Vales Point Power Station

Anthony Callen

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Sev.en Global Investments

Czech based family office group – Presence across four continents

Vales Point Operations

By the numbers

- 1320 MW (2x660 MW units)
- 6 TWh pa (~10% NSW demand)
- Use ~ 3,000,000 tonnes of coal each year
- Produce 650-700kT ash
- Contracted Offtakes:
  - Fly ash ~25% reuse;
  - Bottom ash >90% reuse;
  - Cenospheres (<1% of total ash);
  - Remainder to landfill/ash dam – wet storage.

NSW GOVERNMENT

SEVEN GLOBAL INVESTMENTS

Sunset Power International

NSW GOVERNMENT

1963 - 2015	2015-22	2023-33?	2033+

New Technologies and Product Development

U-Panel Commercial/Domestic/Retaining Wall System

- The U-Panel wall system is high speed modular wall system developed in Australia.
- No need for high-skilled labour for installation.
- Made from innovative concrete mix reducing CO2 emissions.
- U-CRETE has no sand, aggregate or steel and the mix is made from over 50% recycled Fly Ash and develops **over 66 Mpa in strength and 100% recyclable.**

TESTED TO AUSTRALIAN STANDARDS

- ✓ **Cyclone rated to category-5 (288 k/hr winds)**
- ✓ **Compression test on wall is over 30 tonnes LM**
- ✓ **Water penetration tested and passed (N6/C4)**
- ✓ **Racking tested 5.43kN/m**
- ✓ **Fire tested 90/90/60**
- ✓ **Compression test on material 66 MPA**
- ✓ **Thermal rating R3.2**
- ✓ **Acoustic tested Rw+Ctr 44 & 56**

New Technologies and Product Development

U-Panel Residential Projects

WINNER 2023
HIA Hunter Region
Product Innovation

New Technologies and Product Development

U-Panel Vales Point Projects

New Technologies and Product Development

UniqueCem Pioneering low-carbon cement

Delta

UniqueCem Low-Carbon Cement

- SCMs, sustainable aggregates and low carbon cements required for producers of concrete and concrete products.
- UniqueCem LCC is a dry powder alkali activated binder cement.
- The precursor materials, predominately blast furnace slag derived from the steel industry and flyash, are combined with two alkali compounds and a patented set regulator.
- The mechanism of reaction in alkali activated systems based on blast furnace slag could be considered a hybrid reaction of polymerisation/condensation observed in systems with a low calcium concentration, and a more conventional calcium silicate formation observed in Portland cement systems
- Binders of "pure" slag as a precursor are generally considered to have a short set time and workability issues. Cemalt LLC has a flyash precursor and the patented set regulator designed to counter these concrete issues.
- There is a minimal carbon footprint for the powder compared with Portland cement, and UniqueCem LCC represents a solution for the circular economy in that it uses industrial wastes to develop a usable product.

UniqueCem Mixing Plant at Vales Point (5,000 tpa, commissioned Sept 2024)

New Technologies and Product Development

UniqueCem Low-Carbon Cement

UniqueCem Pioneering low-carbon cement

Delta

- Powder product performs as direct drop-in replacement for OPC.
- Low carbon <150kg CO2e/tonne cement
- Designed to be used in concrete that will satisfy the modern building codes, Standards and specification. Recent specifications such as PAS 8820 (UK) and SA TS 199 (Australia) allow for the designing of concrete structures using binders similar to UniqueCem.

UniqueCem Hanbar unit, Port Kembla.

Next Steps

Opportunities

- Greater utilisation of ash
  - Economic opportunity within circular economy framework
  - Aligns with local, State and Commonwealth sustainability initiatives and meets community expectations
  - Greater use of dry ash (dependent on availability)
- Stored ash reclamation utilises brownfield development sites
- Innovation and collaboration
  - No need to reinvent the wheel
  - Nexus of two industries in transition – opportunity for collaboration
  - Industry to proactively support new product development and innovation
- Strategic approach to standards and specification
  - Leverage existing standards hierarchy and resource recovery policy

Challenges

- Innovation leads regulation
  - planning and regulatory system must keep pace with industry developments otherwise we risk access to limited development capital
- Scalability and processing costs
  - Focus on reducing supply chain risks
  - Timeline to market – access to stored ash required to align with coal plant closures.
  - Resolve co-mingling storage issues
  - Targeted investment in innovation
- Transition from product push to market/demand pull drivers
  - Demand driver – public and private procurement policy
- Maintaining circularity
  - Focus on product design, resource recovery and recycling technologies to ensure ongoing circularity of materials.