STEATITE
COMPUTING - POWER - COMMUNICATIONS
A Solid State Group Company

Case study: Partnering for success in extreme environments

Background

MWD, LWD and Wireline logging applications require **cells that operate reliably in extreme environments**. Steatite partners with both Engineered Power and ElectroChem in the design and manufacture of standardised and bespoke **primary lithium technology battery packs** for oil and gas downhole tool designers, manufacturers and service companies.

Lithium Thionyl Chloride (**$LiSOCl_2$**) and Lithium Sulfuryl Chloride (**$LiSO_2Cl_2$**) cell chemistries see performance optimised at +100°C, but downhole tools are often required to begin operation at much lower surface temperatures.

"Steatite is a leader in the supply of lithium battery technology with over 20 years' experience in portable power solutions in the world's most demanding environments. As an existing long-term customer of Steatite's standardised downhole Wireline logging battery range, it was easy to adopt Steatite as GOWell's battery partner for the bespoke GO7 battery packs.

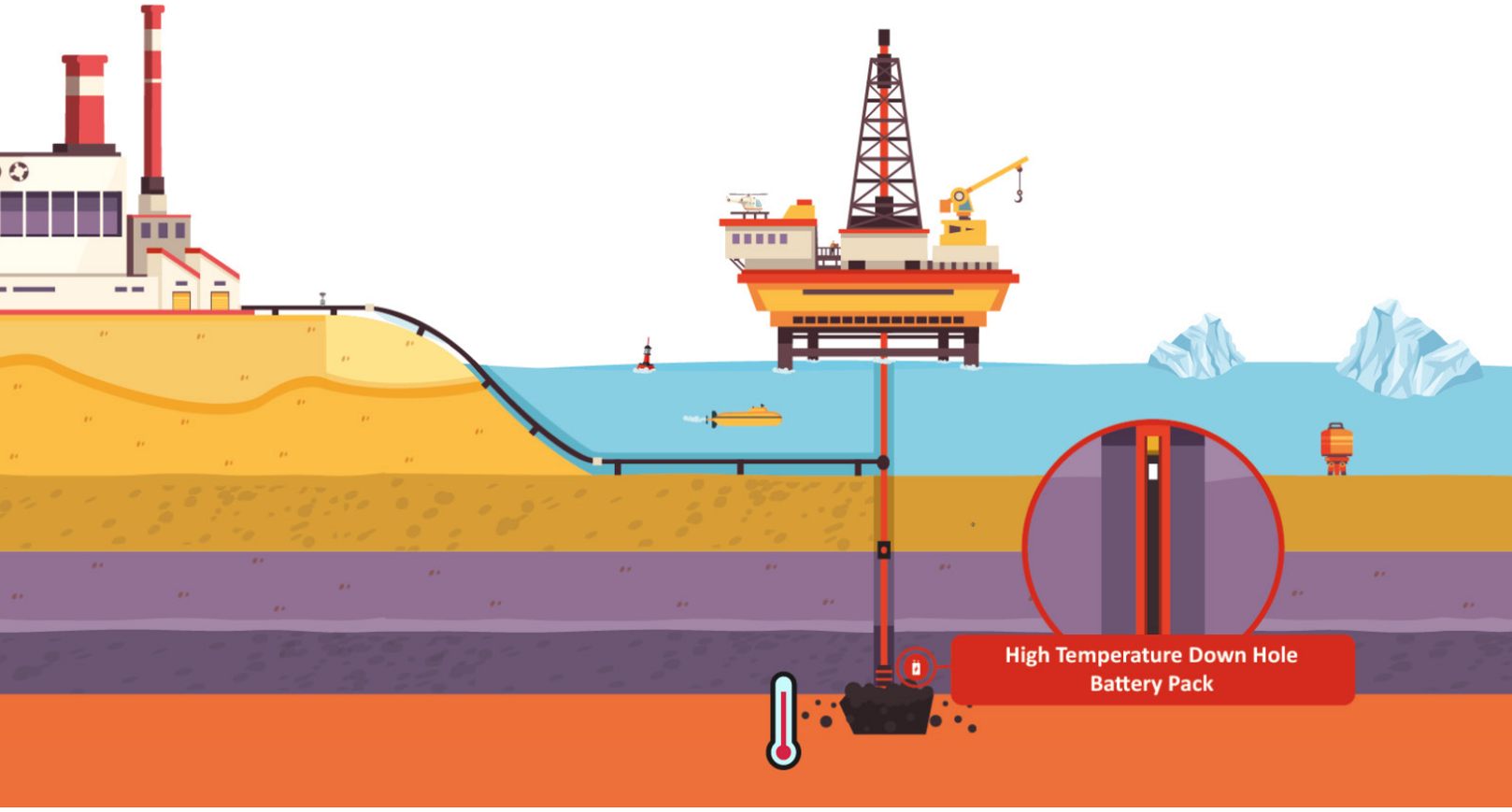
Steatite's solid relationships with key quality cell manufacturers tailored with inhouse design, engineering support and knowledge base can deliver solutions to any complex challenges.**"**

Deepak Venugopal
Operations Manager - Eastern Hemisphere
GOWell

The challenge

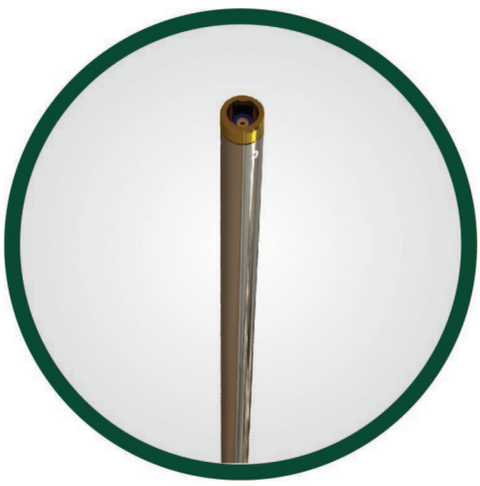
GOWell is a leading wireline logging technology company with research, development and manufacturing capabilities for **cased-hole and open-hole logging equipment**. Specialising in Well Integrity Evaluation, GOWell offers various unique technologies to the global market with its primary business in Oil, Gas, UGS, CCUS and Geothermal operations.

From their extensive customer relationships, GOWell identified a high and low temperature requirement for use with their Pegasus Star tools and set about defining the electrical, mechanical and environmental parameters. The brief concluded that a battery with a higher nominal voltage would mitigate drop off when a tool is required to discharge in more ambient conditions. As a long-term customer of Steatite's standardised downhole Wireline logging battery range, this challenge was presented for consultation on a solution.



The solution

With the tools' internal dimensions known, cell size was easily defined. An **operating temperature range below 0°C to +165°C** was required for headroom at maximum downhole temp. With these critical parameters defined, **two 3.9V cell options** maximising the available capacity were suggested. Each would have a series configuration meeting their **target nominal voltage of 18V to 36V**.



With consistency on the key requirements established, the varying benefits for each option were presented for final consideration. With one of the options having a similar mechanical design to an existing off-the-shelf battery from Steatite's existing product range, GOWell understood the benefit of Steatite using proven materials from long-term supplier relationships.

Results

With an engineering team that has over **20 years' experience** of working with high temperature cells, we confidently defined the electrical profile and identified existing materials with proven performance to manufacture a bespoke battery providing exact mechanical integration with the Pegasus Star tool.

Our team presented **two suitable solutions** which allowed GOWell to make the **right commercial choice**, with a production and delivery arrangement to suit the demands of their international customer base. GOWell have designed our custom-built battery pack into their Pegasus Star tools and are now enabling **innovative downhole research and development** across multiple continents.

STEATITE LIMITED (BATTERIES)
UNIT 17 NORTHERN WAY
CREWKERNE
SOMERSET
TA18 7HJ

STEATITE LIMITED (HEAD OFFICE)
RAVENSBANK BUSINESS PARK
ACANTHUS ROAD
REDDITCH
WORCESTERSHIRE
B98 9EX

WWW.STEATITE-BATTERIES.CO.UK
A STEATITE BUSINESS UNIT

Telephone: **+44 (0)1460 980 100**
Email: **sales@steatite-batteries.co.uk**