energy in arranging the visit and company meetings.

During the meetings with Korean companies separately and at ENTECH, we examined a number of interesting technology trends and solutions which are currently either not yet available in Australia directly, or only through third party distributors but have had low uptake levels. These technologies can provide potential solution areas for queries by companies in where the market is heading and potential business opportunities for some businesses as well.

The following information is a high level overview of the potential technologies that may be of interest to companies in the Clean Energy Sector. Further information on these systems and contact details for the companies or their local agents is available on request from Neil Prentice (asm@wasea.com.au).

Energy efficiency

- LED Lighting & wireless control systems- LG Electronics
    - Wireless control systems for internal LED lighting management that is designed for commercial office space situations, which operate on the ZigBee protocol.
    - Control of the lighting can work on the basis of control of specific areas and fine control is possible down to an individual light level regardless of the size and complexity of the lighting systems.
    - Control can exercised through a single flat panel touch screen system.
    - Estimated savings on operational expenses of office lighting systems have been modeled at between 35 and 80% savings, dependent on the degree of behavioral change achieved.
    - Currently a demonstration of the systems capability is being implemented at LG headquarters in Seoul.

- Lighting management & control – UASIS
    - The system of interest in one that can count the ingress and egress of people within a particular space and operates across multiple entry and exit points and coordinate the count of people within a particular area. It therefore operates in a more reliable and efficient manner than simple motion sensors.
    - System applications can cover any amount of enclosed space, including domestic, commercial, industrial and public enclosed spaces.

- Provides significant opportunities for energy saving without the inconvenience of motion sensor limitations.
- Operates on a wired, rather than wireless system which can be interconnected to other energy management systems.
- The technology was developed by Samsung and distributed in Asia by UASIS.
- Other compatible technologies and control systems are covered by UASIS as well.

- Plasma lighting systems (PLS)- LG Electronics
  - Plasma lighting (also known as sulphur plasma) is a filament-less lighting systems to replace arc discharge lighting by utilising argon and a sulphur compound to simulate emissions spectrum similar to that of daylight through excitation of the gas with microwaves.
  - Operates lower energy consumption than that of comparable (lux level) halogen lighting with better levels of illumination at a distance.
  - A good summary of the sulphur plasma systems and the history of their development can be found at http://sound.westhost.com/lamps/sp-lamp.html
  - Key advantages for PLS systems are identified as:
    1. Mercury Free Light Source
    2. "Full spectrum" emission similar to sunlight, rather than more narrow band emissions of other light systems
    3. The emission spectrum is better suited to human visual sensitivity
    4. Does not fade out after extended use
    5. Highly energy efficient and longer lasting that equivalent products such as halogen systems
  - Models have been developed for external use (flood-lighting, area lighting and street lights) and internal use (factory and hi-bay lighting). Applications for internal cold rooms and freezers are currently under re-development.
  - Nanoparticle based filters can be applied to the lights to create specific colour effects.

Energy Storage systems

- iCeL Korea
  - Small & large scale Li battery systems
  - 1 MW capable battery in 20' container.
  - Multiple applications for smaller scale systems including:
    - 4800-5200mA systems for portable electronics, including iPhone, iPod and iPad. (currently being sold in the US)
    - 3kW systems for UPS and small scale commercial applications.
    - Larger systems for grid control assistance and smart grid applications up to 1 MW capacity.
  - Cell balancing error rate is less than 5 mA (0.001%) on 1MW series batteries
  - The company is currently working as a consortium partner with Hyundai Heavy Industries and KEPCO on Jeju Island Smart Grid project (est. completion October 2010).

Dewatering & waste water purification

- Johnan (Jyonan) Co Ltd (Kyoto)
    - Purification of oil contaminated water and oil- water emulsions, particularly in factory based air compressors.
    - Reduction of the oil content can be from 50-500pmm to a level of 5ppm or less for safe disposal (amusing the local regulations allow)
    - Reduces costs of direct disposal of hydrocarbon contaminated water and is more efficient and faster than conventional settling tank type systems for waste water treatment.
    - Marketed under the Dorentore brand name

- Elosys – Korea Water Technology
    - "Electro-osmotic" dehydration of high solids waste streams. Apparently this is a first of type product and has been on the market for 6 years.
    - Primary application is in secondary treatment of high solids waste water streams.
    - Improvement of concentration percentage of solids within a waste stream, leaving improved water recovery and recycling.
    - Performance of the system can achieve solids of 35-45% after primary dewatering to 15-25% range. Higher solids input can be achieved in bio-solids applications.
    - The product is patented and is currently in use in Korea, Singapore, the US and Europe.

- Aquacell- Filtration media and systems
    - A number of systems / solutions for water treatment including:
        - a PE / zeolite filtration media
        - Bio-trickling filtration system
        - Wastewater reclamation and reuse
        - River / pond purification system
        - Electrolysis sterilization systems
    - Scale an application of the systems can vary based on the potential application and intended use of the water after filtration.