EDISON

Spotlight - Update

Ensurge Micropower

Technology

21 November 2022

Achieving commercialisation milestones

Ensurge Micropower's CEO took the opportunity in the recent Q322 results presentation to brief investors on the progress made delivering samples of complete packaged microbatteries to customers as well as sample unit cells to strategic partners. Management anticipates commercial production starting at the end of Q422 to fulfil customer demand in Q123.

Losses widen as company prepares for production

Ensurge did not generate any revenues during the first nine months of FY22 (9M22). Payroll costs were $1.4m higher year-on-year at $6.8m as management increased spending on operations to support sampling and production readiness. This resulted in a widening of EBITDA losses, excluding share-based payments, by $1.7m to $12.5m. Investment in capital expenditure was only $0.6m as most of the work adapting the roll-to-roll (R2R) facility for manufacturing microbatteries was completed in FY21. The free cash outflow totalled $15.9m, leaving $3.1m cash (gross excluding restricted cash) at end Q322.

Cash runway extended into Q123

Following the private placement in November raising NOK55m gross ($5.4m) at NOK2.0/share, management notes that Ensurge has sufficient funds to support operations into Q123. It is focused on signing an agreement with one of its strategic partners, which it anticipates will provide substantial funding for operations starting in Q123. Management notes that it is actively engaging multiple US investment banks to raise equity (value unspecified) into the California subsidiary to fund the expansion in production capacity required to meet anticipated demand from FY24 onwards.

Valuation: Potential market of over 1bn units a year

Ensurge is initially targeting the medical wearables and hearables markets, followed by the connected sensor and sport & fitness wearables markets. Our scenario analysis calculates that a 5–10% share of these markets represents annual revenues of $330–550m and EBITDA of $211–365m. Management has stated that when the R2R factory in San Jose is fully utilised it could potentially generate EBITDA of more than $100m, depending on product mix.

Historical financials

Year end	Revenue ($m)	EBITDA ($m)	PBT* ($m)	EPS* ($)	DPS ($)	P/E (x)
12/18**	3.4	(49.3)	(54.3)	(0.93)	0.00	N/A
12/19**	1.2	(30.6)	(35.9)	(0.61)	0.00	N/A
12/20	0.5**	(11.3)	(14.9)	(0.04)	0.00	N/A
12/21	0.0	(14.6)	(17.2)	(0.01)	0.00	N/A

Source: Company data. Note: *PBT and EPS are normalised, excluding amortisation of acquired intangibles, exceptionals and share-based payments. **Discontinued business.

Price	NOK2.20
Market cap	NOK517m

Share price graph

Share details

Code	ENSU
Listing	OSLO & OTCQB
Shares in issue (following issue of Tranche 1 of shares from Private Placement)	235m
Net debt ($m) at 30 September 2022 (excluding $1.6m restricted cash, $11.2m finance leases and funds from private placement)	8.6

Business description

Ensurge Micropower's solid-state lithium battery technology combines advanced energy cell design with proprietary materials and manufacturing innovation to produce thin, flexible batteries that can power safer and more capable wearable devices and connected sensors.

Bull

- Ensurge's solid-state batteries are highly suitable for the hearables and medical wearables markets.
- Markets for microbatteries are already established.
- When fully equipped, Ensurge's volume manufacturing facility should be able to generate c $100m EBITDA.

Bear

- Ensurge has yet to generate meaningful revenues from microbattery sales.
- Revenue growth dependent on companies incorporating microbatteries in their products.
- Funding from strategic partners not yet agreed.

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Twin go-to-market strategy

First packaged battery samples shipped

At the end of October, having solved the key challenges related to manufacturing packaged rechargeable microbatteries, Ensurge shipped its first packaged battery samples for evaluation. These samples were delivered to a leader in the hearing aid market. Since then, Ensurge has also shipped packaged battery samples to an innovative digital health device company, which is expected to require batteries for inclusion in its products during Q123, making it the first of Ensurge's customers to go into production. In contrast to the shipments of unit cells discussed below, the packaged microbatteries are formed from unit cells stacked on top of each other and sealed in a protective package with connectors. The prospective partners and customers evaluating Ensurge's technology are able to mount the complete microbatteries on printed circuit boards and evaluate how well they perform in prototype products.

During the first shipment phase, samples will be delivered to the five companies that have signed contracts with Ensurge and want the batteries for testing, evaluation and adoption. These include a Fortune 500 industrial company active in manufacturing capital equipment, a customer in the digital health market, two agreements in the medical hearables market and one in the broader wearables market. Management estimates that these collectively represent potential product revenue of over $50m/year. These customers are interested in complete microbatteries in the 1–100 mAh range, which can provide faster charging or higher energy density than conventional rechargeable microbatteries, can be mounted on customers' circuit boards using conventional reflow assembly techniques (unlike typical lithium-ion coin cell batteries) or can be customised to create novel form factors such as rings. These form factors are only achievable with batteries formed on a flexible substrate such as the ultra-thin steel substrate used by Ensurge. In a subsequent phase, the samples will be offered to customers that have shown strong interest in the Ensurge microbattery's performance but have not yet signed agreements. Ensurge is currently in discussions with more than 20 new potential microbattery customers, collectively representing over $200m in potential annual product revenue. This is more than the capacity of the San Jose fabrication facility when fully equipped.

We note that management expects that the initial revenues will be attributable to smaller companies with faster development cycles where the flexibility of form factor offered by Ensurge's microbattery technology is essential. The larger companies with longer development cycles are likely to introduce products incorporating Ensurge's microbatteries in H223.

Unit cells shipped to strategic partners

In August Ensurge announced that it was complementing potential sales of complete packaged microbatteries with potential sales of its core microbattery building block, referred to as the 'unit cell'. It is in active discussions with four large multinational corporations that are interested in unit cells rather than packaged batteries because each of them has technology that could be combined with Ensurge's core cell technology to create solutions enabling applications yet to exist. These applications expand the market beyond the one-billion-unit market discussed below. Ensurge has already shipped unit cells in a conventional coin cell format to ease testing and evaluation to three of these strategic partners, one of which is a multinational consumer electronics and communications company and two are battery manufacturers targeting the wearables, hearables and internet-of-things (IOT) markets. The fourth strategic partner, which Ensurge is currently in contract negotiations with, is a global information and communications technology corporation.

Ensurge is focused on signing funded development agreements with the two consumer device companies and licensing agreements with the two battery companies, though funded development agreements are also an option for these partners. Management expects the partnership discussions to accelerate now three of the partners have commenced their evaluation of the unit cells. As shown in the company's November 2022 presentation, the two consumer device companies collectively represent over $500m in potential annual revenues for Ensurge. The two battery companies collectively represent over $500m in potential revenues if a technology licensing model is adopted. We note that there is a pipeline of several other potential strategic investors.

Funded development beyond current roadmap

Ensurge is currently engaged in contract negotiations with a global leader in the information technology market to undertake funded technology development, which will potentially deliver technology attributes at the unit cell level beyond Ensurge's current roadmap. This development work will be defined to meet the demands of the third party's aggressive wearable device roadmap, potentially delivering substantial improvements with regards to usability.

Financing

Cash runway extended into Q123

In July, the company announced funding of NOK57m gross ($5.7m), of which NOK46.7m was from convertible loans bearing 5% interest with a conversion price of NOK3.00/share and NOK10.3m from a private placement at NOK3.00/share. Management estimated that this activity would provide sufficient funds to support operations into Q422. In November Ensurge completed a private placement raising c NOK55m ($5.4m) (gross) at NOK2.0/share. The placement is split into two tranches, the second of which is subject to approval at an extraordinary general meeting (EGM) on 1 December 2022. The net proceeds will be used to fund the company's operations and development work. Ensurge also intends, subject to approval at the EGM, to raise up to NOK15m ($1.5m), also at NOK2.0/share, through a subsequent offering to eligible shareholders.

Operating costs to be supported by strategic partners from Q123

Management aims to secure at least one long-term, funded technology development agreement with a strategic partner, which, together with revenues from customers, will significantly contribute towards coverage of the company's cash expenses. It is focused on signing an agreement with one of its strategic partners, which management is targeting to provide substantial funding starting in Q123. If a strategic partnership is not in place soon enough, or if it does not provide sufficient funding, the company intends to raise additional funds from financial investors to cover operating costs.

Potential fund-raising for capacity expansion

Management noted a strong increase in the production rate of battery cells during Q322, which it expects to increase further during Q422 and FY23. This capacity should be sufficient to meet customer demand during FY23. However, management expects that additional capacity will be required from FY24 onwards, which will require Ensurge to start placing orders for critical pieces of equipment in early FY23. Consequently, management notes that it is actively engaging multiple US investment banks to raise equity into the California subsidiary to fund this capital investment. Management has not stated how much equity would need to be raised to cover capacity expansion. In addition, Ensurge may also outsource some of the final steps in manufacturing complete batteries to gain extra capacity.

Management changes

In August Ensurge announced the appointment of Tarun Anand as acting CFO, replacing Dave Williamson, who has retired after almost three years as acting CFO. Tarun has more than 20 years' experience in finance leadership at both established corporations, such as Hewlett Packard and Thermo Fisher, as well as several pre-IPO start-up firms.

Valuation: Addressing a market of over 1bn units/year

We continue to present a scenario analysis rather than a formal valuation based on peer multiples because Ensurge does not expect to generate revenues from its solid-state battery technology until Q123. Referencing research from IDTechEx and others, management notes that the medical wearables, hearables, connected sensor and sport & fitness wearables markets are predicted to grow to more than one billion units per year by 2025. This excludes applications addressed by strategic partners (see above) rather than microbattery customers.

As discussed in our March note, these markets require batteries in the 1mAh to 70mAh capacity range. This capacity range is already covered by conventional lithium-ion batteries, although the relative size of lithium-ion batteries compared to solid-state batteries makes it likely that a material percentage of device manufactures will elect to pay a premium for the solid-state option. Ensurge has had detailed conversations with potential customers with which it has shared design details and in H121 stated that it believed a price of \$3–10/unit was achievable.

Exhibit 1: Potential annual revenues from milliwatt hour market (\$m)

		Market share (%)				
		1%	**3%**	**5%**	**7%**	**10%**
Price/unit (\$)	1	11	33	55	77	110
	2	22	66	110	154	220
	3	33	99	165	231	330
	5	55	165	275	385	550
	7	77	231	385	539	770
	10	110	330	550	770	1,100

Source: Edison Investment Research

Our scenario analysis presents the annual revenues realisable from these markets for a range of unit prices and levels of market penetration. Our analysis shows that a 5–10% share of these markets at a \$3–10 price range represents annual revenues of \$330–550m. Based on previous management guidance of c \$20m fixed costs (current levels are \$16.7m) and 30% variable costs, this gives an EBITDA range of \$211–365m. Management notes that when the R2R factory in San Jose is fully equipped and utilised it should be able to output several hundred million mAh of batteries each year, potentially generating EBITDA of more than \$100m depending on product mix.

Exhibit 2: Financial summary

$m	2018*	2019*	2020	2021
Year-end 31 December	IFRS	IFRS	IFRS	IFRS
PROFIT & LOSS				
Revenue	3.4	1.2	0.5*	0.0
EBITDA	(49.3)	(30.6)	(11.3)	(14.6)
Operating Profit (before amort. and except.)	(53.3)	(34.5)	(11.4)	(14.6)
Intangible Amortisation	0.0	0.0	0.0	0.0
Exceptionals	(15.6)	(42.4)	0.0	0.0
Share-based payments	(1.8)	(0.2)	(0.7)	(4.9)
Operating Profit	(70.6)	(77.1)	(12.0)	(19.6)
Net interest	(1.1)	(1.4)	(3.6)	(2.6)
Exceptional charges relating to issue of warrants	0.0	0.0	(23.2)	(8.8)
Profit Before Tax (norm)	(54.3)	(35.9)	(14.9)	(17.2)
Profit Before Tax (FRS 3)	(71.7)	(78.5)	(38.8)	(31.0)
Tax	(0.0)	0.0	0.0	0.0
Profit After Tax (norm)	(54.4)	(35.9)	(14.9)	(17.2)
Profit After Tax (FRS 3)	(71.7)	(78.4)	(38.8)	(31.0)
Average Number of Shares Outstanding (m)	58.6	58.6	393.2	1,368.3
EPS - normalised ($)	(0.93)	(0.61)	(0.04)	(0.01)
EPS - (IFRS) ($)	(1.22)	(1.34)	(0.10)	(0.02)
Dividend per share ($)	0.00	0.00	0.00	0.00
EBITDA Margin (%)	N/A	N/A	N/A	N/A
Operating Margin (before GW and except.) (%)	N/A	N/A	N/A	N/A
BALANCE SHEET				
Fixed Assets	35.3	0.6	0.8	2.6
Intangible Assets	2.4	0.0	0.0	0.0
Tangible Assets	22.5	0.0	0.2	2.0
Other	10.4	0.6	0.6	0.6
Current Assets	44.1	11.7	6.9	8.7
Stocks	2.6	0.0	0.0	0.0
Debtors	8.9	2.8	1.1	1.8
Cash excluding restricted cash	31.0	7.3	4.2	5.3
Restricted cash	1.6	1.6	1.6	1.6
Current Liabilities	(8.1)	(6.8)	(32.7)	(8.0)
Creditors	(8.1)	(5.5)	(29.5)	(4.1)
Short term borrowings	0.0	(1.4)	(3.2)	(3.9)
Long Term Liabilities	(11.5)	(25.1)	(21.9)	(16.8)
Long term borrowings excluding finance leases	0.0	(11.8)	(9.7)	(5.9)
Other long-term liabilities	(11.5)	(13.2)	(12.2)	(10.9)
Net Assets	59.7	(19.7)	(46.9)	(13.4)
CASH FLOW				
Operating Cash Flow	(52.3)	(29.1)	(11.9)	(14.6)
Net Interest	0.3	(1.4)	(3.2)	(3.2)
Tax	(0.1)	0.0	0.0	0.0
Capex	(11.2)	(5.1)	(0.3)	(1.8)
Acquisitions/disposals	0.0	0.0	0.0	0.0
Financing	(0.0)	0.0	13.3	25.2
Dividend payments and Other items	(1.6)	0.0	0.0	0.0
Net Cash Flow	(64.9)	(35.5)	(2.1)	5.6
Opening net debt/(cash) excluding finance leases and restricted cash	(96.5)	(31.0)	5.9	8.8
Finance leases initiated	0.0	0.0	0.0	0.0
Other	(0.6)	(1.4)	(0.7)	(1.3)
Closing net debt/(cash) excluding finance leases and restricted cash	(31.0)	5.9	8.8	4.5

Source: company reports. Note: *Discontinued business.

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