

Revasum, Inc. (ASX: RVS)

Investor Presentation

May 2019

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Non-IFRS financial measures

Revasum uses certain measures to manage and report on its business that are not recognised under Australian Accounting Standards or IFRS. These measures are collectively referred to in this document as 'non-IFRS financial measures' under Regulatory Guide 230 'Disclosing non-IFRS financial information' published by ASIC. Management uses these non-IFRS financial measures to evaluate the performance and profitability of the overall business. The principal non-IFRS financial measures that are referred to in this document is EBITDA. EBITDA is earnings before interest, tax, depreciation and amortisation and significant items. Management uses EBITDA to evaluate the operating performance of the business prior to the impact of significant items, the non-cash impact of depreciation and amortisation and interest and tax charges.

Although Revasum believes that these measures provide useful information about the financial performance of Revasum, they should be considered as supplements to the income statement measures that have been presented in accordance with the Australia Accounting Standards and IFRS and not as a replacement for them.

Financial data

All dollar values are in US dollars (US\$) unless as otherwise presented.



Revasum Overview (ASX: RVS)



A\$96.45 million
Market Cap



A\$1.26
Stock Price



16.9%
Management Ownership
of Fully-Diluted



76,546,178
Shares on Issue

2018
US\$27.3 million

Sales by Year

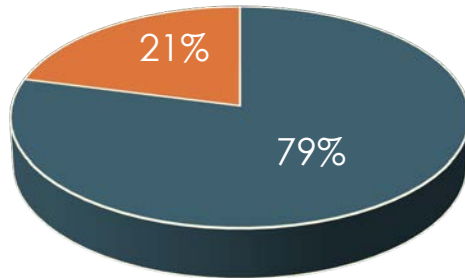
2017
US\$12.5 million

Share and Shareholder data as of 9 May 2019

Who is Revasum?

Revasum is a leading designer and manufacturer of equipment essential to the production of semiconductor devices ubiquitous in everyday life such as IoT, automotive, wearables, telecommunications and industrial applications.

2018 Revenue



■ System Sales ■ Parts & Service

SYSTEM SALES
AVERAGE PRICE: **\$625,000**
35 Systems shipped in 2018



Revasum's equipment is at the **beginning** of the technology we use every day



Many of the world's best known products start with Revasum equipment

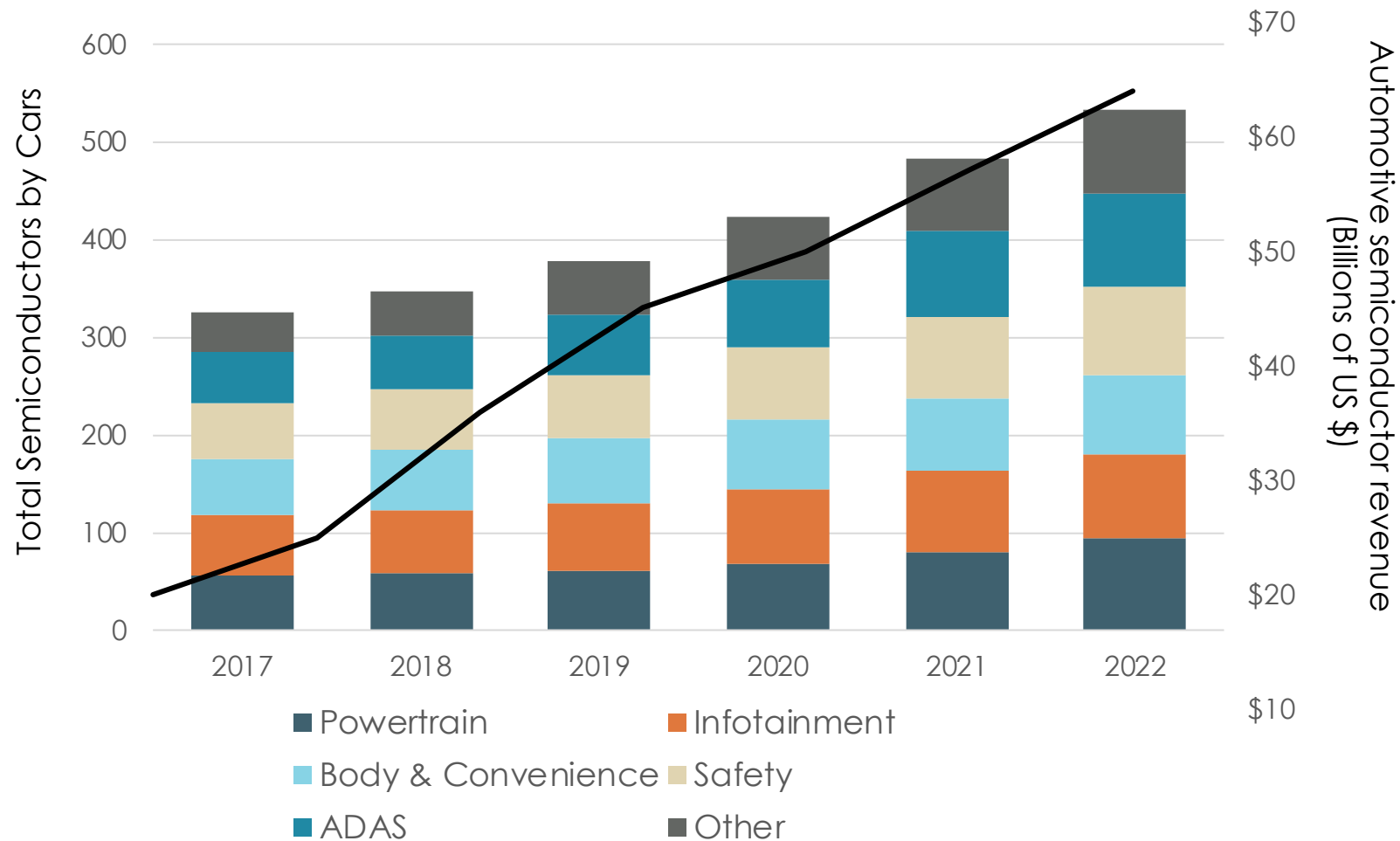
Revasum sells their manufacturing equipment to microchip fabs

The microchip fabs use Revasum equipment to make the substrates for devices used in automobile's, 5G and IoT



MARKET OPPORTUNITIES AND HIGHLIGHTS

Semiconductor Devices in Autos by Application



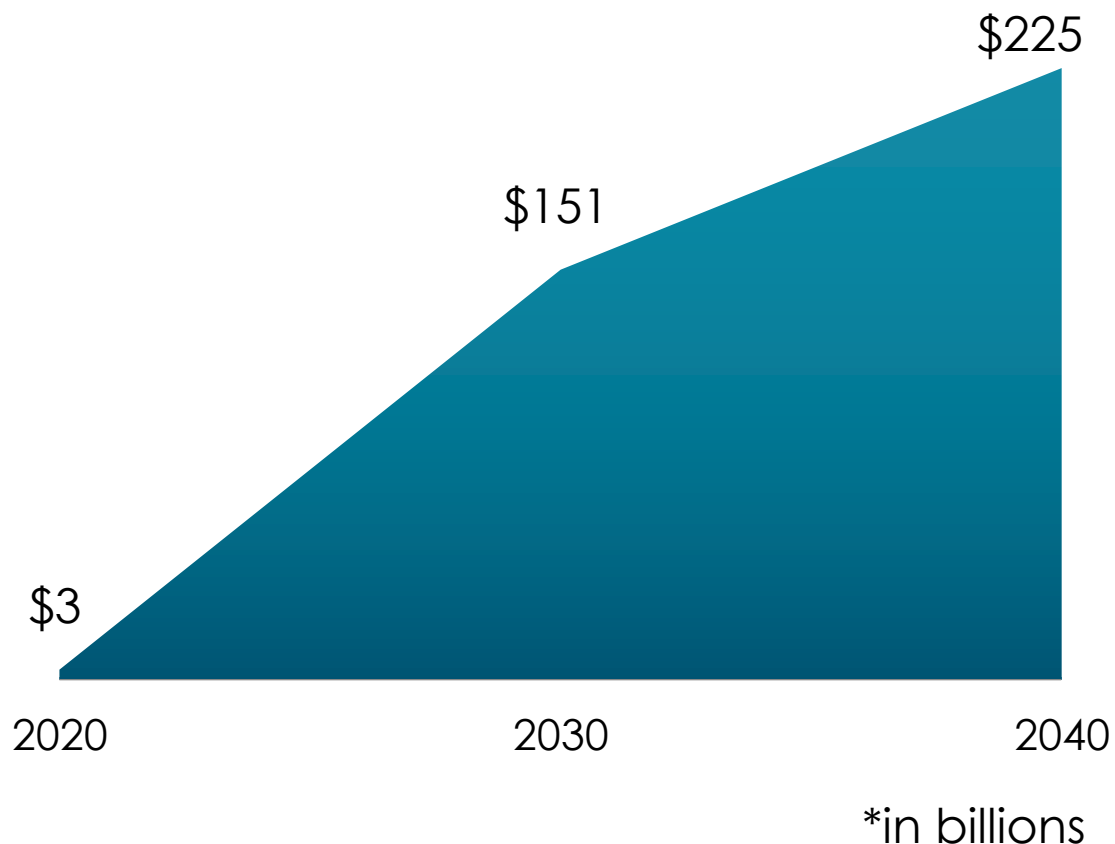
Source: HIS Markets

AUTOMOTIVE

As the automotive industry moves towards “Zero Emissions” transportation, manufacturers are rapidly ramping up their electrification programs; with most OEMs targeting 2025 for significant volumes of Battery Electric (BEVs), Hybrid Electric Vehicles (HEVs) and Super Charging Stations.



5G Semiconductor Device Market Forecast



Source: Frost & Sullivan, End-markets for Semiconductor Manufacturing Equipment



The adoption of 5G is expected to be driven by end use adoption of devices requiring faster processing speed and lower latency.

By 2025 there are expected to be ~1.2 billion 5G connections globally; accounting for 14% of all mobile connections.



engine oil change intervals of up to 10,000 miles

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Home > Uncategorized > Global Silicon Carbide (SiC) Power Devices Market is Trending Worldwide due to...

Global Silicon Carbide (SiC) Power Devices Market is Trending Worldwide due to Trendâs, Analysis & Forecast 2022

By admin - June 12, 2018 16 0

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The **Global Silicon Carbide (SiC) Power Devices Market** report forecast a professional and detailed study on the present state also focuses on the Global Silicon Carbide (SiC) Power Devices business strategists and effective the key players. Global Global Silicon Carbide (SiC) Power Devices Industry granular analysis of the Global Silicon Carbide (SiC) Power Devices market share, segmentation, revenue forecasts and facilitate better decision-making.

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ON Semiconductor Announces SiC Diodes for Demanding Automotive Applications

Lower losses and higher switching deliver highly efficient, space-saving solutions and reduced overall system costs

June 08, 2018 08:00 AM Eastern Daylight Time

MUNICH, Germany--(BUSINESS WIRE)--PCM 2018 - Hall 9 Booth #342 - ON Semiconductor (Nasdaq: ON), driving energy efficient innovations, has announced an expansion of its silicon carbide (SiC) Schottky diode portfolio to include devices specifically intended for demanding automotive applications. The new AEC-Q101 automotive grade SiC diodes deliver the reliability and ruggedness needed by modern automotive applications, along with the numerous performance benefits synonymous with Wide Band Gap (WBG) technologies.

"By expanding our Schottky diode range with AEC-Q101 qualified devices, ON Semiconductor is providing the significant benefits of SiC technology to automotive applications, allowing our customers to achieve the demanding requirements of high-voltage, high-current, and high-temperature environments. SiC technology provides superior switching performance and higher reliability compared to silicon devices. The diodes have no reverse recovery current and switching performance is independent of temperature. Excellent thermal performance, increased power density and reduced EMI, as well as decreased system size and cost, make SiC a compelling choice for the growing number of high-voltage, high-current, and high-temperature applications."

For more information, please visit [www.onsemi.com](#) or contact your local sales representative.

Home > Business > News

High-Voltage Silicon Carbide Inverter Stabilizes Medium-Voltage Grids

Published on 30 May 2018

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Researchers at the Fraunhofer Institute for Solar Energy Systems ISE developed and successfully put into operation an inverter for

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Electronics and Semiconductors

Cree to invest \$1 billion to expand SiC capacity

Electronics360 News Desk

07 May 2019

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As part of its long-term growth strategy, Cree Inc will invest up to \$1 billion in the expansion of its silicon carbide (SiC) capacity with the development of a state-of-the-art, automated, 200 mm SiC fabrication facility and a materials mega-factory at its U.S. car

company's largest investment to date in fue

Upon completion in 2024, the facilities will s

wafer fabrication capacity, allowing wide-ba

shifts underway within the automotive, com

to Cree CEO Gregg Lowe, "This

Equipment/Materials Lasers/VCSs Opto/RF Communications Solar/CPV

Financial/Market LED Technology Power Devices/Amplifiers Services MEMS

Home > Littelfuse Introduces New 1200V SiC Schottky Diodes

Littelfuse Introduces New 1200V SiC Schottky Diodes

on June 8, 2018 in Power Devices/Amplifiers

Article Type: news, Latest News

Littelfuse, Inc. added 1200V Schottky Diodes to its portfolio of silicon carbide (SiC) power semiconductor devices. Specifically, the company introduced five new GEN2 Series 1200 V, 3L TO-247 Schottky Diodes and three GEN2 Series 1200 V, 2L TO-263

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Search here...

Toyota Testing Brand New SiC Technology to Increase Hybrid and EV Efficiency

/ Home / News / Industry 29 Jun 2015, 16:03 UTC by Gabriel Brindusescu

Silicon carbide (SiC) seems to be the solution to improve current

hybrid and electric vehicle efficiency to boost range and also

make them lighter. Or at least that's what Toyota is betting on for

now as it will soon roll out the new technology into a hybrid Camry

and fuel cell bus prototypes to test it.

7 photos

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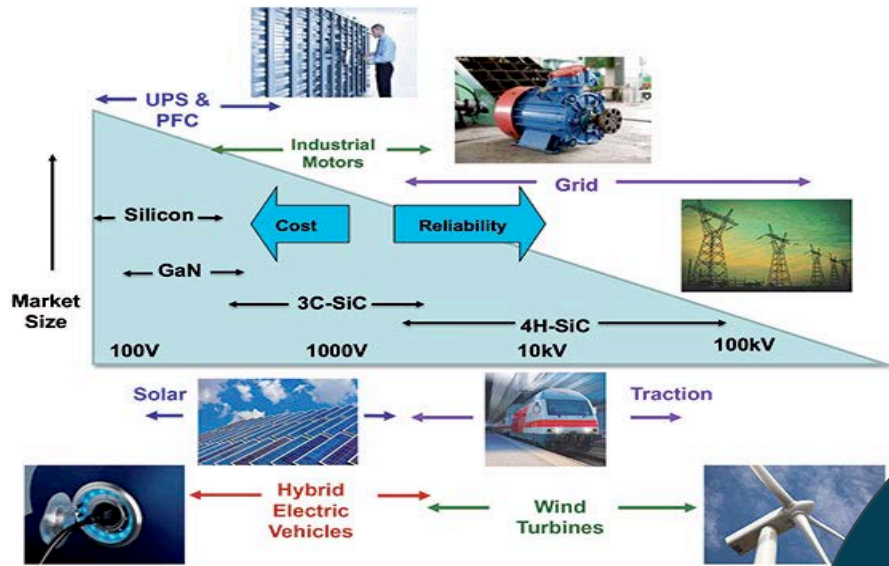
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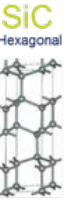
Global Silicon Carbide Device Market Size Growing Fast

The global silicon carbide market size is expected to reach USD \$16 billion by 2032





Property	SiC advantage	Si	SiC
E_g (eV) - band gap	x3	1.1	3.3
v_{sn} (cm/s) - electron saturation velocity	x2	1×10^7	2×10^7
μ_n (cm ² /Vs) - electron mobility	~	1350	950
ϵ_r - dielectric constant	~	11.8	9.7
E_c (V/cm) - critical electric field	x15	2×10^5	3×10^6
k (W/cm K) - thermal conductivity	x3	1.5	5



SiC Advantages

70% more efficient

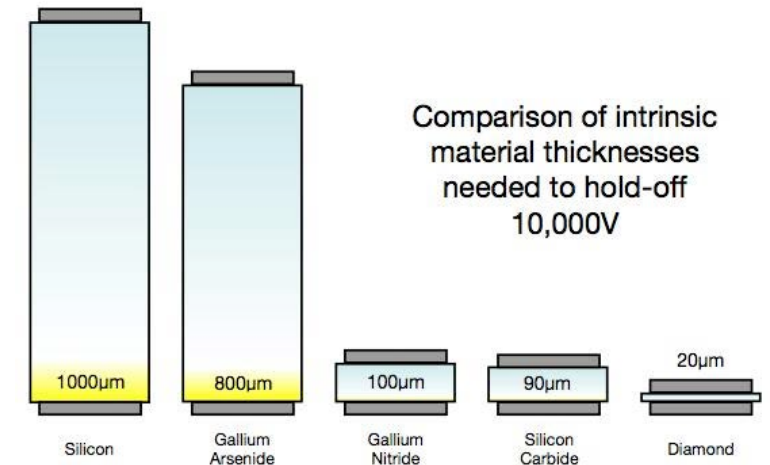
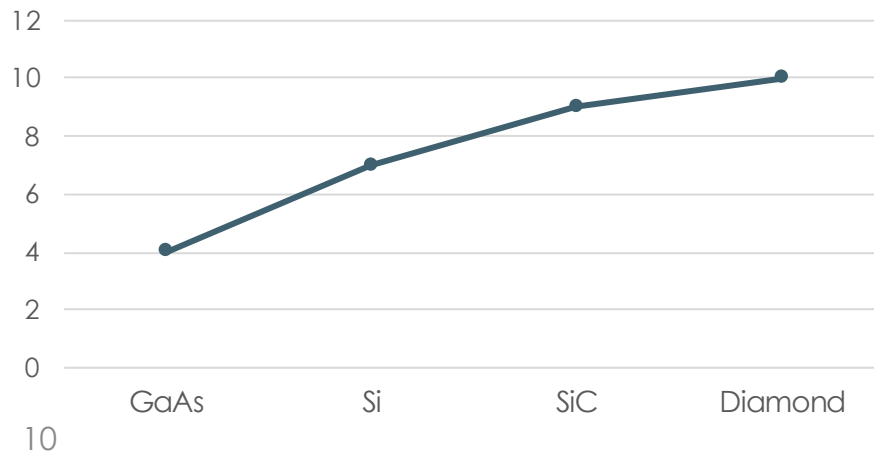
2-3X faster switching speed

Deliver 65% increase in power density

30% fewer components

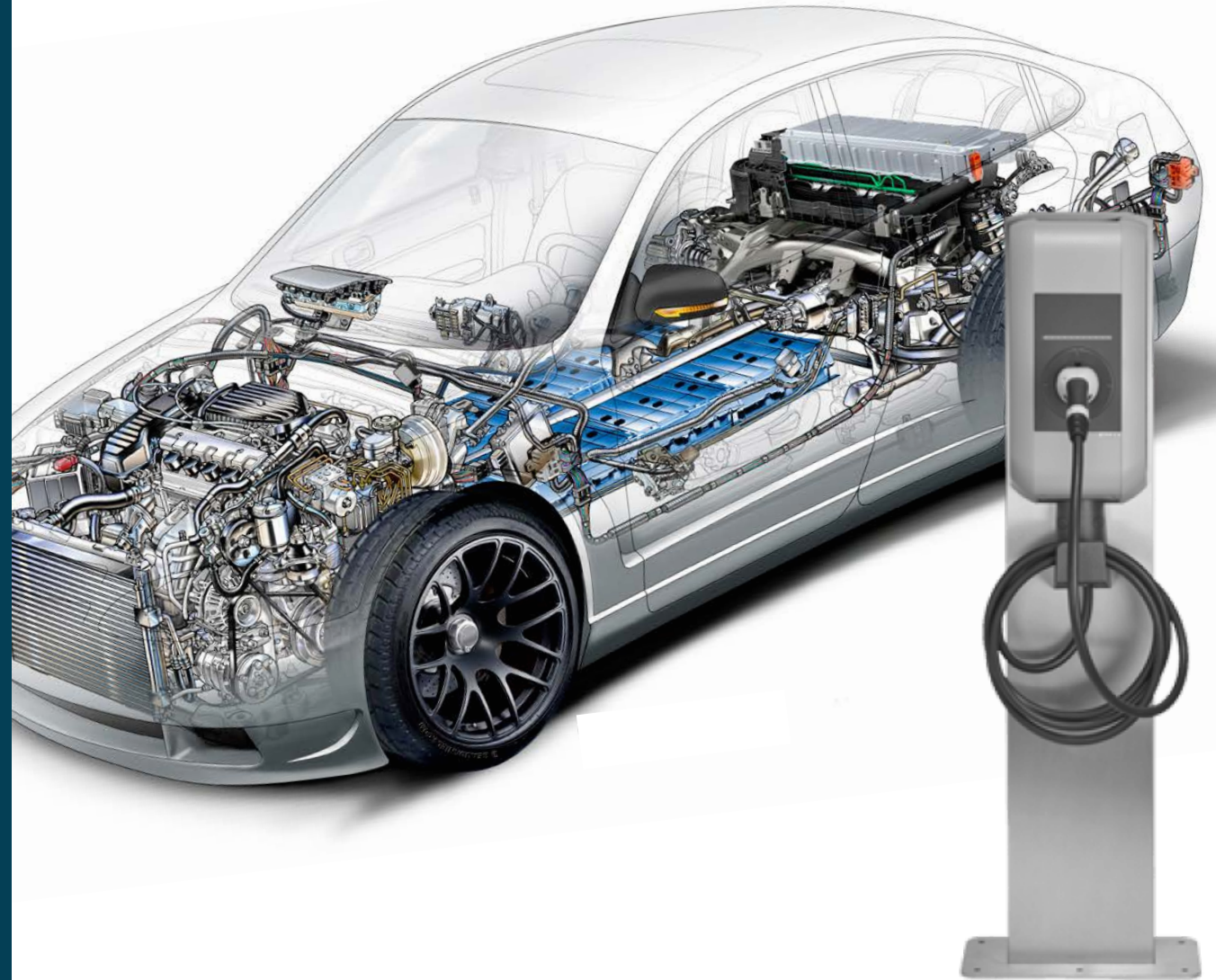
*vs. Silicon

Mohs Hardness Scale



SiC Driving EV Infrastructure with Higher Power Density and Switching Efficiency

As electric vehicles (EVs) have penetrated lithium battery markets, key electrochemical properties have imposed more challenging standards; while higher energy densities are desired for increased driving mileage, enhanced reaction kinetics are demanded for fast charging and high rate operations.



Current LTE networks cannot transmit and receive signals at the same time on the same channel, using SiC solves this.



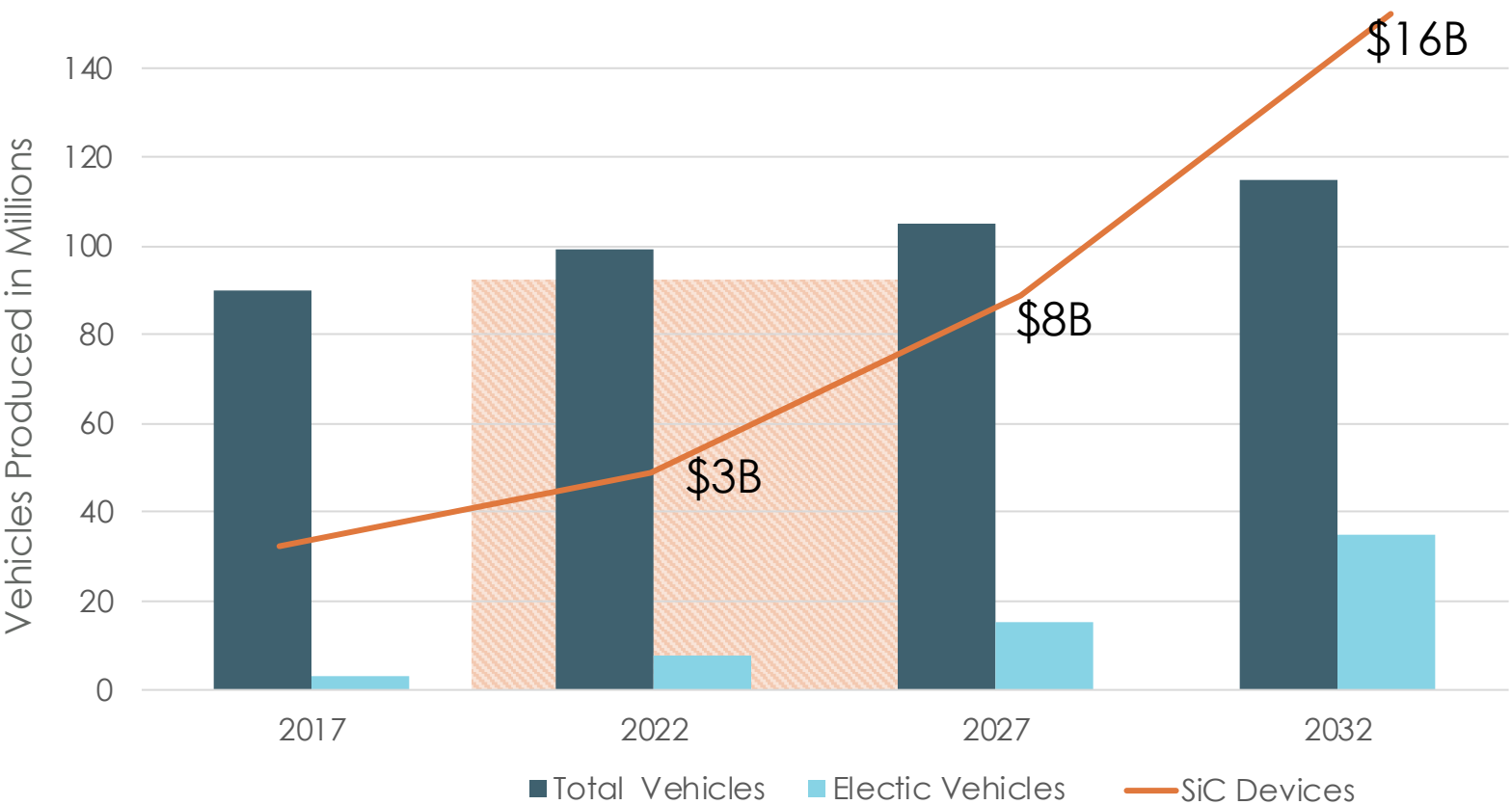
SiC for 5G is about Reducing the Size and Increasing Power

5G not only requires the installation of more base stations, but also more compression of power on the device level. Temperature, speed, power, efficiency, size and cost become key criteria for selecting a semiconductor technology upon which 5G base stations will be built.

GaN on SiC—is the clear choice for 5G based on its superior technology characteristics and lifetime total cost of ownership.



Even Modest EV Adoption Drives Massive SiC Equipment Demand



*Source: Morgan Stanley and Cree

What does SiC Mean for Revasum?

total SiC grinding and polishing equipment market of

\$565m**

over the next 5 years

**Company estimate



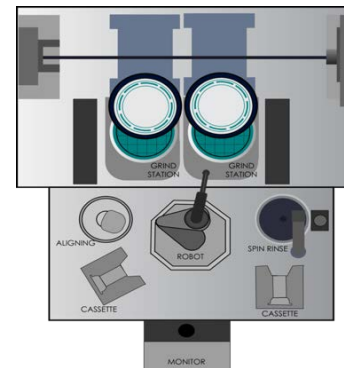
Revasum Develops and Manufactures SiC Grinders and Polishers

Revasum grinders are designed to provide high reliability and consistent performance at a low cost of ownership

Revasum device-proven polishing equipment is ideal for a broad range of applications

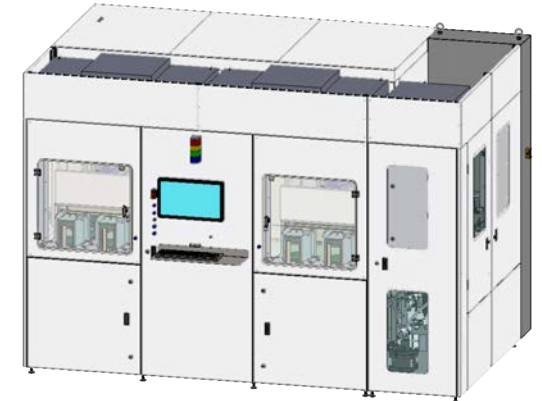


SiC GRINDER

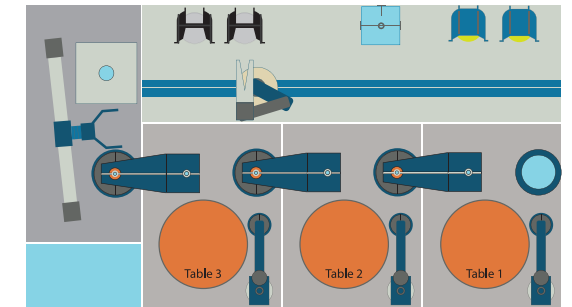


Market Advantage

We have #1 market share for SiC backside thinning



SiC POLISHERS



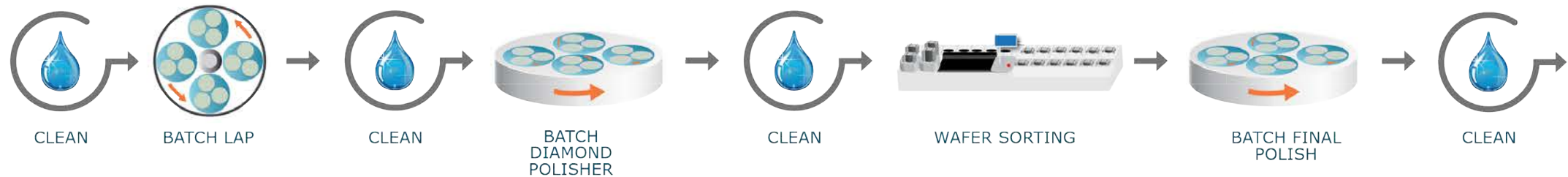
Market Advantage

Flatter, smoother, more consistent prime wafers result in higher device yields

Processing 6" SiC Wafers is Difficult

Traditional Batch Process

This process sequence involves numerous separate process tools and is fraught with issues including manual loading and unloading of wafers, the requirement for wafer sorting to group wafers by thickness, damage induced by the loose lapping abrasive, low yields, and unacceptably high risk of scrap (an entire batch of wafers may be scrapped if even one wafer cracks or breaks during a batch process).



REVASUM HAS THE SOLUTION!

Revasum's Single Wafer Process

Revasum's single wafer tools can significantly simplify the process sequence. The key improvements include individual wafer processing, better controls, fully-automated handling, two-sided grinding, integrated cleaning for both the grinder and polisher, elimination of diamond polish step, and elimination wafer sorting prior to final polish.



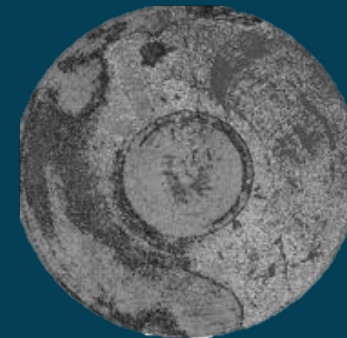


Traditional Batch

A dirty, manual process

Manual load and unload from each batch step increases scrap (wet wafers are slippery and break easily!)

Wafers sit in slurry and debris while being unloaded by hand



Dried slurry is like dried cement – tough to remove



Revasum Single Wafer A Clean Automated Process



Fully automated, cassette-to-cassette handling. Single and two-sided processing requires minimal labor.



Integrating cleaning prevents slurry and debris from drying on the surface of the wafer.

Revasum is the Clear Choice for SiC Device Processing

Most SiC is produced on 4" wafers. To meet market demands fabs are switching to 6" and even 8" wafers.

To make the move to larger wafer size, Revasum's single wafer process is clearly the better choice.

	Revasum's Single Wafer Processing SiC Substrates	Batch Wafer Processing SiC Substrates
Higher Throughput		✓
Better wafer-to-wafer consistency	Ⓜ	
Improved TTV	Ⓜ	
No Wafer Sort Required	Ⓜ	
Reduce Sub-surface Damage	Ⓜ	
Better Yield	Ⓜ	
Improved EPI readiness	Ⓜ	
Fully Automated	Ⓜ	
Clean, Dry wafer after polish	Ⓜ	
Cost of Ownership	Ⓜ	



FINANCIAL PERFORMANCE AND INVESTMENT HIGHLIGHTS

2018 Financial Highlights / 1H19 Outlook

(USD in millions)	FY18 Actual	IPO FY18*	IPO 1H19*	1H19 Current Guidance
Revenue	\$27.3M	\$27.5M	\$20.5M	\$15M - \$16.5M
Gross Profit	\$10.2M	\$10.0M	\$8.6M	
GM%	37%	36%	42%	
Operating Expenses	\$11.2M	\$11.1M	\$6.5M	
Operating Income(Loss)	(\$1.0M)	(\$1.2M)	\$2.1M	

Reconciliation of Adjusted EBITDA to Operating Loss

(USD in millions)	FY18 Actual	IPO FY18*	IPO 1H19*	1H19 Current Guidance
Adjusted EBITDA	\$0.8M	\$0.3M	\$2.9M	(\$1.5M) to \$1.0M
IPO Costs	(\$1.3M)	(\$1.0M)	\$0.0M	
Share Based Comp.	(\$0.3M)	(\$0.3M)	(\$0.3M)	
Depr. and Amort.	(\$0.2M)	(\$0.2M)	(\$0.5M)	
Operating Income(Loss)	(\$1.0M)	(\$1.2M)	\$2.1M	

1H19 Revenue
Guidance lowered April 2019 due to revised delivery and production schedule and booking forecast.

Cash Balance of US\$19.8 (unaudited) as of 31 March 2019 and no debt.



INVESTMENT HIGHLIGHTS / OUTLOOK

- Capitalizing on strong growth in demand for end-use products driven by the Automotive, IoT, & 5G markets.
- New Product development of SiC-focused Polisher tracking to be delivered on-time and on-budget in 2H19.
- Strategically focused on the wafer substrate and device markets sized 200mm and below where there is a known shortage of equipment supply.
- Experienced Management Team
- Strong Intellectual Property Portfolio



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