PROVARIS (PV1 AU)



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2 April 2024

Current Price (A\$)	0.03
Shares in issue (m)	598
Mkt Cap (A\$m)	20
Net debt (A\$m)	-5
EV (A\$m)	15
BVPS (c)	32.2

Share price performance

1m	-10.5%
3m	-29.2%
12m	-22.7%
12 m high/low	0.1/0
Ave daily vol (30D)	677,397

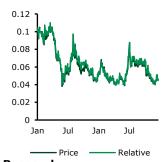
Shareholders

Copia Investment	4.1%
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Spo Equities Pl	2.7%
Carolan Martin	2.6%
Davies Robert Franci	2.5%
Triglavcanin Garry J	2.3%
Garner Paul Charles	1.6%
Copulos Group	0.9%
Northgold Pty Ltd	0.9%
John Todd Morris D	0.8%
Total for top 10	22.2%
Free float	85.5%

Next news Results Q3

Business description

Hydrogen shipping and project developer



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TANKS OFFER NEAR TERM CASHFLOW

Provaris has developed a commercial hydrogen storage solution based on the tank design for its hydrogen shipping vessels. Without the need for type rating this allows the company to introduce a highly competitive storage solution to the market in this calendar year. That in turn could see useful cashflow helping to offset cash burn until the vessels themselves come on the market along with their associated hydrogen export projects.

Leveraging Tank Design

Provaris is planning for early revenue from the sale of its proprietary hydrogen storage tanks with possible sales this calendar year. The company is leveraging the work done in the design of its compressed hydrogen shipping solution to create a series of hydrogen storage tanks which can be utilised as stand alone ground based storage. The efficient design using layered steel is just as effective as designs using carbon fibre or glass fibre yet considerably cheaper.

Low Cost of Hydrogen Storage

We estimate that the Provaris design can deliver a hydrogen storage solution at a cheaper cost per kilo of hydrogen storage than most other designs. This is based on an assessment of material costs compared with existing tank designs such as glass fibre based and carbon fibre based. We estimate a cost of between US\$250/kg of storage hydrogen and US\$380/kg of hydrogen stored. Depending on utilisation this could deliver a levelised cost of hydrogen storage of between US\$0.17/kg and US\$0.19/kg.

Revenue Potential in Calendar Year

Based on these cost assumptions we estimate that Provaris could see revenue of A\$0.5m from the sale of a single 1t tank this calendar year and with the potential for strong growth thereafter. This can be done with almost no additional capex as production cell has already been developed for the prototype. The economics are likely to be shared with partner Prodtex but this will still be an attractive business delivering helpful cashflows to the company as the main hydrogen vessel business develops. We have not included these in forecasts at this stage but will review as further details emerge.

A\$,000 June	2022a	2023a	2024e	2025e	2026e	2027e
Sales	367	586	0	0	0	107,268
EBITDA	-13	-24	0	-1	-1	0
PBT	-6,758	-12,407	-6,559	-6,723	-30,733	-19,489
EPS	-13.2	-24.2	0.0	-0.6	-0.8	-0.3
CFPS	0.0	0.0	0.0	0.0	0.0	0.0
DPS	0.0	0.0	0.0	0.0	0.0	0.0
Net Debt (Cash)	-11,617	-5,070	-431	190,334	538,210	988,575
Debt/EBITDA	882	210	na	-na	na	na
P/E	0.0	0.0	-2.5	-0.1	0.0	-0.1
EV/EBITDA	880.1	208.7	na	na	na	Na
EV/sales	-31.6	-19.8	na	na	na	-0.1
FCF yield	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Div yield	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

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A BETTER HYDROGEN TANK

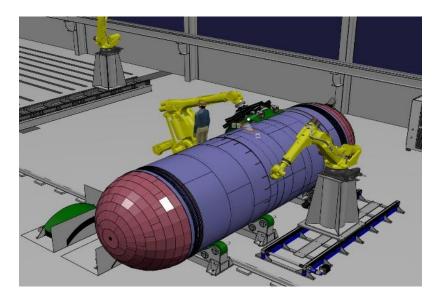
Key to the innovative compressed hydrogen shipping solution pioneered by Provaris is the design of the tank which allows a more efficient vessel design. This maximises the volume of hydrogen stored at a lower capital cost while also addressing the safety of operations required for a pressurised storage tank. The tanks themselves are a significant improvement on existing hydrogen storage tanks most of which are made from either glass or carbon fibre.

The Provaris proprietary design of the tank has been advanced with partner Prodtex to include a construction methodology that allos the production of tanks at a cost that is transformational to the industry. The tanks use a layered design of carbon steel for safety factors and a stainless steel liner to mitigate embrittlement when hydrogen is in contact with steel. Stainless steel is not affected by embrittlement.

The tanks are designed for efficient production with a fully automated robotic laser welding process which is more cost and energy efficient than traditional welding. It consumes considerably less energy and consumables, and allows for faster production. The proven application of robotic-laser welding is key to lower the capex for the tanks and by removing a significant amount of labour cost, it enables up to 80% to 85% of costs to be related to materials, providing increased certainty of future margins.

- Increased productivity (~20x)
- Reduced heat & energy costs
- Reduced consumables (welding wire)
- 100% quality assurance (NDT)
- Reduction in CO2 footprint
- Reduction in construction costs
- Extends IP to new applications

Illustration of robotic construction arrangement for the prototype tank



Source: Provaris

Prodtex already has a construction facility located in Norway and has commenced construction of a prototype scaled tank for fatigue and pressure testing and final approvals. Testing is expected to be completed in Q2 24 with the receipt of class approvals for the H2Neo carrier from DNV and ABS. For the shipping business these approvals will allow Provaris to enter into shipbuilding contracts for the H2Neo.

Prodtex facility at Fiskå . Norway



Source: Provaris

The Prodtex facility at Fiskå in Norway will also allow production of smaller scale (1 to 5 tonne and up to 10 tonne) tanks for early sales. The first production run will target a 1 tonne capacity tank, in line with the existing available carbon or glass fibre containerised solutions on the market.

Illustration of 1-tonne capacity tank next to a 40ft container (to scale)



Source: Provaris

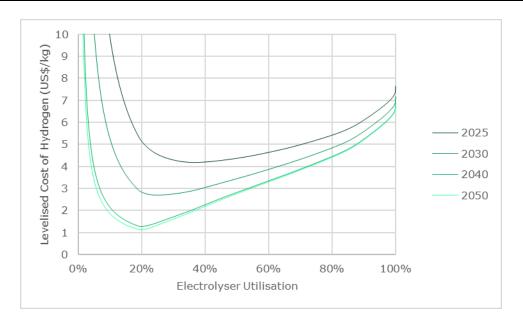
WHY WE NEED HYDROGEN STORAGE

While it is possible to create green hydrogen and use it straight from an electrolyser this has a number of disadvantages. At the basic level, some form of buffer for maintenance and other outages is sensible. The new EU Alternative Fuels Infrastructure Regulation (AFIR) requiring a refuelling station every 200km which implies 657 sites across member states all of which will require tanks of 1 tonne or above.

More importantly, green hydrogen is almost entirely produced from intermittent renewable electricity, either wind or solar. While electricity storage such as batteries and pumped hydro is available there is likely to be a price impact as a result. The ability to operating an electrolyser flexibly and benefit from variable electricity prices is significant in our view and storage is required to achieve this.

In our note, <u>Hydrogen and Stupidity</u> (Longspur Research 7 November 2023), we showed that it is cheaper to run three PEM electrolysers a third of the time and pick up the cheapest third of electricity prices than to run an alkaline electrolyser in baseload mode. But to do this would require storage of at least 16 hours if not longer.

Levelised Cost of Hydrogen Against Utilisation



Source: Longspur Research

There is growing policy support including the UK's latest REMA for using green hydrogen production as a balancing tool in the electricity market. This means intermittent production and that requires storage.

HYDROGEN STORAGE OPTIONS

There are a number of options for storing hydrogen but many are geographically limited. Depleted gas fields, salt caverns and rock caverns all have potential but are most suited to large scale long duration storage at centralised locations. Shorter duration and localised storage in development includes conversion to ammonia, liquid organic hydrogen carries and liquefaction.

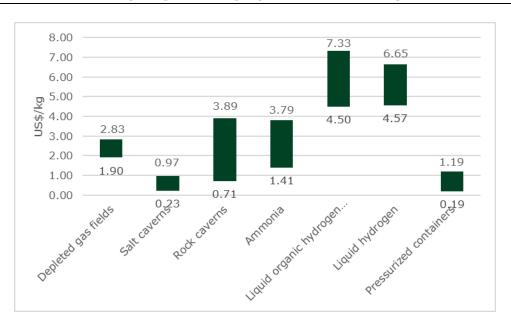
Hydrogen storage options

	Salt caverns	Pressurized containers	Liquid hydrogen	Ammonia	LOHCs	Metal hydrides
Volume	Large	Small	Small	Large	Large	Small
Cycling	Months - weeks	Daily	Days - weeks	Months - weeks	Months - weeks	Days - weeks
Pressure (bar)	45-275	Up to 1,000	Ambient	Ambient	Ambient	~10
Benchmanrk LCOS (US\$/kg)	\$0.23	\$0.19	\$4.57	\$2.83	\$4.50	Not evaluated
Possible future LCOS	\$0.11	\$0.17	\$0.95	\$0.87	\$1.86	Not evaluated
Flexibility	Medium	High	Medium	Medium	Medium	Medium
Losses	Near-zero	Near-zero	50%	Near-zero	Near-zero	Near-zero
Parasitic load (% H2 HHV)	1 - 2.5%	0.5 - 11%	25 - 33%	25 - 28%	29-33%	11 - 28%
Density (kg/m3)2	4 - 20	3.5 - 50	70.8	107 - 121	47 - 57	40 - 140
H2 purity after release	High	High	High	May need purification	High	High
Geographical availability	Limited	Not limited	Not limited	Not limited	Not limited	Not limited

Source: Bloomberg New Energy Finance

Against all of these pressurised storage is already the cheapest solution.

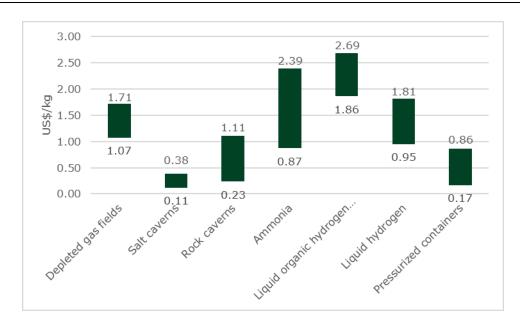
Levelised cost of hydrogen storage (current estimates)



Source: Bloomberg New Energy Finance

Costs may come down of course and BNEF forecast as follows.

Levelised cost of hydrogen storage (future estimates)



Source: Bloomberg New Energy Finance

In addition to costs there are a number of other characteristics to consider and perhaps the most important of these is flexibility given the need to work efficiently with intermittent power. Along with other pressurised containers, the Provaris solution does well here. It also offers safety benefits through is multilayered approach which mitigates weld failure risks and through fully welded connections which avoid multiple flanges and valves, thus reducing risks of leakage or failure.

PRESSURISED STORAGE

Within the market of pressurised containers there are a number of key types.

Compressed hydrogen options

Properties	Type I	Type II	Type III	Type IV
Material	Metal	Metal partly wrapped in fiber composite	Metal fully wrapped in fiber composite	Plastic fiber composite
Weight (kg/l)	1.4	0.9	0.45	0.3
Maximum pressure (bar)	Slightly above 1,000	Slightly above 1,000	Slightly above 1,000	Slightly above 1,000

Source: Bloomberg New Energy Finance

The Provaris solution is essentially a type 1 all metal solution. Like other similar solutions it does suffer a weight penalty but is better in that regard than other type 1 solutions. It has a weight of 0.7kg/l which is lower than both type 1 and type 2 storage solutions in BNEF's categorisation. It is also considerably cheaper than all other alternatives.

COST OF STORAGE

In addition to the comparative data from BNEF, Provaris has presented data for two competing compressed hydrogen storage options, one a high cost carbon fibre solution and one a glass fibre solution. These show levelised cost of storage (LCoSh) figures of US\$0.20/kg and US\$0.24/kg respectively based on a single storage cycle per day and assuming low range compression costs.

Compressed hydrogen fibre costs

		1t carbon fibre	8.5t glass fibre
Storage capacity	kg	1030	8500
Weight	t	27	300
Steel/carbon/glass fibre	US\$/t	27,000	12,586
Cost	US\$	750,000	4,000,000
Cost per kg H2 stored	US\$/kg	728	471
Cycles	#	7300	7300
LCoSh	US\$/kg	0.10	0.06
Compression	US\$/kg	0.14	0.14
Total LCoSh	US\$/kg	0.24	0.20

Source: Longspur Research

We can estimate the costs of a Provaris tank using the differential material costs for carbon fibre, glass fibre and carbon steel. Work undertaken for the US Department of Energy suggests that material costs account for c.55% of total costs. If we adjust for this and the different weight of material required for each technology, we can estimate that Provaris can deliver a solution at US\$250/kg stored to US\$380/kg stored giving a LCoSh of US\$0.17/kg to US\$0.19/kg

Longspur estimated Provaris hydrogen storage costs

		1t carbon fibre	Provaris	8.5t glass fibre	Provaris
Storage capacity	kg	1030	1000	8500	8500
Weight	t	27	54	300	410
Material cost	US\$/t	27,000	1,455	12,586	1,455
BoP (@45% of total)	US\$	337,500	337,500	1,800,000	1,800,000
Cost	US\$	750,000	381,960	4,000,000	2,147,593
Cost per kg H2 stored	US\$/kg	728	382	471	253
Cycles		7300	7300	7300	7300
LCoSh	US\$/kg	0.10	0.05	0.06	0.03
Compression	US\$/kg	0.14	0.14	0.14	0.14
Total LCoSh	US\$/kg	0.24	0.19	0.20	0.17

Source: Longspur Research

GETTING TO REVENUE THIS YEAR

The company hopes to start to make some early tank sales with the possibility of first revenue before the end of the current calendar year. This is likely to be minimal with perhaps one or two smaller tanks being sold. However, that could add over A\$1m in revenue assuming an average selling price of A\$580k in line with our cost estimates. Profit will be shared with Prodtex under what we think will be a JV structure and the gross margin may start low until the business is established. Initial capex will be minimal as the production cell has already been developed for the protype tank for the vessels. Additionally associated working capital may be available through schemes available from Innovation Norway. We have not included sales in our forecasts at this stage but will review as more detail emerges.

FINANCIAL MODEL

Profit and Loss Account

AU\$,000, Dec	2022a	2023e	2024e	2025e	2026e	2027e			
Turnover									
Project income	367	586	0	0	0	107,268			
Central costs and fees	0	0	0	0	0	0			
Other	0	0	0	0	0	0			
Other	0	0	0	0	0	0			
Total	367	586	0	0	0	107,268			
Operating profit									
Project income	367	586	0	0	0	29,950			
Central costs and fees	-7,125	-12,993	-6,559	-6,723	-6,891	-2,000			
Other	0	0	0	0	0	0			
Other	0	0	0	0	0	0			
Operating profit	-6,758	-12,407	-6,559	-6,723	-6,891	27,950			
P&L Account	2022a	2023a	2024e	2025e	2026e	2027e			
Turnover	367	586	0	0	0	107,268			
Operating Profit	-6,758	-12,407	-6,559	-6,723	-6,891	27,950			
Investment income	0	0	0	0	0	0			
Net Interest	0	0	0	0	-23,843	-47,440			
Pre Tax Profit (UKSIP)	-6,758	-12,407	-6,559	-6,723	-30,733	-19,489			
Goodwill amortisation	0	0	0	0	0	0			
Exceptional Items	0	0	0	0	0	0			
Pre Tax Profit (IFRS)	-6,758	-12,407	-6,559	-6,723	-30,733	-19,489			
Tax	0	0	0	0	0	0			
Post tax exceptionals	0	0	0	0	0	0			
Minorities	0	0	0	0	11,921	8,745			
Net Profit	-6,758	-12,407	-6,559	-6,723	-18,812	-10,745			
Dividend	0	0	0	0	0	0			
Retained	-6,758	-12,407	-6,559	-6,723	-18,812	-10,745			
EBITDA	-6,342	-12,200	-6,559	-6,723	-6,891	32,992			
EPS (p) (UKSIP)	-13	-24	0	-1	-1	0			
EPS (p) (IFRS)	-13	-24	0	-1	-1	0			
FCFPS (p)	-9	-13	0	-25	-20	-15			
Dividend (p)	0	0	0	0	0	0			
Source: Company data, Longspur Research estimates									

KEY POINTS

- Grant income drops off in 2022 and then first revenues from the first Norwegian project in 2027
- This then builds beyond the forecast period presented above
- Administration expenses normalise after high share based payments in the FY22

Balance Sheet

AU\$,000, Dec	2022a	2023a	2024e	2025e	2026e	2027e
Fixed Asset Cost Fixed Asset	1	0	0	298,660	768,781	1,404,012
Depreciation	0	0	0	0	0	-5,041
Net Fixed Assets	1	0	0	298,660	768,781	1,398,971
Goodwill	0	0	0	, 0	, 0	, ,
Other						
intangibles	5,386	0	0	0	0	0
Investments	0	0	0	0	0	0
Stock	0	0	0	0	0	0
Trade Debtors	0	0	0	0	0	26,450
Other Debtors	343	159	159	159	159	159
Trade Creditors	-771	-782	-802	-822	-842	-27,292
Other Creditors	0	0	0	0	0	0
<1yr	0	0 0	0 0	0	0	0
Creditors >1yr Provisions	-62	-115	-115	-115	-115	-115
Pension	-02	-113	-113	-113	-113	-113
Capital	0	0	<u> </u>	0	<u> </u>	<u> </u>
Employed	4,897	-738	-758	297,882	767,983	1,398,173
. ,	•			•	•	
Cash etc	11,617	5,070	431	18,728	-13,652	-53,452
Borrowing <1yr	0	0	0	0	0	0
Borrowing >1yr	0	0	0	209,062	524,558	935,123
Net Borrowing	-11,617	-5,070	-431	190,334	538,210	988,575
Share Capital	85,812	85,901	117,568	1,280,885	2,456,187	4,044,266
GI	•	•	20 767	-	-	-
	0	0	-29,/6/	1,123,285	2,228,069	3,/20,862
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			<u> </u>	77,733	105,550	109,930
	4,897	-738	-758	297,882	767,983	1,398,173
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Net Assets	16,514	4,332	-327	107,548	229,773	409,597
Total Equity	16,514	4,332	-327	107,548	229,773	409,597
Cash etc Borrowing <1yr Borrowing >1yr Net Borrowing Share Capital Share Premium Retained Earnings Other Minority interest Capital Employed Net Assets	11,617 0 0 -11,617 85,812 0 -73,019 3,721 0 4,897 16,514 16,514	5,070 0 0 -5,070 85,901 0 -85,426 3,856 0 -738 4,332 4,332	431 0 0 -431 117,568 -29,767 -91,985 3,856 0 -758 -327 -327	18,728 0 209,062 190,334 1,280,885 - 1,123,285 -98,707 3,856 44,799 297,882 107,548	-13,652 0 524,558 538,210 2,456,187 - 2,228,069 -105,598 3,856 103,396 767,983	-53,452 935,123 988,573 4,044,266 3,720,862 -107,598 3,856 189,936 1,398,173 409,593

Source: Company data, Longspur Research estimates

KEY POINTS

- We have assumed capex commences in FY25 with spend on electrolysers and part
 payments on vessels however this can be brought leftwards into 2024 to arrange
 long lead items
- This has a corresponding rise in net debt and equity with the associated funding required for the capex

Cashflow

AUC 000 Dec	20225	20222	2024e	20250	20260	20270
AU\$,000, Dec	2022a	2023a	2024e	2025e	2026e	2027e
Operating profit	-6,758	-12,407	-6,559	-6,723	-6,891	27,950
Depreciation	416	207	0	0	0	5,041
Provisions	0	0	0	0	0	0
Other	1,159	5,388	0	0	0	0
Working capital	376	248	20	20	21	0
Operating cash flow	-4,807	-6,565	-6,539	-6,703	-6,870	32,992
Tax paid	0	0	0	0	0	0
Capex (less disposals)	0	0	0	-298,660	-470,121	-635,231
Investments	0	0	0	0	0	0
Net interest	0	0	0	0	-11,921	-38,695
Net dividends	0	0	0	0	0	0
Residual cash flow	-4,807	-6,565	-6,539	-305,363	-488,912	-640,935
Equity issued	9,823	0	1,900	69,799	70,518	95,285
Change in net borrowing	0	6,547	4,639	190,765	347,876	450,365
Adjustments	38	0	0	0	0	0
Total financing	9,861	6,547	6,539	260,564	418,394	545,650

Source: Company data, Longspur Research estimates

KEY POINTS

- Cash outflows for project and administration costs until FY26 when capex commences
- Assumed raises in FY25, FY26 and FY27 assuming there is no farmout of projects and a portion of these are equity funded

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