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Protean's V-KOR technology receives AU\$3.0M* project commitment for Korean vanadium battery project

- KORID Energy, a 50% owned Protean Energy subsidiary, has received a AU\$3.0M project funding commitment from the Korean Institute of Energy Technology Evaluation and Planning (KETEP).
- The \$AU3.0M funding commitment forms part of a larger AU\$9.7M project being undertaken by KETEP to demonstrate the most efficient vanadium battery solution, for eventual mass-production in South Korea.
- The trial will fund the provision of Protean's patented V-KOR stack technology for KETEP's 1MW/4Wh vanadium redox flow battery project, which is anticipated to run for 96 months.
- KORID Energy was selected ahead of a field of other companies offering similar technology as a result of its leading V-KOR stack technology, which has a 250% higher power output when compared to other Korean competitors.
- Additional IP developed through the project will be available to KORID Energy, such as improvements to stack technology resulting from the project, superior current stack power density and improved cost assembly processes.

Protean Energy Ltd (**Protean**) is pleased to announce that KORID Energy, a 50% owned Protean subsidiary, has received a project funding commitment of AU\$3.0M to install and run its patented V-KOR stack technology as part of a AU\$9.7M vanadium battery project in South Korea.

The Korean Institute of Energy Technology Evaluation and Planning (**KETEP**) has administered the project and the grant, where the patented V-KOR stack technology will be integrated with a 1MW/4Wh vanadium redox flow battery (**VRFB**).

The V-KOR stack technology is an energy storage system that stacks a series of repeating cell frames to form a number of cells within the overall battery stack - improving battery performance and lowering manufacturing costs, compared to conventional VRFB technology.

* The funding arrangement is to be provided in Korean Won, for the purposes of this release the exchange rate at 18/09/2018 of 1KRW:0.0012AUD is used

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KETEP reviewed several VRFB producers in the space and selected V-KOR's stack technology for the project, which will bring together a number of leading energy industry stakeholders to demonstrate the most efficient vanadium battery solution.

Protean Chairman Mr Bevan Tarratt said "KORID Energy's selection for such a nationally significant project in South Korea was further validation of the considerable technological advancements it had made in recent times. We are very pleased to have been awarded the role ahead of such a strong field of energy storage competitors, in a country so focused on the sector".

The KETEP project will measure eight key performance specifications; stack output, stack power density, electrolyte cost, electrolyte temperature range, battery round trip efficiency, battery life cycles, ESS (energy storage systems) substantiation utilisation rate and total ESS footprint.

Other project participants include CHEMTROS, an electrolyte manufacturer, and EKOS, which will provide power conditioning (see figure 1).

KORID Energy will benefit directly from the project, which will enable the execution of further product improvements to scale the manufacturing and assembly process of V-KOR, particularly its 25kW stack (see figure 2).

The project is aiming to double the energy density of vanadium electrolyte, which could significantly reduce the physical footprint of the V-KOR battery solution.

The improvements to the 25kW could lead to substantial cost reductions as well as an enhanced assembly process - a key part of the KORID Energy's commercialisation strategy for large-scale utility applications, such as commercial and industrial use.

ABOUT PROTEAN ENERGY LIMITED (ASX: POW)

Protean Energy Limited is an energy company focused on the commercialisation of vanadium battery energy storage systems via its 50% owned Korean subsidiary, KORID Energy Ltd. Protean is also developing a multi-energy mineral (vanadium and uranium) project in South Korea through its 50% holding in Stonehenge Korea Limited (SHK). SHK is a Korean JV company with a KOSDAQ-listed industry partner being DST Company Ltd (DST). SHK owns 100% of the rights to 3 projects in South Korea, including the Company's flagship Daejon Vanadium Project.

For further information, see www.proteanenergy.com

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Figure 1:

KETEP Project Participants



Figure 2: The KORID Energy 25kW Stack

