



Automotive components



Source: Refinitiv

Market data

EPIC/TKR	SCE
Price (p)	12
12m high (p)	42
12m low (p)	11
Shares (m)	324
Mkt cap (£m)	38.9
EV (£m)*	36.9
Free float**	72%
Market	AIM

*As at end-2023. **As AIM Rule 26

Description

Surface Transforms (SCE) is 100% focused on manufacture and sales of carbon ceramic brake discs. During 2024, its capacity in place rises to £50.0m annualized revenues.

Company information

Non-Exec. Chair. David Bundred
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Key shareholders (Oct'23)

Directors	1.5%
Richard Sneller esq.	14.0%
Cannacord	12.9%
Unicorn AM	7.4%
Richard Gledhill esq. (dir.)	6.2%
Janus Henderson	5.4%

Diary

22 Nov'23	Hardman & Co webinar
Jan'24	Trading update
Apr'24	Full year results
Jun'24	AGM
Oct'24	Interim results

Analyst

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SURFACE TRANSFORMS

Funding for growth: Open Offer

In the past two years, Surface Transforms (SCE) has quadrupled its order book, raised monthly sales run rates from £0.2m to £1.0m and expanded its capacity four-fold to a £20m pa sales rate. A 3 November update pointed to production teething troubles. October sales of £1.0m were below prior estimates, so we significantly reduced our 2023 and 2024 estimates. We estimate PAT breakeven for 2H24. Initially from debt, SCE has the resources to finance capital expenditure from internal cash flow to raise its capacity to £150m by 2027 and to grow beyond that as one of only two global suppliers to this large and growing OEM (original equipment manufacture) market.

- ▶ **Environmentally driven:** The order book has reached £390m. The product's lower weight, hence fuel efficiency, is one of several environmental legislative-driven benefits to OEMs. Recently the LSE awarded SCE its Green Economy Mark.
- ▶ **High barriers to entry:** OEMs demand excellence and SCE has been solidly R&D-led. There are years of testing required; SCE is one of only two ever to have tried and achieved this challenge. As to the production challenge, SCE's new production line as it is being completed is smoothing out bottlenecks.
- ▶ **Growth:** The order book alone equates to ca. £80m pa sales average. There have been minor but cumulatively meaningful teething troubles upgrading the production line. October volumes were over double the 2022 rate, which itself was over double 2021. Our reduced estimates reflect the 3 November update.
- ▶ **Risks:** The commissioning of new capacity is now being achieved, but there have been frustrations, delaying SCE achieving break-even to 2H24E. SCE and its clients work as partners in the sales evolution. A major sales increase leads to a (definable) increase in working capital needs.
- ▶ **Investment case:** The SCE order book has grown dramatically. The market opportunity and competitive moat are exciting. We now see a clear path to order book delivery, while recognising frustration at the slower-than-expected production ramp up, and the cash impact. Turning to ROCE, excluding work in progress needed, we estimate EBIT returns on capital equipment at ca. 40% pa.

Financial summary and valuation

Year-end Dec (£m)	FY'20	FY'21	FY'22	FY'23E*	FY'24E*	FY'25E*
Sales	1.95	2.37	5.12	8.60	23.00	40.00
EBITDA	-2.32	-3.78	-4.90	-8.00	1.50	11.00
EBITA	-2.81	-4.45	-5.87	-9.50	-1.30	7.00
PBT	-2.92	-4.58	-6.04	-9.70	-2.50	5.70
PAT	-2.31	-3.95	-4.78	-8.70	-1.70	6.50
EPS (adjusted, p)	-1.54	-2.08	-2.34	-3.47	-0.52	1.99
Shareholders' funds	5.67	20.89	33.55	32.85	31.15	37.65
Net cash/(debt)	0.50	11.70	13.80	2.00	-8.90	-12.70
P/E (x)	loss	loss	loss	loss	loss	6.0
EV/sales (x)	19.0	15.6	7.2	4.3	1.6	0.9
EV/EBITDA (x)	loss	loss	loss	loss	24.6	3.4
DPS (p)	nil	nil	nil	nil	nil	nil

*Estimates are pre the Open Offer

Source: Surface Transforms, Hardman & Co Research estimates

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Executive summary

A placing completed, Open Offer instigated

Having successfully raised £8.3m gross through an institutional placing and subscription, an Open Offer at 10p to raise up to £2.0m is launched.

The investment case

Barriers to new competition are high. Capital expenditure generates high returns, due to the IP and client value. SCE holds a £390m order book. This in itself generates cash to expand, with the benefit of the seed-corn equity and debt soon in place.

- ▶ SCE is delivering. Sales deliveries are for 'in-series' production of five of the contracted 11 models. SCE order values are weighted to electric vehicles (EV).
- ▶ SCE is well placed in a large, growing market. Only two companies in the world have attempted and managed to achieve the large R&D and IP required. The market is potentially £2.2bn, growing fast. It is environmentally as well as performance driven. The order book is designed-in to each model's whole run.
- ▶ Combined, these factors demonstrate the realism of SCE's plans for self-funded £150m capacity, stated by the Chairman concurrent with the share placing. The 60% gross margins bring significant operational gearing.
- ▶ Our financial modelling also confirms SCE's ability to equip itself for a £150m sales capacity between now and 2027, funded initially through debt and then through its own resources.

New equipment has been commissioned. By now we had expected a four-fold revenue run rate rise in 2H23 versus the previous year. The update of 3 November 2023 confirmed this was just under three-fold, which has caused cash implications.

In 2021, *SCE stated a £40m capital cost for a £75m volume production line* and this figure remains robust. Estimating long-term 20% EBIT margins, this indicates sales from this £40m capex generate £15m EBIT which is a 37.5% return on that capital. Prospective tax is low. Figures exclude the work in progress (WIP) needed for sales growth.

A strong, broad order book; a large moat to competition

The difficulty for entrants to this market is a major benefit to SCE. Its product is extensively road tested. SCE sells into global OEMs, but only after each has years of extensive pre-testing. This is why SCE has had to be selling discs on a small scale for over ten years and has many years' testing by each OEM client. It now has seven OEM clients in its £390m order book. Currently the global market is ca. £270m. This figure is extrapolated by Hardman & Co, derived from research by Future Market Insights and by inspection of the competitor's accounts for 2022. We would expect more than the £2.2bn potential size, in due course.

An environmental and performance product

Some of the rationale is:

- ▶ Environmental factors concerning its lower weight and hence fuel efficiency;
- ▶ better air quality regarding particulates;

A product with high and sustained growth exhibiting major long-term barriers to new entrants

SCE has been awarded the LSE Green Economy Mark and is supported by environmental legislation

High operational gearing benefits and internally funded expansion to £150m sales capacity

Details from 2021 stating the £40m cost to instal £75m pa capacity kit

Sells into global OEMs, but only after years' extensive pre-testing

Some of many reasons SCE has been awarded the LSE Green Economy Mark

- ▶ EV's use of regenerative braking and their comparatively heavy weight both benefit from SCE products;
- ▶ costs halving then halving again, opening upper-mid market within a total global auto brake systems market of £35bn.

These characteristics mean a rapid growth towards a multi-billion-pound market. Orders run for the whole manufacturing run of the model, typically five to seven years.

Delivery of the rapid production ramp-up but underperformance 3Q23

Latest run rate output is £12m pa

Latest (October) annualised run rate output is £12m. We had estimated £20m by now. 2022 was £5.1m, so still a strong rise, which is rising further.

This expansion of sales to OEMs is recent but given its order book, the expansion is fast and the constraint is capacity

2022 was the first year in which SCE sales to OEMs exceeded £1m. At the start of that year the order book was £115m, which justified and required the laying down of production facilities to satisfy orders. The then capacity of £5m pa was at that point increased four-fold. This capacity is now operational but the production output update on 3 November 2023 pointed to a shallower than expected ramp-up. SCE's constraint is solely capacity and the major uplift is under way.

Capacity is the current main topic and the rate of progress is analysed

We explore four main themes concerning the capacity constraints on SCE's growth:

- ▶ Capacity has ramped up, as monthly sales rates demonstrate, but this has been affected by some single points of failure (bottlenecks). From here, expertise (including training and new COO) and ongoing capex reduce the down-time risk. See page 5.
- ▶ 2023 is set to deliver sales growth, but this is below previous expectations. We recently reduced 2023 sales estimates to £8.6m and 2024 from £30m to £23m (to be conservative). See page 6.
- ▶ The 2024 estimate is importantly SCE's first year of operational cash flow neutrality. Capital expenditure for 2024 and part of 2025 is loan-funded.
- ▶ Potential corroboration of demand existing for the expansion of such a quantum, to £150m capacity and beyond. See page 8.

What SCE does and how it does it

Eight manufacturing stages

There are eight manufacturing stages and ca. 30 individual processes. Carbonisation furnaces are a major part of the removal of non-carbon atoms followed by vapour infiltration. Surface Transforms' website has a complete explanation:

www.surfacetransforms.com/what-we-do/our-process/

The move from cell structure to production line

In 2017 the first OEM contract began

To scale the business, SCE in 2022 moved to a production line arrangement. SCE initially manufactured in small batches, then scaled up to a small production cell in a factory opened in 2017. Immediately thereafter came a larger cell to get to the £5m annual sales achieved. Installed capacity is now £20m, including a move to a production line. This is the same equipment but more of it. The next step-up to £50m is in the commissioning stage (see below). Early elements of this kit include duplication of essential equipment on the production line, while the majority is pure expansion. No equipment is new to SCE, we understand.

Integral importance of the current £50m capacity equipment

Capacity profile and financing

Capacity built to date and future plans

We assess:

- ▶ The timing of ramp-up of new capacity, past and future;
- ▶ the 2023 single point of failure manufacture setback;
- ▶ the financing of the capital expenditure required to expand capacity towards a stated aim of £150m pa. The 2024E is for cash flow improving to breakeven.

2024 estimates operating cash flow breakeven, with a positive 2025. These include funding the WIP build-up

This is a realisable and ambitious programme with defined timelines

Timing of the ramp-up

The journey of SCE manufacturing capacity		
Item	Date	£m pa capacity (approx.)
Certified to ISO9001; tier 2 contract held	2008	<1.0
Move to cell system	2016	1.5
Move to new factory and second, larger cell	2017	5.0
Commissioning of line, a move from cell	2022, 2023	20.0
Commissioning of step-up in line capacity	2024	50.0
Commissioning of step-up in line capacity	End 2025	75.0
Commissioning of step-up in line capacity	Note	150.0

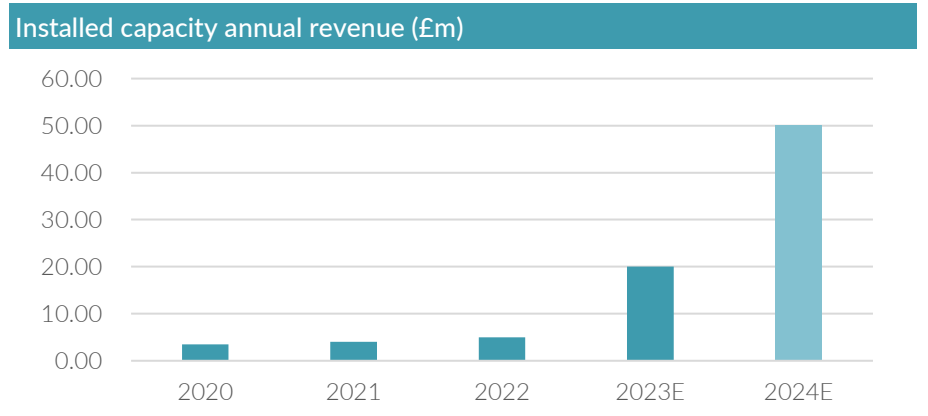
Note: Date to be finalised, illustratively 2027

Source: Company announcements, Hardman & Co Research

The data can be represented as a chart. The £20m has recently come onstream but has had teething problems (setting up a new industrial process is not a question of flipping a switch, requiring in-house elements and in-house maintenance profiling). The laying down of the £50m production line is well advanced and the move to lay down the production line for £75m is just commencing.

The prize is significant and it should be at the forefront of investors' minds that this is likely to grow to a £2.2bn market and there is only one competitor.

£20m capacity is installed; £50m paid for and actively being commissioned



2023 figure is as currently installed; 2024 is an estimate, this next phase is currently being installed

Source: Hardman & Co Research, Surface Transforms presentations

£5.1m sales 2022A; £12.0m annualised October 2023A; £23m sales 2023E

SCE has placed equipment in its customised industrial setting with in-house designed elements, and has been bedding this in

Less-than-expected rise to £8.6m 2023E from £5.1m in 2022 is a significant disappointment

The SCE analysis concerns the speed of growth

Recent – October 2023 – annualised production volumes £12m

2024 sales estimated at £23m

£150m capacity can be reached by end-2027, self-financed

2023 and 2024 detail on ramp up

There was a series of single point failures in the early autumn 2023 and this means SCE is running at somewhat double 2022 sales, which itself was a record. This is not good enough, though.

Why capex reduces risk of unplanned downtime

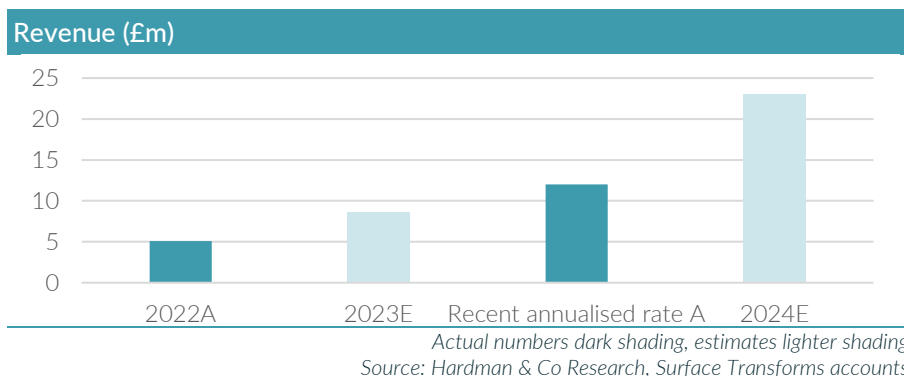
2022 saw furnace maintenance issues fixed and 2023 has been about bottlenecks disrupting the whole line when individual parts go down. The COO has been in post since September. Training and maintenance planning is one factor.

The 2023-24 installations (which will bring SCE to £50m capacity) involve duplications on key pieces of kit (e.g. the CVI furnace) and are already paid for, so should therefore be another alleviating element.

Taking both together, this will smooth out the bottlenecks and allow management to anticipate them and grow further.

£5.1m sales 2022A; £12.0m recent annualised 2023A; £23.0m sales 2024E

2022 achieved £5.1m; 2023 estimated at £8.6m but our estimate had been at £16m six months ago. Clearly this is disappointing, but the chart below illustrates that the actual current run-rates are demonstrating significant growth.



The production line stoppages which occurred in early autumn have been addressed and the shape of the planned ramp-up reduced to realisable levels. We provide details on this important aspect, but one fact to bear in mind is that in October we had initially hoped revenue would be running at an annualised rate of four times the 2022 revenue for the year. The outcome was 2.5 times. We understand this figure – current for November – has reached three times. While this is high growth, it remains a disappointment.

Turning to 2024, our estimate of £23m sales is below our previous estimates of £30m. Equipment for £20m volumes has been in place since the start of 2022. We would anticipate output would be ca. 75% this level as there are always fluctuations. We have reviewed our 2025 sales estimate of £40m and have not altered this figure.

Self-financing expansion from now

To be clear, we make this statement taking the recent equity raise and debt facility as part of this funding. On the basis our expected sales profile materialises, SCE self-funds all the rest of the growth. Having modelled the requirements post our recent downgrade to 2023 and 2024 revenues, we can confirm that our model indicates £150m capacity can be reached by end 2027 and this can be self-financed.

2024 and part of 2025 capital expenditure is debt-financed, then internal cash flow completes through to the £150m capacity to 2027; then, having reached the £150m current target, generates free cash flow estimated at over 20% of revenue.

2024E operating cash flow neutral, pre rise in WIP

Revenue 1H24E £9m, 2H24E £14m

We estimate £23m revenue in 2024. As to 2H24, we estimate breakeven to a small profit, on £14m sales in the 2H24 period.

The 2024E year as a whole generates £1.5m EBITDA. We estimate a £2.5m rise in working capital in 2024. £2.5m net cash at start 2024 turns to £7.9m net debt at year end after £9.0m estimates capital expenditure. A portion of this capex is capitalised R&D.

2H23, 2024 and 2025 estimates

The starting point has seen cash hurt by the sets of delays...

... With manufacturing equipment bedded in and a new COO, the forward visibility is more mature and robust

Cash drivers			
£m	2H23E	2024E	2025E
Revenue	5.3	23.0	40.0
EBITDA	-3.2	1.5	11.0
Working capital inflow	-2.6	-2.5	-3.8
Tax	0.0	0.8	0.8
Cashflow sub total	-5.8	-0.7	5.5
Interest	-0.1	-1.2	-1.3
Capital expenditure	-3.1	-9.0	-9.0
Net equity funding	8.0	0.0	0.0
Total cash flow	-1.0	-10.4	-2.3
Net cash	2.5	-7.9	-10.1

Source: Hardman & Co Research

To 2027

Financing: we model each element and agree with Chairman that growth is self-financing from now

To be clear, we make this statement taking the recent equity raise and imminently finalised debt facility as part of this funding. The financing of both capital expenditure and working capital is, as stated by the Chairman on the [RNS of 14 November 2023](#), self-financing once current new equity and the loan facility of £23m are deployed. This is for “funding required to build £150m p.a. sales capacity in the period to 2027.” We have modelled the requirements post our recent downgrade to 2023 and 2024 revenues and can confirm that our model indicates such a statement to be valid.

Our model includes working capital, and assumes ca. 70% capacity utilisation to account for ramp-up tapering-in and contingencies. By end-2027 the £150m capacity is in place and paid for, with major cash generation on a future no-growth basis being assumed. Within these years we estimate WIP investment of £3m-£6m each year. We do not expect 2028 to be the end to growth ambitions, as the market expands towards £2.2bn and beyond.

Growth to a multi-billion-pound market

The carbon ceramic disc market is growing fast and is set to achieve ca. ten-fold growth in the coming years, towards £2.2bn.¹ To give context, the global brakes market of which carbon ceramic discs is a sub-set is ca. £35bn.²

¹ Source: Society of Motor Manufacturers & Traders; Parkers

² Source: Fact.MR, Grand View Research

Market demand is strong, to pull through SCE's capacity expansion

Three 'buffers' for SCE

Demand clearly in place for the £75m capacity SCE is now ordering

Demand expands as production costs halve and halve again. The typical model price supplied is now reaching down towards £100,000, some less. Typical also is that the models supplied have a new end-client waiting list. SCE prospects are not made by the super-car market, nor the mass-economy market; this provides resilience. Currently, end-client order books include waiting lists, giving a second buffer to the indications of worldwide slowing economies. The third buffer is that SCE production deliveries, even in 2024, are well below average run rates in the order book (see Appendix 1 and below).

£80m pa is the average delivery latent within the multi-year order book

SCE remains as ambitious for growth as ever and the interim term is well covered by the existing order book. The run-rate average annual sales from a £390m order book are ca. £80m, given the length of time an average model is in production. This should be compared to the current capacity of £20m with the £50m pa capacity equipment being tapered in later in 2024.

Global slowdown?

Yet, it is clear *global auto sales were slowing in 3Q23*, principally as yet indicated by used car values. The fall is not great and the same source indicated *a modest bounce back in October*. LG Energy Solutions on 24 October stated "EV demand next year could be lower than expectations."

In automotive OEM terms £2.2bn would be a small market

Market share

See Appendix 3.

We estimate the size of the market will reach £2.2bn in a short number of years. SCE's initial ambition, to reach £150m capacity by end-2027, would therefore represent under 10% of ultimate market size, globally. We firmly believe SCE can exhibit realistic ambitions for this or more as a market share. Currently and for the foreseeable future, the majority of sales are to overseas customers, the largest zone being the USA.

Investors should keep in mind that SCE is currently finalising and scoping out its imminent move to £75m capacity. It then at a future date will take the decision for the £150m capacity.

Risks and SWOT analysis

The main risk by far is securing the timely growth in delivery of the product.

There has never been a major fail; at end 2021 there were maintenance cycle issues

Q: What if there is a major failure at the heart of the process, at either of the two furnace stages?

A: SCE knows the furnace capability and maintenance profile intimately. It is a complex process which needs a great deal of tuning. The tuning was two years ago and for example, furnace re-lining was undertaken. SCE updated the market in late 2021 that this was what it was doing and updated again in January 2022 that it had succeeded in refining the output. Come what may, SCE would update the market and the November 2023 update was an opportunity to be explicit on all issues. Capex is laying down more, which can duplicate throughput on the line. This has been happening through 2023 and we currently understand this full duplication will be performing at all levels by mid next year.

Three OEMs are being supplied out of three scheduled

Q: How are the OEM clients?

A: There are five. One has the SCE product on main model variant. Deliveries there have had to be significantly reduced below the scheduled level. As a variant, this is frustrating but does not in any way affect the OEM's own unit numbers.

Q: Does SCE have supply chain issues of volume or cost either in manufacturing or in the sourcing of capital equipment?

A: No. Its gas supply (for the carbon atoms, not power) is fixed price to 2025.

£20m pa is the operating breakeven sales rate

Q: Does a further delay on top of this mean cash strain?

A: £23m pa is the operating breakeven sales rate, post the tax credit. We estimate £23m revenue in 2024E. It is before interest and before capital expenditure. For 2025E we estimate £6.7m inflow after everything except the capital expenditure, estimated at £9.0m cash spend.

Q: How are medium-term input costs for SCE?

A: Across the board, cost engineering is reducing costs and these tend to get passed on to customers. The main operating cost is gas (not for energy but for carbon). This price is fixed for two years. Costs on the capex programme run at or below budget.

Q: Is there a macro-economic concern, with global slowdowns?

A: See page 8. The models being supplied are mainstream upper-middle market, with a bias now towards EV. Carbon ceramic brakes are fast becoming standard in a significant part of the market. The main – effectively sole – competitor reported good sales growth in their most recent investor report, relating to 2022.

Main investment drivers

SWOT	
Category	
Strength	Momentum of order wins; barriers to new competition
Weakness	Cash flow negative; manufacturing problems
Opportunity	Delivery of the current order book alone would be received strongly The high gross margins make self-sustaining rapid growth possible
Threats	Cash absorbed by growth capex; OEMs require a dependable supply

Source: Hardman & Co Research

Financials (pre Open Offer)

2024E operating cashflow breakeven pre the ring-fence funded capex

The company is estimated to be running at £15m annualised revenues in the last two months of 2023. Running a financial model with annual revenue of £23m per annum equates to cash flow breakeven, including working capital change and excluding debt-funded capital expenditure. This assumes SCE is running at a rate of overheads which we estimate at £12.3m 2024E. Teething problems inflated 2023 operating costs which were £8.0m in 2022, and we estimate £13.3m for 2023E.

We model a rise in WIP from £4.7m end 1H23A to £9.8m end 2024E. This models future debtors, creditors and inventories each being two months' prospective full-year sales.

We estimate 1H24E profit after tax -£2.2m; 2H24E profit after tax at £0.5m.

Revenue account						
Year-end Dec (£m)	FY'20	FY'21	FY'22	FY'23E	FY'24E	FY'25E
Sales	1.95	2.37	5.12	8.60	23.00	40.00
Gross profit	1.31	1.55	3.08	5.30	13.80	24.00
Gross margin	67.00%	65.00%	60.10%	61.60%	60.00%	60.00%
R&D & overheads	-3.63	-5.33	-7.98	-13.30	-12.30	-13.00
R&D capitalised	0.00	0.25	1.60	2.00	1.50	1.50
EBITDA	-2.32	-3.78	-4.90	-8.00	1.50	11.00
EBITA	-2.81	-4.45	-5.87	-9.50	-1.30	7.00
Net finance income	-0.11	-0.13	-0.17	-0.20	-1.20	-1.30
PBT (adjusted)	-2.92	-4.58	-6.04	-9.70	-2.50	5.70
Exceptional items	0.00	0.00	0.00	0.00	0.00	0.00
Tax credit	0.61	0.63	1.26	1.00	0.80	0.80
PAT	-2.31	-3.95	-4.78	-8.70	-1.70	6.50
EPS (diluted, adjusted, p)	-1.54	-2.08	-2.34	-3.47	-0.52	1.99
DPS (p)	0.00	0.00	0.00	0.00	0.00	0.00

Source: Surface Transforms accounts, Hardman & Co Research estimates

All tables are as pre the current Open Offer. SCE is finalising its loan facility.

Balance sheet

Balance sheet						
@ End Dec (£m)	FY'20	FY'21	FY'22	FY'23E	FY'234E	FY'25E
Shareholders' funds	5.67	20.89	33.55	32.85	31.15	37.65
Net current assets (excluding gross cash)	0.99	1.15	3.90	7.30	9.90	13.50
Net cash/(debt)	0.50	11.70	13.80	2.50	-8.00	-10.10
Avg. shares diluted (m)	149.80	190.00	204.20	251.00	325.00	326.00

Source: Surface Transforms accounts, Hardman & Co Research estimates

Cashflow

Cashflow						
Year-end Dec (£m)	FY'20	FY'21	FY'22	FY'23E	FY'234E	FY'25E
Cash from operations, including tax	-1.34	-3.82	-6.36	-11.10	-0.30	8.20
Equity issuance	2.26	19.10	17.22	8.00	0.00	0.00
Interest	0.00	-0.13	-0.18	-0.20	-1.20	-1.30
Capital expenditure	-0.64	-3.95	-8.35	-8.00	-9.00	-9.00
Net cashflow	0.28	11.20	2.33	-11.30	-10.50	-2.10
Depreciation	0.49	0.67	0.97	1.50	2.80	4.00

Source: Surface Transforms accounts, Hardman & Co Research estimates

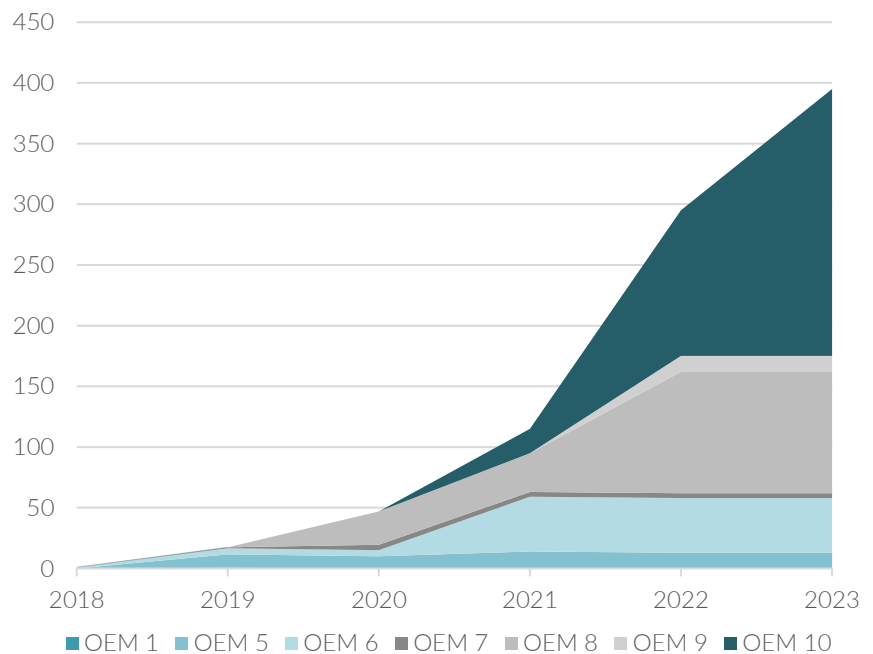
Appendix 1

SCE order book

Order book growth has been gratifying. These are sole supplier contracts, virtually all as Tier 1. Typical order lasts five to seven years, the life of the model in production, with SCE brakes designed in. Most are not optional extras, because options do not have the full weight-bearing advantages. There is a delay from order win to start of production; this can vary and it can be extended by the OEM customer. Three orders are currently being produced in a material way, for US and European continental clients, household name global OEMs.

SCE benefits from 11 contracts with seven OEMs

Order book at calendar year-end (£m)



Notes: OEM 1 has been a relatively small client
Source: Hardman & Co Research, Surface Transforms presentation

SCE's success is in the context of a rapidly growing market with one competitor. See Appendix 3.

Appendix 2

The product and ESG

Proof of the pudding is the multi-year success with each client and for over a decade on the road

How are SCE carbon ceramic brake discs attractive to OEMs?

- ▶ They have excellent multi-year test successes with each client.
- ▶ They have been on the road through the early retrofit sales for well over a decade, with no statistically significant fails.
- ▶ There are multiple environmental benefits from weight to reduced particulate emissions to end of life benefits. Most discs will last the car's whole life.
- ▶ There are specific benefits for EVs, now ca. half the order book.
- ▶ SCE is a superior product but being a second source of supply is also attractive to OEMs.

Designed-in so supply lasts as many years as model is in production

What is the attraction of the contract structure?

On all bar one, SCE is a Tier 1 contractor. On no contract is SCE one of two suppliers. It could not be, as the model is designed with a particular disc and that cannot be changed – hence the long lead-time to an order. SCE has ensured its order book is weighted to its disc not being an option variant. However, it is a variant model for its OEM 8 client, which is receiving product currently. Being a variant does mean more flexibility in offtake, which is helpful to SCE given its early autumn 2023 under-production.

LSE Green Economy Mark

How is SCE good in ESG?

Fuel saving...

... EV vehicle benefit...

... air quality improvement...

... and plenty besides

- ▶ SCE was awarded status of LSE Green Economy Mark. Only 108 of all LSE quoted companies have achieved this (as of the 21 June 2023 announcement).
- ▶ Lighter weight for both the discs and the associated brake systems thereby helping fuel consumption – a major environmental and user-cost benefit.
- ▶ Much longer life, often not needing to be replaced during a car's lifetime.
- ▶ Carbon ceramic discs assist EV regenerative braking. These cars tend to be heavier than internal combustion so weight-saving discs are welcomed.
- ▶ Carbon ceramic brake discs significantly reduce brake pad particles being released into the atmosphere and watercourses.
- ▶ At the end of its life, the disc product acts as a carbon sink as the aluminium bell can be recycled. Carbon and silica are almost the only remaining elements at the end of the product's life.
- ▶ Future potential steps in manufacturing in years to come are likely to comprise a Combined Heat and Power Plant project.
- ▶ The factory near Liverpool provides high-quality local jobs and STEM training.
- ▶ It is clear that only part of the attraction – but an essential part – is the higher performance, including absence of 'brake fade.'

Appendix 3

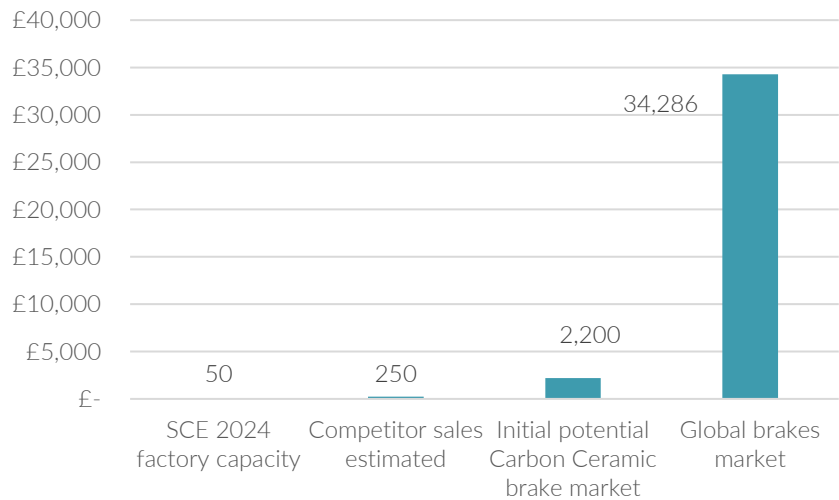
The market and competition

Carbon ceramic discs are particularly useful to EV OEMs due to their light weight (EVs are heavy) and benefit to regenerative braking. The low weight brings fuel-saving benefits and there are several other environmental benefits from improving air quality to minimising need for replacement in the life of a car. Even at £2.2bn market size there would be considerable upside.

The carbon ceramic disc market is growing fast and is set to achieve ca. ten-fold growth in the coming years towards £2.2bn. To date SCE has only one competitor. It takes many years for any supplier to get its product approved, let alone designed into a model. This is of course a most unusual position in the auto OEM supply chain. There are high and broad technical and commercial barriers to entry.

To give context, the global brakes market (of which carbon ceramic discs is a subset) is ca. £35bn³. The carbon ceramic discs global market is £270m currently,⁴ which analysts suggest is growing at over 11% per annum over the next five years.

Global automotive brakes market – new plus second hand (£m)



SCE is fledgling – it has part of the global OEM brakes market and very small retrofit sales

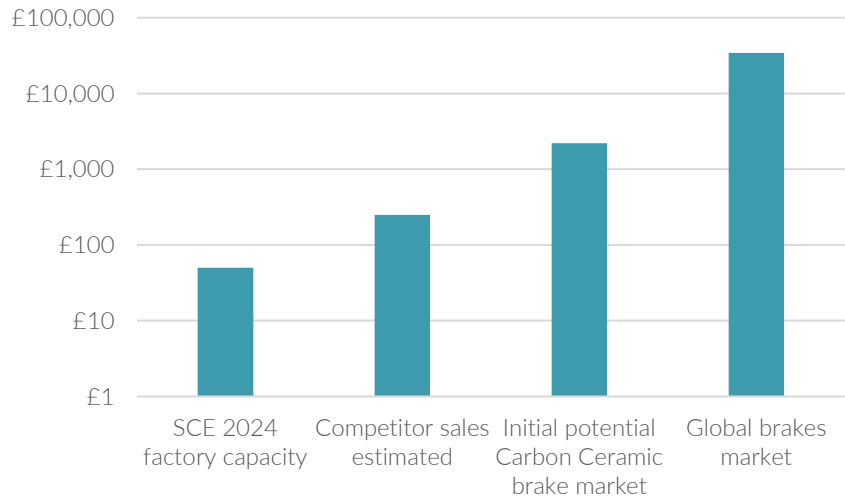
Source: Society of Motor Manufacturers and Traders, Fact.MR, Brembo, SCE, Hardman Research

The current factory capacity of SCE is £20m, rising to £50m in 2024. The same data in logarithmic scale presents as follows, below.

³ Source: Fact.MR, Grand View Research

⁴ Source: Future Market Insights

Logarithmic presentation of data in previous chart (£m)



Source: Society of Motor Manufacturers and Traders, Fact.MR, Brembo, SCE, Hardman Research

Competition

Competition is from a single European-based joint venture company, Brembo SGL Carbon Ceramic Brakes. This company, founded in 2009, was profitable in its latest reported financial period, calendar 2022, in which sales of the Italian and German businesses totalled €69.4m and €172.6m respectively. This represents a 14.7% increase on 2021 sales. It is important to note that the *Brembo group accounts* indicate the sales derive also from "...sale of braking systems in general, and particularly of OEM carbon ceramic brake discs...".

In September 2023 Brembo *announced the laying of the foundation* for an expansion in its factory. New machinery is currently scheduled for October 2024, with start of production scheduled for January 2025. The company states this and other initiatives completed by 2027 will expand both production facilities at the combined two-site production facility capacity by 70% and cost €150m.

Appendix 4

Production issues and financial impact

14 December 2021

On 14 December 2021, SCE gave an operations update: *“...a series of minor startup challenges has caused output delay, resulted in Q4 output missing target. By December, these issues have been narrowed down to an issue with one particularly complex furnace.”*

11 January 2023

On 11 January 2023, SCE updated and itemised: *“...some highly specific, but cumulatively significant, production issues at the Company in late November [2022] and December [2022] as volumes were ramped up. The problem furnaces are now operational.”*

27 June 2023

The 27 June 2023 AGM statement read: *“The production difficulties described in the first quarter trading update have not recurred, but the Company has continued to experience individually small production disruptions that have slowed the ramp up in output.”*

3 November 2023

The 3 November 2023 trading update stated:

“The previously reported technical problems have now been overcome. However, we continue to face some challenges in our production line, including single points of failure and a learning curve on the maintenance of our new equipment. These challenges, which are being resolved, are hindering us from creating sufficient capacity resilience and are constraining our production ramp up.”

Consequently, the Company is prioritising new capacity on these single failure points whilst building up work-in-progress buffer stocks [...] revised operating processes and training has been accelerated to deal with improving maintenance of key pieces of equipment. The Company has also made significant changes to Operations Management, including but not limited to, the appointment of a new Chief Operating Officer, Stephen Easton.”

Mr Easton joined from SGL Carbon where he worked for 16 years, latterly as UK Managing Director. He took up his post in September 2023. He has held various leadership positions in both the UK and US, specialising in carbon and oxidised fibre.

Changes in estimates			
Item	PBT/ EPS	OLD estimate	NEW estimate
2023	PBT	-5.70	-9.70
2023	EPS	-1.65	-3.47
2024	PBT	2.50	-2.50
2024	EPS	1.23	-0.52

Source: Company announcements, Hardman & Co Research

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