'HARDMAN PREPARED THIS DOCUMENT PURSUANT TO AN ENGAGEMENT LETTER ENTERED INTO WITH BPER'

ELES

All about no failures

ELES is well positioned within the semiconductor testing market, proposing an innovative test approach, with a good competitive position, long-term client relationships and a solid financial standing. The Group is seeking to raise around €10m: €5-€6m through new primary shares, €0.9m through potential secondary shares and around €3m from existing shareholder (Gepafin) sales – to accelerate its growth process.

- **Competitive position:** ELES, serving clients in the semiconductor industry, is a leading player in its market segment, has long-term relationships with its principal customers, and is present in the Silicon Valleys of America, Asia and Israel. The ELES offer is composed of Test System (machines) and Test Application (Boards & Value-Added Services).
- **Strategy:** ELES offers an innovative design level test approach, based on DFT and BiST, and supports its clients in improving the reliability of its products via early co-engineering (at design phase) in order to achieve the primary goal for the semiconductor industry, to then achieve Zero Defect Results and excellence.
- **Financials/valuation:** ELES compares favourably with its closest competitive peer group in terms of the most common financial metrics. Our medium-term financial forecasts suggest sales growth of around 12% p.a. and EBITDA growth to €7.3m, with margins of around 22% being attained by 2021. Valuation methodologies suggest a current equity valuation of just under €25m.
- **Risks:** The principal risks for ELES include the volatile, unpredictable and seasonal nature of the semiconductor equipment industry, as well as the timing and amount of orders from customers and shipments to customers.
- **Investment summary:** ELES is well positioned within the semiconductor testing market, with a good competitive position. The Group is seeking to raise around €10m to accelerate its growth process, and is looking to invest around €15m in the next three years – around €7m for internal growth (capital equipment expenditure, upselling technology) – and €6.5-€8m in acquisitions (predominantly in the US and Indian markets).

Financial summary and valuation

Year-end Dec (€m)	2017	2018	2019E	2020E	2021E
Sales	14.4	22.6	25.1	28.5	32.5
Gross profit	5.9	8.0	9.3	10.8	13.8
EBITDA	2.7	3.6	4.3	5.1	7.3
EBIT	0.6	1.5	2.2	3.3	5.7
Pre-tax profit	0.4	1.2	1.9	3.0	5.4
Net (debt)/cash	(6.6)	(4.3)	(3.4)	(2.8)	(1.3)

Source: Hardman & Co Research

Description

ELES is an Italian Innovative SME that operates in the Microelectronics Testing systems sector, providing the semiconductor industry with reliability systems and test solutions.

Company information

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CFO	To be appointed
Chairman	Antonio Zaffarami

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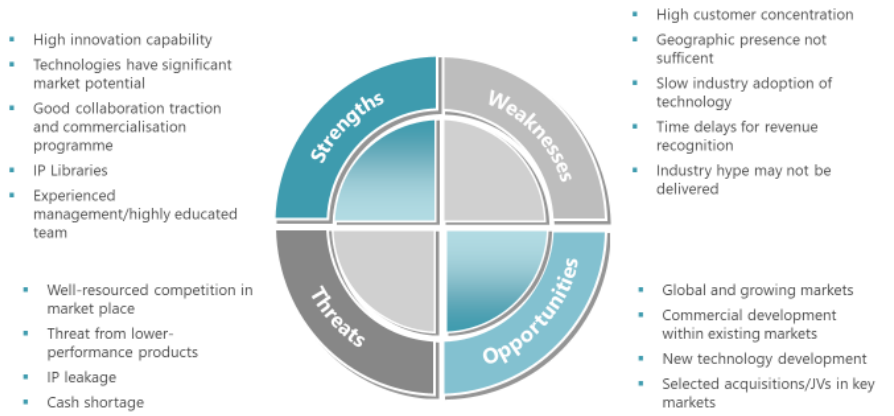
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Executive summary

Investment conclusion

ELES is well positioned within the semiconductor testing market, with a new product offering, a good competitive position, with long-term client relationships, and a solid financial standing. The group's risk/reward profile is favourable. The Group is seeking to raise around €10m: €5-€6m through new primary shares, €0.9m through potential secondary shares and around €3m from existing shareholder (Gepafin) sales – to accelerate its growth process.

SWOT analysis



Source: Hardman & Co Research

Strategic thrust

ELES is competitively well positioned within the semiconductor testing market, operating in the testing equipment market for semiconductors. It is focused mainly on Integrated Circuits testing, including System on Chip (SoC), MEMs and Memories. Within the SoC devices family, ELES is focused on Smart Power devices, Logic SoCs and SoCs with Embedded Memory.

Entering the Electronic Control Unit Test market

ELES's RETE (Reliable Embedded Test Engineering) offer for the semiconductor industry could be addressed to ECU producers for the Automotive and Aerospace & Defence industries, for both products and services. ELES is present in the ECU business for Automotive, which represented 5% of total sales in 2018, and has the possibility to leverage into the ECU business for Aerospace & Defence, where it already has strongly recognised expertise and capability, and also provides specific solutions within the I&D (Industry & Defence) business division.

Entering the Automated Test Equipment market

ELES mainly operates in the burn-in segment, but is structured and set to enter the Automated Test Equipment (ATE) market. ELES has developed the innovative RETE approach in order to reach its strategic goals. It has also developed an innovative and detailed product roadmap for each of its two main product lines (Test Systems and Test Applications & Services) to strengthen its positioning in the ATE market.

The ART platform is the heart of every solution developed by ELES, which includes two different product lines: Test Systems and Test Applications & Services.

The Group's medium-term strategic objective is to increase customer loyalty by cross-selling. Furthermore, the Group is looking to offer ELES solutions to new customers resulting from the target company and to expand the ELES systems offer.

In addition, the company is seeking to make an advanced acquisition of a US competitor and to increase its presence in Asian market share by strengthening the ELES Singapore team, signing partnerships with Chinese partners and through acquisitions of semiconductor design centres in India.

Fundamental prospects

Today, the use of devices, including semiconductors, plays a fundamental role in everyday life

According to research conducted by SEMI (trade association of semiconductor manufacturers), semiconductor sales are expected to increase from $500bn in 2019 to over $1tr before 2030. Growth drivers in the sector are Autonomous Driving, Big Data and AI. Consumer electronics held 28% of the market share in 2018 and will experience the strongest growth in the period 2018-22.

The ATE testing market is growing, driven by the growth of the semiconductor industry

The Global Automated Test Equipment market is expected to grow to $13.5bn by 2022. Asia Pacific accounted for 37% of the overall market share in 2018, and it will experience the highest growth rate by 2022. Although the Integrated Circuit ATE market growth rate is forecast to slow down from 2019 onwards, it will continue to grow in absolute terms. Semiconductor devices' reliability is the major top concern in the automotive industry. Even though the number of sold cars slightly diminished last year, the number of semiconductors built in the single car is exponentially increasing.

The ATE market is dominated by a few strong players, while the burn-in market is very fragmented. The growth of ELES is focused mainly on the automotive, aerospace, defence and healthcare sectors. ELES's actual client base in the automotive sector is represented by Tier 2 and Tier 1 suppliers.

ELES's innovative RETE approach is based on an early co-engineering phase with its customers. It offers a 'zero defects' goal through design and process improvement, in addition to cost reduction and reliability improvements, as well as time to market improvements. This cooperation allows ELES to improve it know-how and guarantees a close relationship with customers, thus creating entry barriers for competitors.

Finance

Revenues almost doubled from 2016 to 2018, reaching €22.2m in 2018. EBITDA registered a 21% CAGR over the period, reaching €3.6m in 2018, with average EBITDA margins over 2016-18 of 18%. Net debt declined from €6.3m to €5.0m at the end of 2018. **ELES** compares favourably with its closest peer group in terms of the most common financial metrics.

Our medium-term financial forecasts suggest revenue growth of around 15% p.a. and EBITDA reaching €7.3m by 2021, with margins at 22%. Net debt at the end of 2021 is forecast at around €1.3m.

Risks

Risks relate principally to the volatile semiconductor market

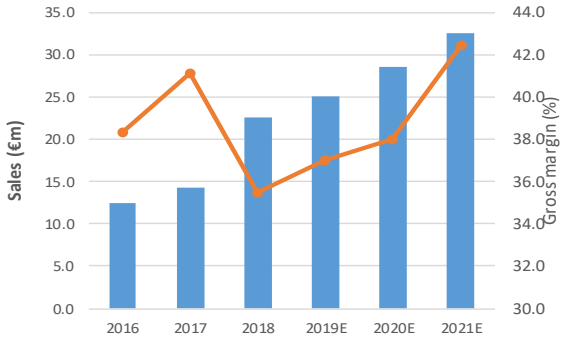
The principal risks for ELES include the volatile, unpredictable and seasonal nature of the semiconductor equipment industry, as well as the timing and amount of orders from customers and shipments to customers.

Equity valuation at just under €25m, enterprise value at €27m

Valuation

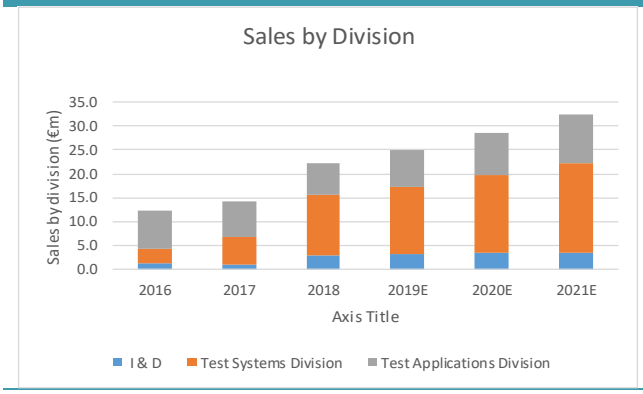
We use the DCF methodology, peer comparable EV/sales, EV/EBITDA multiples and recent M&A transaction multiples to ascertain a possible enterprise valuation for ELES of around €27m, with a range of between €23m and €30m. Adjusting for the Group's net debt position, we arrive at an equity valuation of just under €25m.

Sales (€m) and gross margin (%)



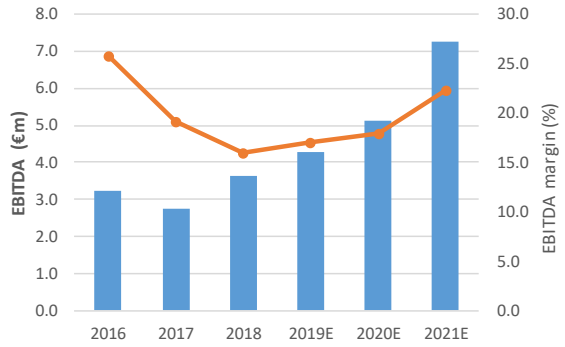
- Group sales growth at around 12% p.a.
- Gross margins to attain around 42%, benefiting from higher average product prices (new products) and lower raw materials

Sales by division (€m)



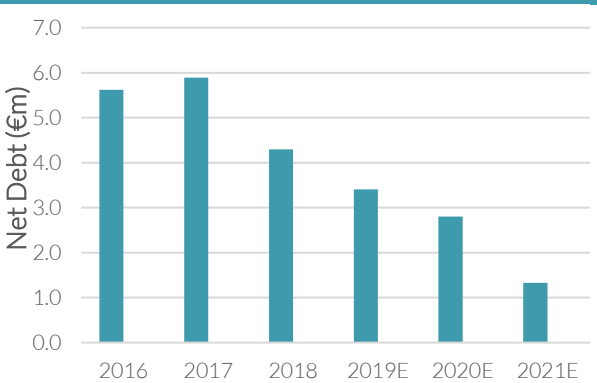
- Growth led by the Test System division, with growth close to 15% p.a.
- Within Test System division, Equipment will lead the growth
- Test Application division should see CAGR above 15% p.a. and I&D division a CAGR of between 5% and 6% p.a.

EBITDA (€m) and EBITDA margin (%)



- EBITDA to rise from €3.6m to around €7m by end of 2021
- EBITDA margins reached 18% in 2018 and are forecast to rise to around 22% by the end of 2021

Net debt (€m)



- Net debt stood at €4.3m at the end of 2018
- Net debt forecast to decrease to around €1.3m at the end of 2021

Source: Company data, Hardman & Co Research

Valuation

Valuing technology companies like ELES is very subjective, given the industry volatility and the stage of the company within its life cycle. Furthermore, any valuation is very dependent upon key assumptions made over attainable market size, market penetration, margins, development of cost base, etc.

Basis	Factor/multiple (X)	Av 2 year forecast	Enterprise Value
DCF	12.5% discount rate 1% terminal growth	n.m.	**27.2**
Peer EV/sales	1.0	26.8	**26.8**
Peer EV/EBITDA	5.0	4.7	**23.5**
Peer EV/EBIT	12.0	2.2	**33.0**
M & A (EV/sales)	1.16	26.8	**31.1**
Average			**28.3**

Source: Hardman & Co Research

DCF basis – equity valuation around €24m

For our DCF methodology, we use a discount rate of 12.5% – typical for current-stage technology development companies – to arrive at a present value of this future income stream. Our terminal value growth rate is 1%.

DCF valuation (€m)	2019E	2020E	2021E	2022E	Terminal
EBITDA	**4.26**	**5.13**	**7.26**	**8.47**	**17.1**
Tax	-0.58	-0.93	-1.78	-2.27	-5.7
NOPAT	**3.68**	**4.20**	**5.48**	**6.20**	**11.4**
Change in working capital	-1.53	-2.22	-2.54	-2.30	-6.9
Capex	-0.80	-0.80	-0.80	-0.80	-0.8
Free cashflow	**1.35**	**1.18**	**2.13**	**3.10**	**3.7**
Discount rate	12.5%	12.5%	12.5%	12.5%	12.5%
Discount factor	1.00	0.89	0.79	0.70	
Present value - free CF	**1.4**	**1.1**	**1.7**	**2.2**	
Cumulative present value	**1.4**	**2.4**	**4.1**	**6.3**	

Source: Hardman & Co Research

DCF valuation	
Valuation (€m)	
Present value - forecast FCF	15.8
Present value - terminal CF	11.4
Enterprise value (€m)	**27.2**
Net cash(debt)	**(3.4)**
Market cap equity (€m)	**23.8**

Source: Hardman & Co Research

The sensitivity table below details the sensitivity of the valuation to differing assumptions of discount rate/cost of capital and terminal growth rates.

DCF valuation sensitivities					
Discount rate	Terminal growth				
	0%	0.5%	1%	2%	3%
5.0%	66.3	71.6	78.3	98.2	138.0
10.0%	29.6	30.5	31.4	33.6	36.4
12.5%	**22.4**	**22.8**	**23.3**	**24.4**	**25.6**
15.0%	17.6	17.9	18.1	18.7	19.4
20.0%	11.8	11.8	11.9	12.2	12.4

Source: Hardman & Co Research

Peer comparison – enterprise valuation of just over €25m

Comparable valuations – Aher Test Systems, Cohu and Teradyne

The semiconductor industry is highly diversified and somewhat heterogenous, with limited company similarity in terms of product mix. There are, though, numerous companies within the sector, both private and quoted, with market capitalisations ranging from £2m to over £2.0bn.

We believe the best comparators for ELES are the semiconductor testing companies with market capitalisations in the range $1m to $500m. These include Aher Test Systems and Cohu – both US companies. We also consider Teradyne, a major competitor also based in the US, but with a much larger market capitalisation.

Current market valuations for these companies appear wide-ranging from an historical perspective, with EV/sales multiples ranging from 1 times to 7 times.

Peer group comparable valuations									
Company	**Price**	**Mkt cap**	**EV**	**Sales '20**	**EBITDA '20**	**EPS '20**	**EV/Sales**	**EV/EBITDA**	**PE**
	($)	**($m)**	**($m)**	**($m)**	**($m)**	**(c)**	**(X)**	**(X)**	**(X)**
Aehr Test Systems	**1.7**	**37.3**	**31.3**	**32.1**	**5.6**	**0.5**	**1.0**	**5.6**	**3.3**
Cohu	**14.8**	**471**	**511**	**75.0**	**30.0**	**7.5**	**6.8**	**17.0**	**2.0**
Teradyne	**44.6**	**8,581**	**7,581**	**2,100.0**	**500.0**	**3.5**	**3.6**	**15.2**	**12.7**

Source: Hardman & Co Research

M&A activity – valuation around €30m

Typical semiconductor industry transaction values at 1.5 times EV/sales and close to 7-10 times EV/EBITDA

M&A activity in the sector can also provide an assessment of value. There have been numerous transactions within the semiconductor industry over recent years.

Most recently, in mid-2018, Cohu, a leading semiconductor testing producer, acquired fellow competitor Xceera for a transaction value of $800m and an enterprise value of around $625m.

Transaction values have averaged around 1.5 times EV/sales and 8 times EV/EBITDA, with the Cohu acquisition at 1.3 times EV/sales.

Semiconductor industry M&A

($MM)

Announced Date	Acquirer	Target	Transaction Value	EV / Revenue LTM	EV / Revenue NTM	Target Description
12/06/2018	致新科技	Advanced Analog Technology	$49	1.2x	NM	Designs and develops multifunctional PMICs, WLED drivers, battery management products, amps, level shifters and more.
11/14/2018	ADVANTEST	ASTRONICS Semiconductor System Level Test Business	$215	NA	NA	Designs, manufactures and supplies test and measurement systems including chassis, digital test instruments, analog stimulus instruments and more.
11/12/2018	Infineon	SILTECTRA	$139	NA	NA	Develops cold split technology to process crystal material.
10/30/2018	MKS	esi	$1,189	2.4x	3.3x	Supplies laser-based microfabrication solutions.
10/30/2018	GTA Semiconductor Co., Ltd.	asmc	$293	1.4x	NA	Manufactures wafer products and integrated circuit chips.
10/29/2018	WONIK IPS	TERA Tera Semicon Corporation	$132	0.5x	0.5x	Provides high temperature heat treatment and CVD equipment used in the manufacture of semiconductors, AMOLED and solar cells.
10/25/2018	YINGTECH	nexperia	$2,655	NA	NA	Manufactures discrete, logic and PowerMOS semiconductors.
10/11/2018	Beijing Unis Memory Technology Co., Ltd.	UNIIC	$32	0.6x	NA	Designs and develops memory products including data rate dynamic random access memory and SDRAM.
10/11/2018		dialog Chip Research and Development Business	$300	NA	NA	Dialog Semiconductor patents, ~300 engineers and offices in Britain, Italy and Germany.
10/10/2018	卓兆照	Zhejiang Roland Semiconductor Technology Co., Ltd.	$95	2.3x	NA	Manufactures semiconductor equipment.

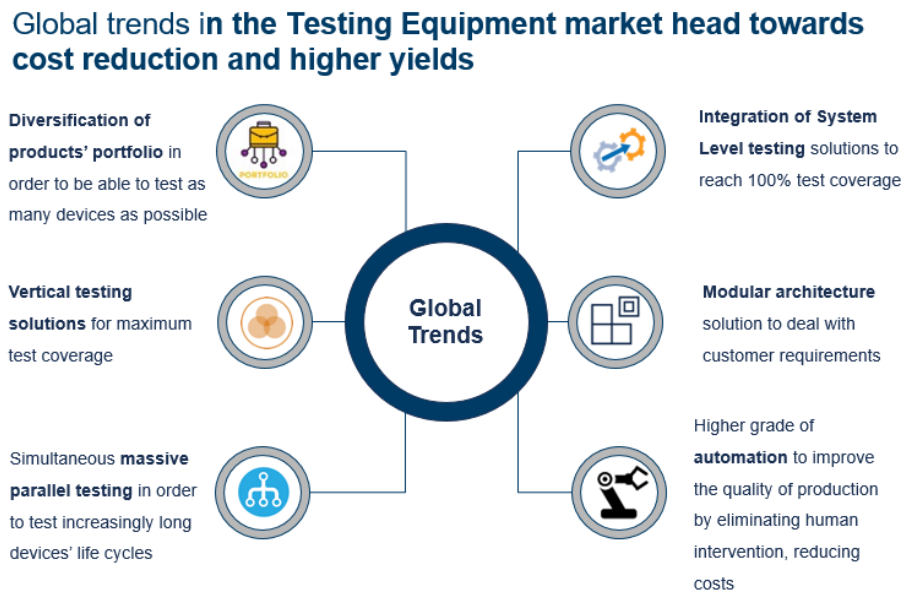
Announced Date	Acquirer	Target	Transaction Value	EV / Revenue LTM	EV / Revenue NTM	Target Description
09/12/2018	华天科技	nepes	$451	1.5x	1.5x	Engages in manufacturing semiconductor devices, and providing other related services to electronics companies.
09/10/2018	KAGA ELECTRONICS CO.,LTD.	FUJITSU Electronics Division	$184	0.1x	NA	Provider of electronics and semiconductor devices.
09/10/2018	RENESAS	IDT	$7,293	7.9x	7.3x	Designs and develops a range of semiconductor solutions for the communications, computing, consumer, automotive and industrial end-markets.
08/27/2018	EDWARDS	Brooks Semiconductor Cryogenics Business	$675	NA	NA	Manufactures, markets, sells, distributes and refurbishes semiconductor cryogenic vacuum pumps, chillers, coolers, compressors, refrigeration systems and spare parts.
08/09/2018	FUJI	FASFORD TECHNOLOGY	$197	2.3x	NA	Provides die bonder products for fabricating flash memory as used in computers, smartphones, digital camera and portable music players.
08/06/2018	SKYWORKS	AVNERA	$425	NA	NA	Designs, develops, manufactures, and sells audio/visual related products including speakers, acoustic equipment, electronic equipment, in-vehicle speakers, LED lighting equipment and more.
07/24/2018	UCT	QUANTUM GLOBAL TECHNOLOGIES, LLC	$357	1.6x	NA	Provides outsourced process tool parts cleaning and engineering services.
06/12/2018	enphase ENERGY	SUNPOWER Microinverter Business	$60	NA	NA	Manufactures microinverter for residential solar product.
05/09/2018	adesto TECHNOLOGIES	IQ SEMICONDUCTORS	$52	2.7x	NA	Manufactures and markets mixed-signal chips and radio frequency application specific integrated circuits.
05/08/2018	Cohu	Xcerra	$800	1.3x	1.3x	Provides test and handling capital equipment, interface products, and test fixtures and related services to the semiconductor and electronics manufacturing industries worldwide.

Source: Industry data

Commercial opportunity

Semiconductor technology is affected by product reliability limits, as global trends in the Testing Equipment market head towards cost reduction and higher yields.

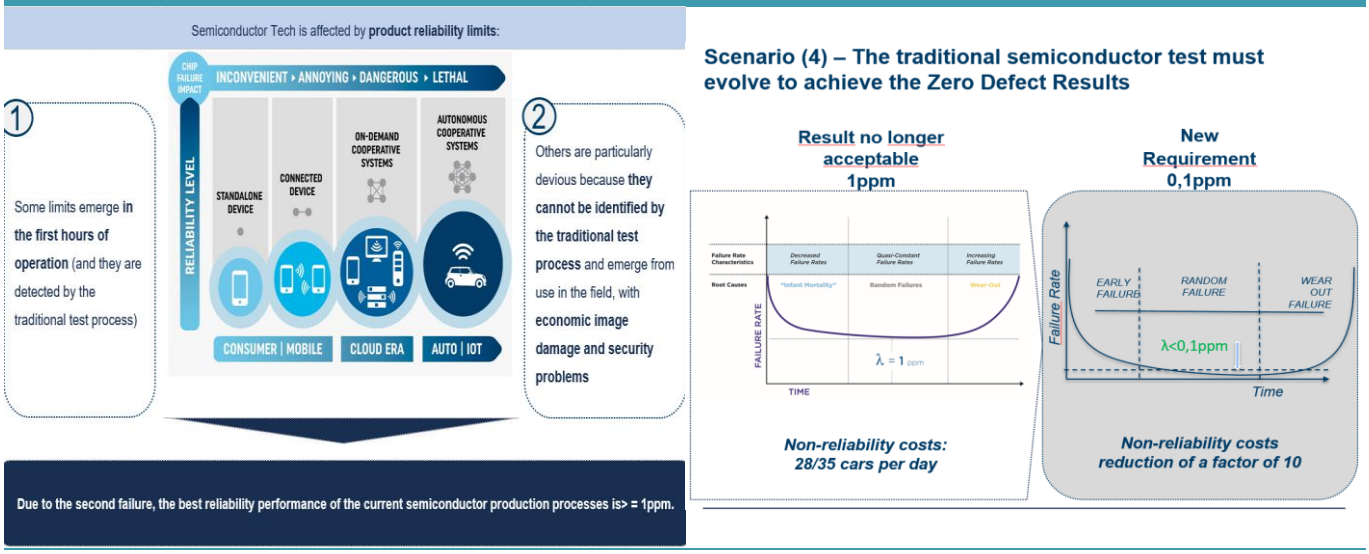
Testing in the semiconductor industry



Source: WSTS

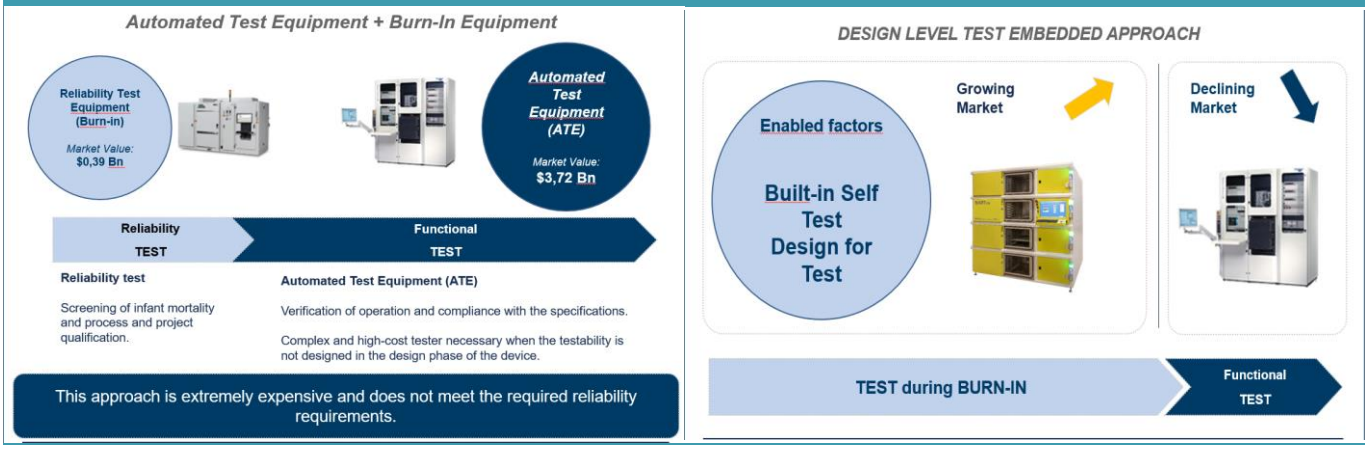
The traditional approach to testing has some technological limits in following the evolution of the devices under test (DUT). This traditional test method must evolve to achieve zero defect results.

Traditional and new semiconductor test approach



Source: WSTS, Worldwide Semiconductor Revenue forecast, ELES

Traditional and new semiconductor test approach



Source: ELES

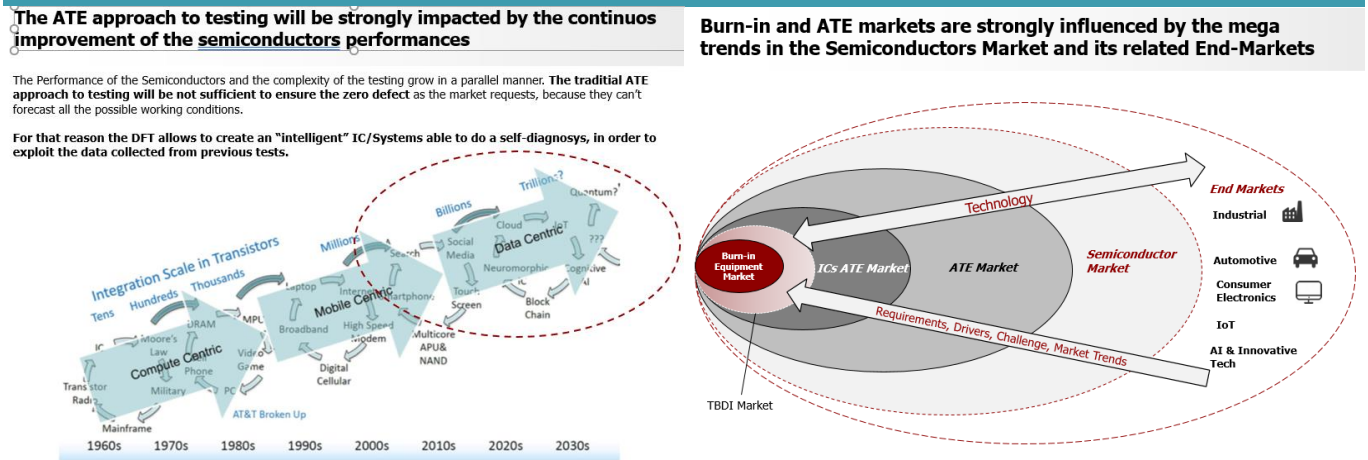
Since 2002, ELES has offered an innovative test approach (Design Level test approach) based on the use of a massively parallel test platform, and of DFT and BiST.

This approach is the only one that can guarantee overcoming the problems of the traditional test approach:

- difficulty in reaching the new semiconductor reliability requirements (0,1ppm);
- traditional approach (dominated by ATE) is very costly;
- time to market not in line with market requirements; and
- difficulty in managing device complexity.

The burn-in and ATE markets are strongly influenced by the mega trends in the semiconductor market and its related end-markets, and by the continuous improvement in the semiconductor companies' performances.

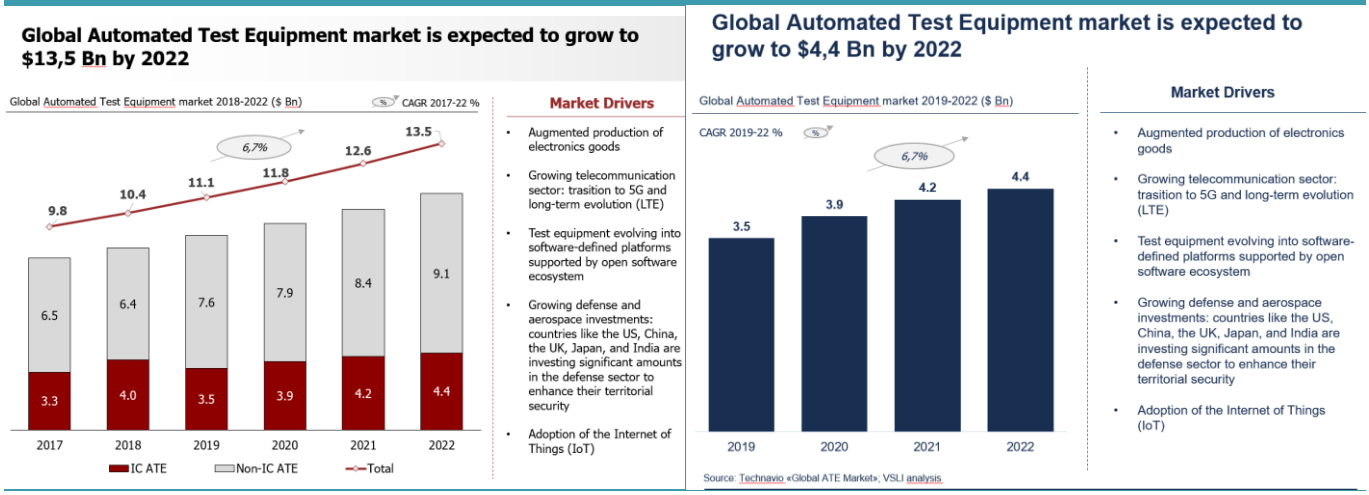
Traditional and new semiconductor test approach



Source: ELES

The Global Automated Test Equipment market is expected to grow to $4.4bn by 2022, driven by a growing telecommunication sector – transition to 5G and long-term evolution (LTE), with test equipment evolving into software-defined platforms supported by an open software ecosystem.

The Automated Test Equipment market

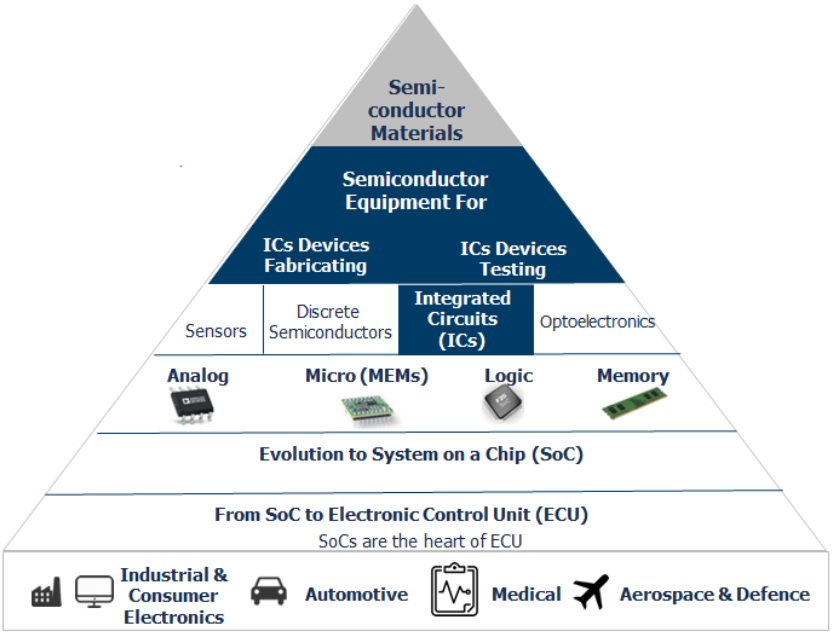


Source: ELES

Additional growth will come from growing defence and aerospace investments: countries like the US, China, the UK, Japan and India are investing significant amounts in the defence sector to enhance their territorial security.

ELES operates in the testing equipment market for semiconductor ICs, SoC and Ecu (Electronic Control Unit-Module)

The semiconductor testing market



Source: WSTS, Worldwide Semiconductor Revenue forecast

The evolving electronics market is putting increasing demands on the reliability of integrated circuits, but, without an evolution of reliability testing, ineffective use of test data can be an extreme waste of time and result in a loss of improvement opportunities.

ELES has developed the RETE approach

To provide the semiconductor industry with state-of-the-art reliability systems and cost- effective test solutions using RETE, which can evidence and filter product failures to the most stringent levels, ELES reliability test systems and engineering services can be the roadmap to reach zero defects (0.1 DPPM) in safety-critical applications.

RETE improves test execution in three synergic areas: ease of use, time to test and failure investigation. If data collection can be performed effectively and efficiently by user-friendly interfaces, then failures will be investigated more frequently and more deeply. Furthermore, if time to test can be accelerated, then the corrective action can be more decisive. Also, if variations in key IC parameters can be easily studied, then naturally it becomes easier to identify possible failure mechanisms. The synergy between ease of use, time to test and failure investigation consequently reduces the overall cost of test and drives improvements towards zero defects.

The RETE approach adopted by ELES utilises embedded circuits within the IC and universal, massively parallel test platform to improve the registering and control of key device parameters that impact reliability. In addition, the embedded functions can be used to optimise the test coverage and stress levels, and reduce test times. Significant value is added to testing, even with a very modest set of embedded functions, such as the chip ID traceability and temperature sensors. However, it is with complex safety-critical devices that the RETE approach really shows its full potential.

R.E.T.E benefits

RETE assures a seamless dataflow between qualification testing and burn-in. This not only facilitates failure detection but also breaks down barriers between company functions, such as design, Q&R and production. Isolation of these phases in the actual test flow can hinder the resolution of the root cause of defects and impair efficiency.

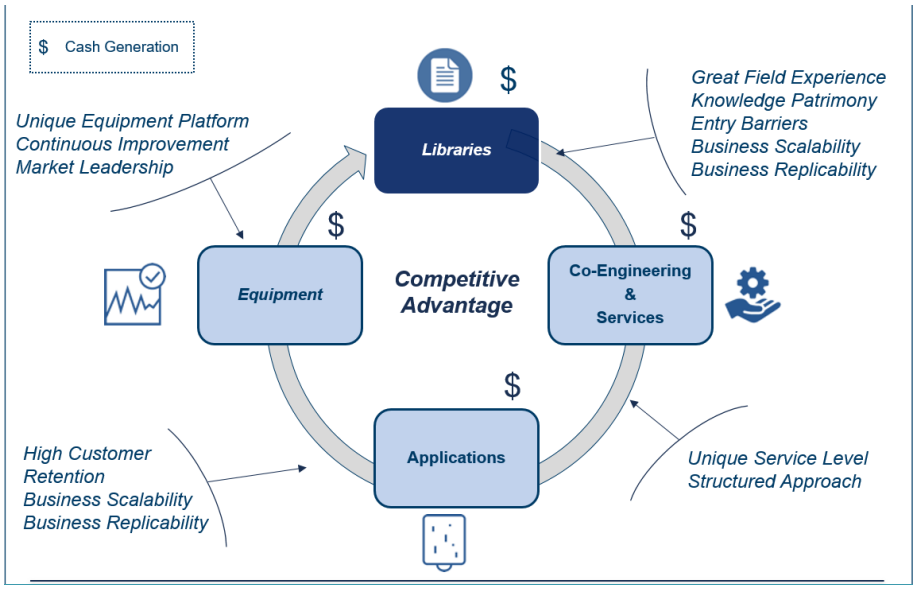
Built-in self-test and embedded reliability engineering can simplify the communication with the DUT by shifting a part of the test flow to the DUT itself. This simplification reduces communication errors and false fails. The RETE provides a stable test system, which reduces the quantity of incorrect or corrupted data.

Reliability testing

ELES designs and manufacturers reliability test solutions to verify the performance of integrated circuits from concept validation to high-volume production during all the test phases.

Clients use ELES test data to proactively analyse variations between lots, between temperature extremes and under accelerated stress conditions (often these defects escape ATE). The improvements to products and processes needed to arrive at zero defects cannot be driven by the quantity of Big Data alone; the quality of data and the reliability of information are strategic advantages that only ELES can provide.

RETE breakthrough approach



Source: WSTS, Worldwide Semiconductor Revenue forecast

Financials

Financial history

- Revenues almost doubled from 2016 to 2018, reaching €22.2m in 2018.
- In 2018, Europe represented 69% of sales. and Asia and Middle East 29%.
- Of the three divisions, Test Systems has driven sales growth, with Equipment the growth area. I&D divisional growth has been driven by the Defence product line, in terms of both sales and margins. The Applications division has seen a decline in sales.
- EBITDA registered a 21% CAGR over 2016-18, reaching €3.6m in 2018, with average margins over the period of 18%. EBIT represents around 7% of revenues.
- R&D expenditure has averaged 10% of sales over the past three years (top semiconductor producers' R&D averaged 15% over the same period).
- Net debt declined from €5.6m to €4.3m at the end of 2018, with net financial debt to EBTIDA declining from 2.27 times to 1.19 times.

Financial comparisons

Financials compare well

The global semiconductor test industry is highly competitive, with numerous players, both private and quoted. We have identified Aehr Test Systems, Cohu and Teradyne as close competitors to ELES. Detailed below are comparables for key financial metrics.

Financial comparisons

Company	3 yr sales growth p.a.	Gross profit margin	EBITDA margin	EBIT margin	Debt/Equity	RoE	RoCE
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
ELES	34.6	37.1	16.1	6.6	56.5	11.5	13.7
Aehr Test Systems	35.0	41.0	5.6	2.2	31.6	2.9	20.0
Cohu	34.5	42.3	16.4	14.1	64.6	-7.7	25.0
Teradyne	10.5	58.1	28.6	22.5	25.0	23.1	25.0

Source: Hardman & Co Research

We note that ELES does not compare unfavourably with this peer group.

Profit & Loss

- Revenues almost doubled over the 2016-18 period, with 2018 EBITDA margins at 18% and EBIT margins reaching 6.6%.
- The current backlog stands at €7m. We see sales growth of around 15% p.a. over the medium term (next three years), with revenues reaching over €30m in the medium term.
- Of the three divisions, Test Systems will continue to be the key driver, with the Equipment product line seeing the strongest growth.
- Gross margins are set to improve over the medium term, as the group benefits from an increase in efficiency (lower incidence of variable costs). EBITDA margins will expand to around 22%, on our estimates.
- The group's underlying tax rate will be around 40%, but should progressively decrease going forward.

Divisional forecasts

Year-end Dec (€m)	2016	2017	2018	2019E	2020E	2021E
I&D	1.3	1.0	3.1	3.3	3.5	3.6
Test Systems division	3.1	6.0	12.5	14.1	16.3	18.7
Test Applications division	8.1	7.3	6.7	7.6	8.8	10.2
Total	12.5	14.4	22.6	25.1	28.5	32.5

Source: Hardman & Co Research

Profit & Loss account

Year-end Dec (€m)	2016	2017	2018	2019E	2020E	2021E
Sales	12.49	14.37	22.63	25.06	28.52	32.54
COGS	-7.70	-8.46	-14.60	-15.79	-17.68	-18.71
Gross profit	4.79	5.91	8.03	9.27	10.84	13.83
Gross margin	38.3%	41.1%	35.5%	37.0%	38.0%	42.5%
Sales & marketing	-0.35	-0.32	-0.33	-0.41	-0.52	-0.67
Admin.	-0.58	-0.65	-0.80	-0.87	-0.94	-1.02
R&D	-1.31	-2.43	-3.30	-3.76	-4.28	-4.88
EBITDA	2.48	2.74	3.62	4.26	5.13	7.26
EBITDA margin	19.9%	19.1%	16.0%	17.0%	18.0%	22.3%
Depreciation & amortisation	-2.02	-2.17	-2.22	-2.10	-1.80	-1.60
Licensing/Royalties	-0.05	-0.03	0.08	0.00	0.00	0.00
Underlying EBIT	0.41	0.55	1.49	2.16	3.33	5.66
Statutory operating profit	0.41	0.55	1.49	2.16	3.33	5.66
Net financials	-0.26	-0.20	-0.26	-0.30	-0.30	-0.30
Pre-tax profit	0.15	0.35	1.23	1.86	3.03	5.36
Taxation	-0.12	-0.17	-0.48	-0.74	-1.21	-2.14
Underlying net income	0.02	0.18	0.75	1.12	1.82	3.22

Source: Hardman & Co Research

Balance sheet

- Net debt declined from €5.6m in 2016 to €4.3m at the end of 2018.
- We forecast that net debt will decline to around €1.3m at the end of 2021.

Balance sheet						
@ 31 Dec (€m)	2016	2017	2018	2019E	2020E	2021E
Shareholders' funds	5.6	5.8	6.5	7.7	9.5	12.7
Net Debt	5.6	5.9	4.3	3.4	2.8	1.3
Invested capital	**11.2**	**11.6**	**10.8**	**11.1**	**12.3**	**14.0**
Total Net Asset Value	10.8	9.6	8.1	6.8	5.8	5.0
Inventories	2.3	3.1	3.8	4.7	5.9	7.4
Trade debtors	*3.4*	*5.6*	*5.9*	*7.3*	*9.1*	*11.4*
Trade creditors	*-2.2*	*-3.8*	*-4.4*	*-5.3*	*-6.1*	*-7.3*
Other creditors	*-2.7*	*-2.4*	*-2.5*	*-2.5*	*-2.5*	*-2.5*
Debtors less creditors	1.2	-0.7	-1.1	-0.5	0.5	1.6
Invested capital	**11.2**	**11.6**	**10.8**	**11.1**	**12.3**	**14.0**
Net Debt	**5.6**	**5.9**	**4.3**	**3.4**	**2.8**	**1.3**

Source: Hardman & Co Research

Cashflow

- Annual underlying capital expenditure is likely to be around €0.8m p.a. over the medium term.
- Working capital management remains tight.

Cashflow						
Year-end Dec (€m)	2016	2017	2018	2019E	2020E	2021E
Trading profit	**0.0**	**0.2**	**0.8**	**1.1**	**1.8**	**3.2**
Depreciation	0.0	2.2	2.2	2.1	1.8	1.6
Working capital	0.0	0.0	-0.4	-1.5	-2.2	-2.5
Company op. cashflow	**0.0**	**2.4**	**2.6**	**1.7**	**1.4**	**2.3**
Operational cashflow	**0.0**	**2.4**	**2.6**	**1.7**	1.4	2.3
Capital expenditure	0.0	-1.0	-0.6	-0.8	-0.8	-0.8
Sale of fixed assets	0.0	0.0	0.0	0.0	0.0	0.0
Free cashflow	**0.0**	**1.4**	**2.0**	**0.9**	**0.6**	**1.5**
Dividends	0.0	0.0	0.0	0.0	0.0	0.0
Acquisitions	0.0	0.0	0.0	0.0	0.0	0.0
Cashflow after invests.	**0.0**	**1.4**	**2.0**	**0.9**	**0.6**	**1.5**
Share repurchases	0.0	0.0	0.0	0.0	0.0	0.0
Share issues	0.0	0.0	0.0	0.0	0.0	0.0
Change in net debt	**0.0**	**1.4**	**2.0**	**0.9**	**0.6**	**1.5**

Source: Hardman & Co Research

Company matters

ELES, founded in 1988, operates in the Microelectronics Testing systems sector

ELES Semiconductor Equipment S.p.A, an Italian SME operating in the Microcelectronics Testing systems sector, was founded in 1988 by Antonio Zaffarami and realised the first Electro Migration Test system for SGS-Thomson (STMicroelectronics today). The company is based in Todi (PG), with commercial subsidiaries and partners in the USA, Singapore and in the Israeli Silicon Valley.

ELES operates in the testing equipment market for Semiconductor Integrated Circuits (ICs) and packaged systems, but is focused primarily on testing of ICs.

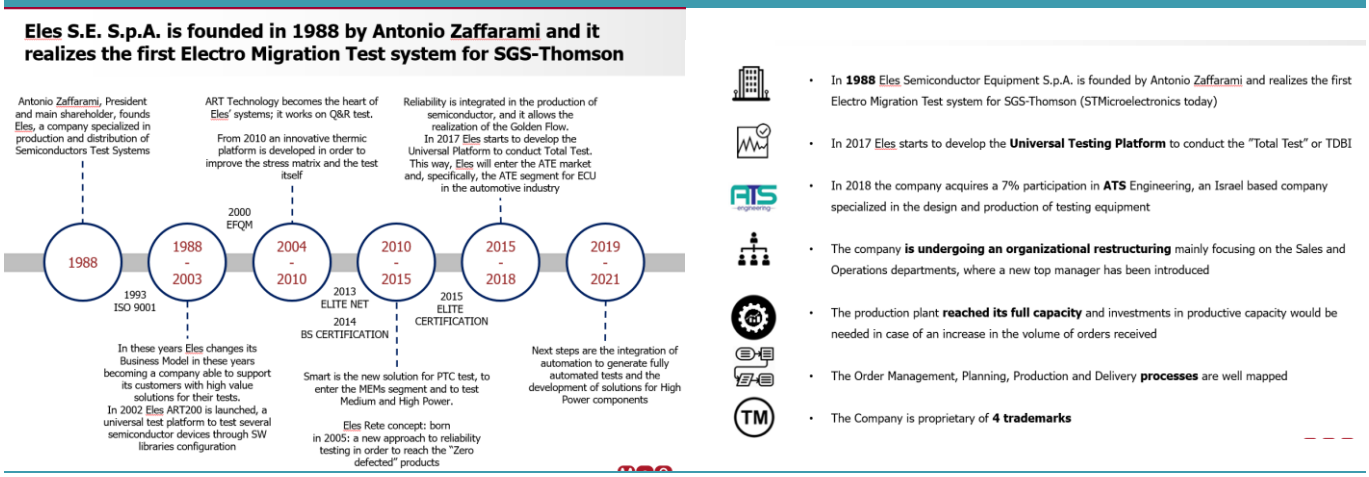
The devices that can be tested with ELES solutions include System on Chip (SoC), Micro Electro Mechanical Systems (MEMs) and Memories. Within the family of SoC devices, ELES is focused on Smart power, Logic SoC and SoC with embedded memory.

ELES's strategic goal is to strengthen its positioning in the ATE market, with its main strategic product development goal being to reach 100% test coverage.

ELES has developed the innovative RETE approach in order to reach its strategic goals. The RETE approach is made up of five different phases, and allows for continuous improvements in Q&R and Production processes.

ELES Testing Equipment shows some competitive advantages, based on a lower price of solutions and a lower cost of test, as the new testing process requires a lower number of testing procedures. Consequently, the innovative approach has a significant impact on the cost of a test, and it represent a competitive advantage.

ELES company and history



Source: ELES

ELES supports its clients in improving the reliability of its products in order to achieve Zero Defects, a primary goal for *Mission Critical and Safety* applications (i.e. *Airbags*). ELES is one of the sector's leading companies, offering a transformed reliability test, via early *co-engineering*, always aiming to achieve the Zero Defects criteria.

The ELES offer is composed of Test System (machines) and Test Application (Boards & Services).

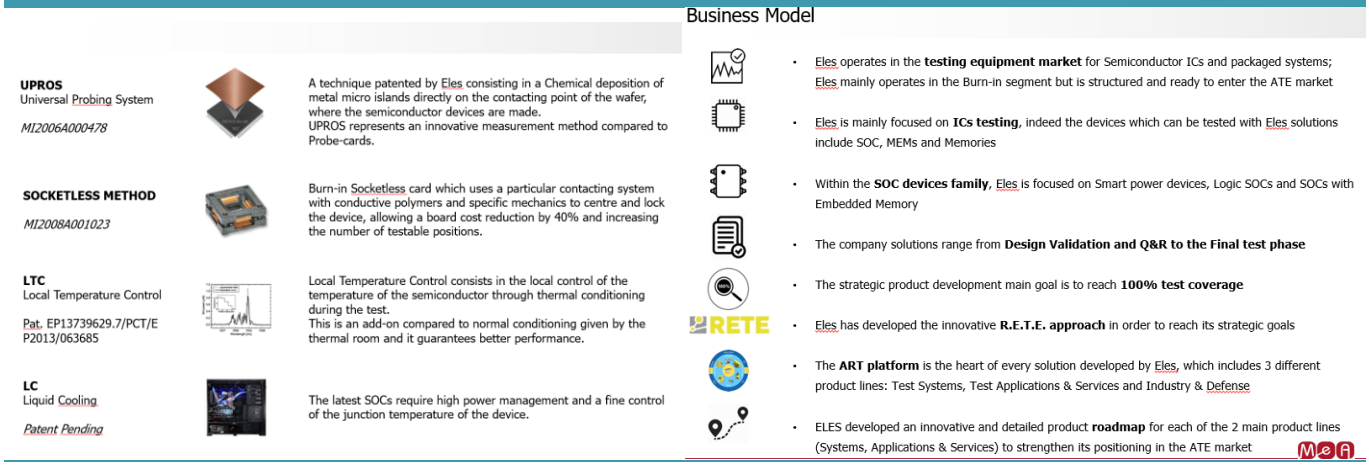
ELES's clients are the main semiconductor multinational companies and electronic module manufacturers for the Automotive and Aerospace & Defence sector.

Long-term customer base but progressive decrease in customer concentration

ELES presents a sound portfolio of 16 historical customers with whom it has strengthened its relationship over the years (CAGR 2016-18: +22%). In the period 2016-18, ELES focused on enhancing the diversification of its customer base, acquiring 13 new customers with whom it is developing its relationship, thanks also to the RETE approach.

ELES is the proprietor of four leading patents. One of them, UPROS, is a technique patented by ELES, consisting of a chemical deposition of metal micro islands directly on the contacting point of the wafer, where the semiconductor devices are made. UPROS represents an innovative measurement method compared with Probe-cards.

ELES's company patents and business model



Source: ELES

The ART200 universal platform

Within the RETE approach, the ART200 modular platform has been developed for qualification testing and burn-in, so the same universal test platform can used from design validation over to production.

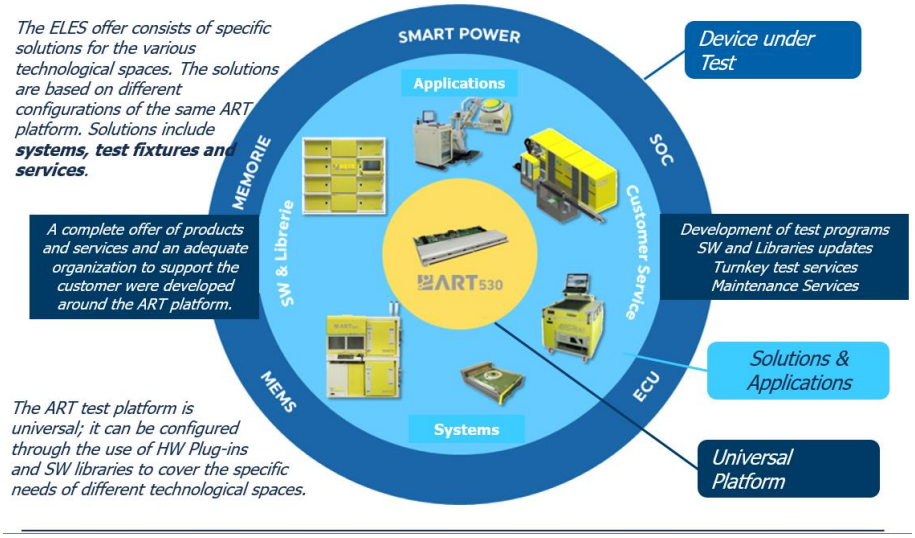
The ART200 modular design facilitates the updating of the platform to changing test requirements. For example, the standard power equipment can be easily updated for medium or high power operation.

Another benefit of ART200 is its flexibility – so different types of devices, such as Smart Power, Memories, SoC and Embedded Flash – can be tested with the same test system. Also, the expandability of ART200 is a very important feature. In fact, the ART200 test drivers can dynamically configure the hardware and relative test libraries to various types of DUT and the test/stress requirements, even during the same trial.

A large number of test libraries are available to cover a vast range of device families and DfT standards; library families include MEMs, Logic SoC, SoC smart power, SoC with embedded memory, Non-Volatile Memory with parallel interfaces or serial interfaces, RAM, eMMC and Multi Chip Memory.

The ART platform is the heart of every solution developed by ELES

RETE, the ART platform



Source: WSTS, Worldwide Semiconductor Revenue forecast

Management

Extensive commercial background

Board of Directors has extensive background in electronic and semiconductor industrial sectors

The Board of Directors has an extensive background in the electronic and semiconductor industrial sectors.

Board of Directors

Role	Background & Responsibilities
Antonio Zaffarami *Chairman*	• (1972) High School Diploma in Electronics Engineering (Todi – PG) • (1988) "La dimensione economico-finanziaria nella gestione e nello sviluppo di nuovi business", 6-month course at SDA Bocconi of Milano • (1972-1977) Design operator at ESCO Electronics, Todi (PG) • (1977) Technical & Production Manager at ITELCO, company specialized in production of radio transmission equipment (Orvieto – TN) • (1978) Founder and CEO of EES Electronic Engineering Services • (1982) Founder of Advanced Electronics (ADEL) • (1988 – current) Founder and Chairman of ELES Equipment S.r.l., company specialized in production of Semiconductor reliability test systems
Francesca Zaffarami *CEO*	• (1997 – 2003) MSc in Electronics Engineering from Università di Perugia • (2008 – 2009) EMBA at LUISS Business School (Rome) • (2003 – 2004) Application Engineer at ELES Semiconductor Equipment • (2004 – 2006) Member of the team resposible for "Wafer Level Burn In" R&D project, assisted by Catania Research Lab • (2005 – 2006) Project manager deputy to digitalization and research project • (2006 – 2008) Improvement Project Portfolio Manager at ELES Semiconductor Equipment SpA • (2008 – 2014) Controller and COO Assistant at ELES Semiconductor Equipment SpA • (2016 – current) CEO and Vice Chairman at ELES Semiconductor Equipment SpA
Andrea Lucaroni *Key Account Manager*	• (2002) MSc in Electronics Engineering from Università di Perugia • (2003) Master in Economics &Telecommunications from M.I.B. School of Management (Trieste) • (2003 – 2007) Sales Manager at SICOM TEST (Trieste) • (2007 – 2009) Procurement Engineer at ELES Semiconductor Equipment SpA • (2009 – current) Key Account Manager at ELES Semiconductor Equipment SpA

Source: ELES

Antonio Zaffarami

Antonio graduated from the Industrial Technical Institute of Terni in 1972 with a specialisation in Electronics. He began his professional career as a design engineer at ESCO Electronics of Todi (PG), for which he developed a series of laboratory stabilised power supplies, becoming a Partner and Director.

After concluding military service in the cavalry regiment as a petty officer in 1977, he began working at ITELCO in Orvieto (TR) – a manufacturer of radio transmission equipment – as a manager in the technical and production sector. As a coordinator of a programme for the development of TV transmitters, he managed their installation in Italy.

In 1978, he founded EES Electronic Engineering Services and developed a series of digital indicators that are sold successfully in Italy and abroad (Alfa Romeo and Sime Brondi).

In 1982, together with Angelantoni Climatic Systems of Massa Martana (PG), he founded ADEL (Advanced Electronics) assuming the role of Sole Proprietor. In five years from founding, ADEL produced impressive results – both technical and financial.

In 1988, thanks to his managerial skills acquired over the years and to his experience gained in Electronic Design and Production, he founded ELES Equipment Srl, a company developing and producing test systems for checking the quality and reliability of microelectronic components.

Also, in 1988, he attended a six-month course for entrepreneurs and managers at SDA Bocconi University in Milan on "The economic and financial dimension in the management and development of new business".

In 1990, he founded ELES Semiconductor Equipment Spa. Besides dealing with the entrepreneurial aspects of the company, he manages the technical aspects, with particular attention and commitment to the innovation part. In particular, he has always played the role of Head of Research and Development (R&D).

In 1993, he implemented an ABM (Activity-Based Management) system for quality management in his company. The SDA Bocconi University of Milan collaborated with the project. He was a partner of AICQ Central Italy for the dissemination of the culture of quality in Umbria.

Engaged in community life and aware of the importance that small and medium industries play in the productive fabric at a national level, in 1997 he became President of the Confapi of Perugia, a role he held together with that of Giunta Confapi national councillor and of Delegate of the National President for Research and Innovation.

He was a founding partner and director of SITECH, a regional agency for innovation, which later merged into the Technology Park of Umbria (until 2003).

Highly qualified team, reorganisational restructuring and new HR management

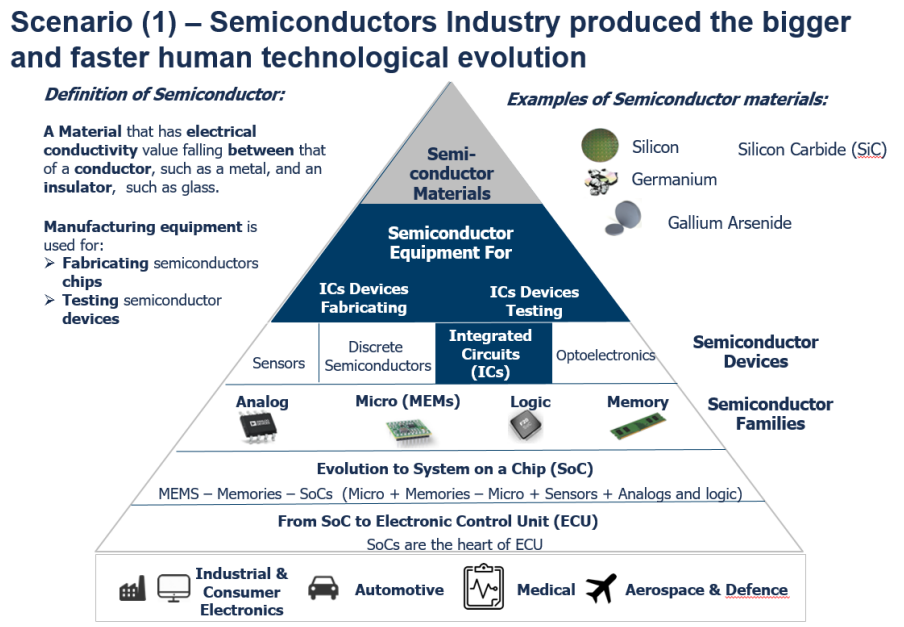
Over 50% of ELES's employees are highly specialised within the electronic, mechanical and IT industrial sectors, with over 30% of ELES's employees working in R&D.

ELES is undergoing an organisational restructuring, focused mainly on sales and operations. New HR management is focused on the talent and skill development of current personnel and selecting new managers.

The Sales department is being managed by a new top manager (started April 2019), and the Operations department has been restructured and has a new top manager.

Industry developments

The semiconductor Industry



Source: WSTS, Worldwide Semiconductor Revenue forecast

Four main product categories

The semiconductor industry is made up of four main product categories:

- Memory: memory chips serve as temporary storehouses of data, and pass information to and from computer devices' brains. The consolidation of the memory market continues, driving memory prices so low that only a few giants, like Toshiba, Samsung and NEC, can afford to stay in the game.

- Microprocessors: these are central processing units that contain the basic logic to perform tasks. Intel's domination of the microprocessor segment has forced nearly every other competitor, with the exception of Advanced Micro Devices, out of the mainstream market and into smaller niches or different segments altogether.

- Commodity Integrated Circuit: sometimes called "standard chips", these are produced in huge batches for routine processing purposes. Dominated by very large Asian chip manufacturers, this segment offers razor-thin profit margins that only the biggest semiconductor companies can compete for.

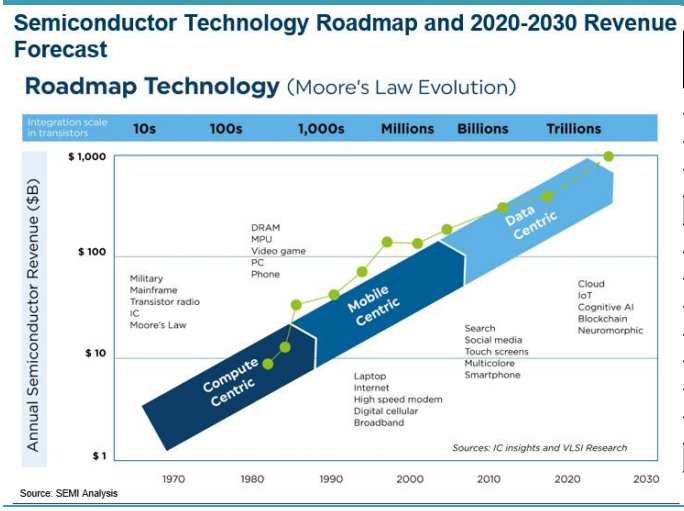
- Complex SoC: "System on a Chip" is essentially all about the creation of an integrated circuit chip, with an entire system's capability on it. The market revolves around growing demand for consumer products that combine new features and lower prices. With the doors to the memory, microprocessor and commodity-integrated circuit markets tightly shut, the SoC segment is arguably the only one left with enough opportunity to attract a wide range of companies.

The semiconductor industry is highly cyclical

The semiconductor industry is highly cyclical. Semiconductor companies face constant booms and busts in demand for products. Demand typically tracks end-market demand for personal computers, cell phones and other electronic equipment.

Detailed below are forecasts and charts for the latest outlook for the semiconductor industry and its segments over the medium term, given by leading industry consultants.

The global semiconductor industry

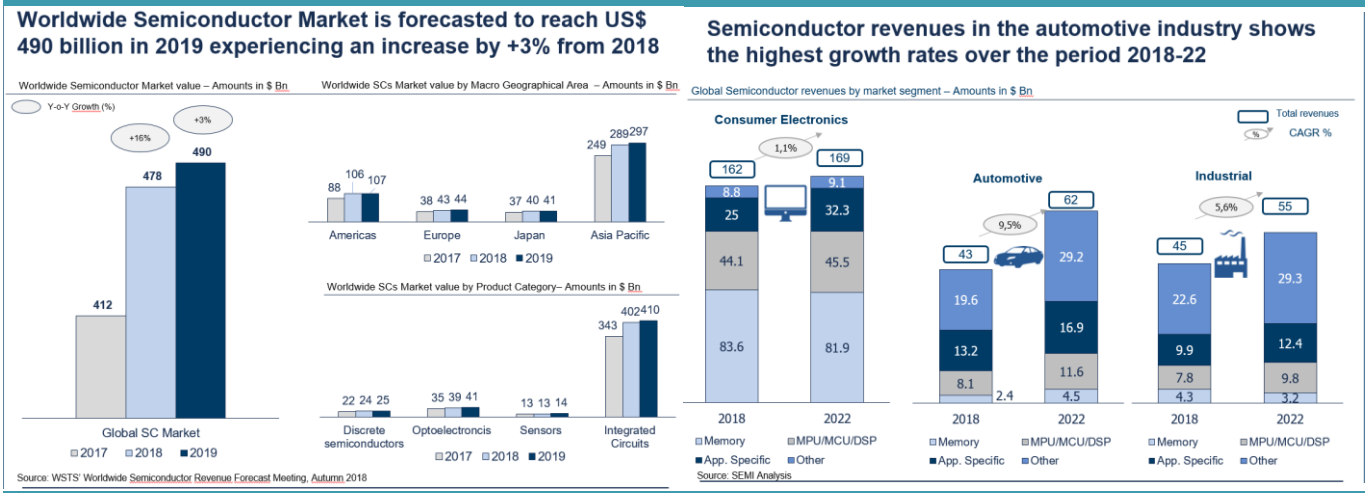


Autumn 2018 - Q4 Update	Amounts in US$M			Year c
	2017	2018	2019	2017
Americas	88,494	102,997	97,021	35.
Europe	38,311	42,957	42,824	17.
Japan	36,595	39,961	40,351	13.
Asia Pacific	248,821	282,863	274,350	19.
Total World - $M	412,221	468,778	454,547	21.
Discrete Semiconductors	21,651	24,102	24,776	11.
Optoelectronics	34,813	38,032	38,611	8.
Sensors	12,571	13,356	13,899	16.
Integrated Circuits	343,186	393,288	377,261	24.
Analog	53,070	58,785	61,083	10.
Micro	63,934	67,233	68,513	5.
Logic	102,209	109,303	112,109	11.
Memory	123,974	157,967	135,557	61.
Total Products - $M	412,221	468,778	454,547	21.

Source: ELES

The worldwide semiconductor market is forecast to reach $490bn in 2019, experiencing an increase of 3% from 2018. Semiconductor revenues in the automotive industry show the highest growth rates over the period 2018-22.

The global semiconductor industry

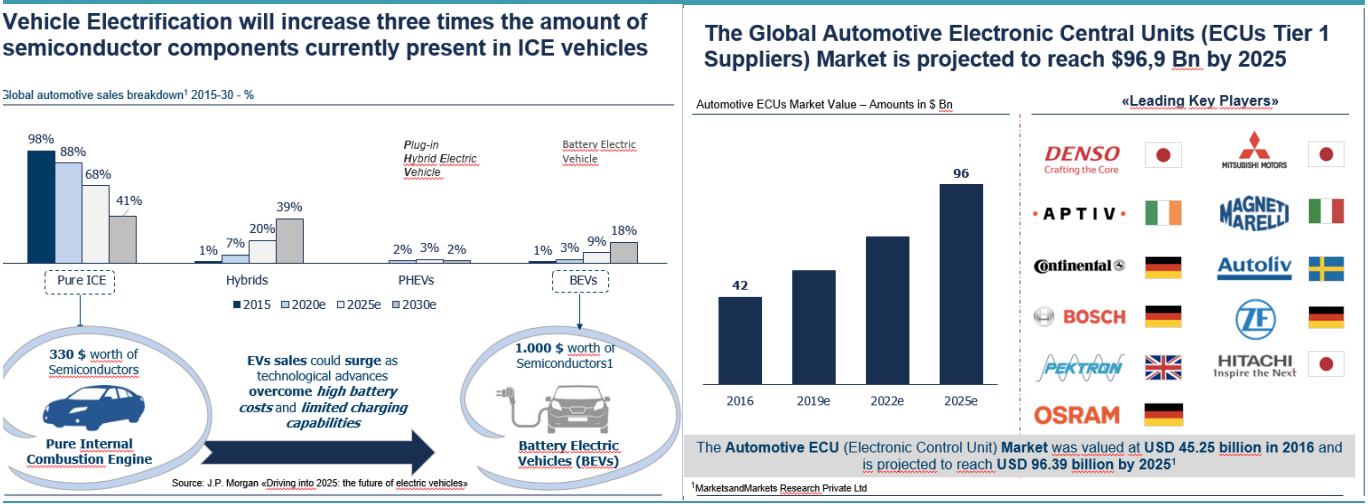


Source: ELES

Vehicle electrification will increase by three times the amount of semiconductor components currently present in ICE vehicles. The greatest growth among automotive semiconductors through 2020 will occur within the safety segment.

The automotive ECU (Electronic Control Unit) market was valued at $45.25bn in 2016, and is projected to reach $96.39bn by 2025.

The global semiconductor industry – automotive segment growth the strongest



Source: ELES

Semiconductor manufacturing is complex

Semiconductor manufacturing is a complex, multi-step process, and defects or weaknesses that may result in the failure of an integrated circuit, or IC, may be introduced at any process step. Failures may occur immediately or at any time during the operating life of an IC, sometimes after several months of normal use.

Semiconductor manufacturers rely on testing and reliability screening to identify and eliminate defects that occur during the manufacturing process. Testing and reliability screening involve multiple steps. The first set of tests is typically performed by IC manufacturers before the processed semiconductor wafer is cut into individual die, in order to avoid the cost of packaging defective die into their packages. This "wafer probe" testing can be performed on one or many die at a time, including testing the entire wafer at once. After the die are packaged and before they undergo reliability screening, a short test is typically performed to detect packaging defects.

Most leading-edge microprocessors, microcontrollers, digital signal processors, memory ICs, sensors and optical devices (such as vertical-cavity surface-emitting lasers, or VCSELs) then undergo an extensive reliability screening and stress-testing procedure known as "burn-in" or "cycling," depending on the application. The burn-in process screens for early failures by operating the IC at elevated voltages and temperatures, up to 150 degrees Celsius (302 degrees Fahrenheit), for periods typically ranging from 2 to 48 hours. A typical burn-in system can process thousands of ICs simultaneously. After burn-in, the ICs undergo a final test process using automatic test equipment, or testers. The cycling process screens flash memory devices for failure to meet write/erase cycling endurance requirements.

Semiconductor test equipment

Semiconductor test equipment (IC tester), or automated test equipment (ATE), are systems for giving electrical signals to a semiconductor device to compare output signals against expected values for the purpose of testing whether the device works as specified in its design specifications.

Testers are roughly categorised into logic testers, memory testers, and analogue testers. Normally, IC testing is conducted at two levels: the wafer test (also called die sort or probe test), which tests wafers; and the package test (also called final test), after packaging. Wafer testing uses a prober and a probe card, while package testing uses a handler and a test socket, together with a tester.

Automatic test equipment or automated test equipment (ATE)

Automatic test equipment or automated test equipment (ATE) is any apparatus that performs tests on a device known as the *device under test* (DUT), equipment under test (EUT) or unit under test (UUT), using *automation* to quickly perform measurements and evaluate the test results. An ATE can be a simple computer-controlled *digital multimeter*, or a complicated system containing dozens of complex test instruments (real or simulated *electronic test equipment*) capable of automatically testing and diagnosing faults in sophisticated electronic *packaged parts* or on *wafer testing*, including *system on chips* (SoC) and *integrated circuits*.

ATE is used widely in the electronic manufacturing industry to test electronic components and systems after being fabricated. ATE is also used to test *avionics* and the electronic modules in automobiles. In addition, it is used in military applications like radar and wireless communication.

ATE In the semiconductor industry

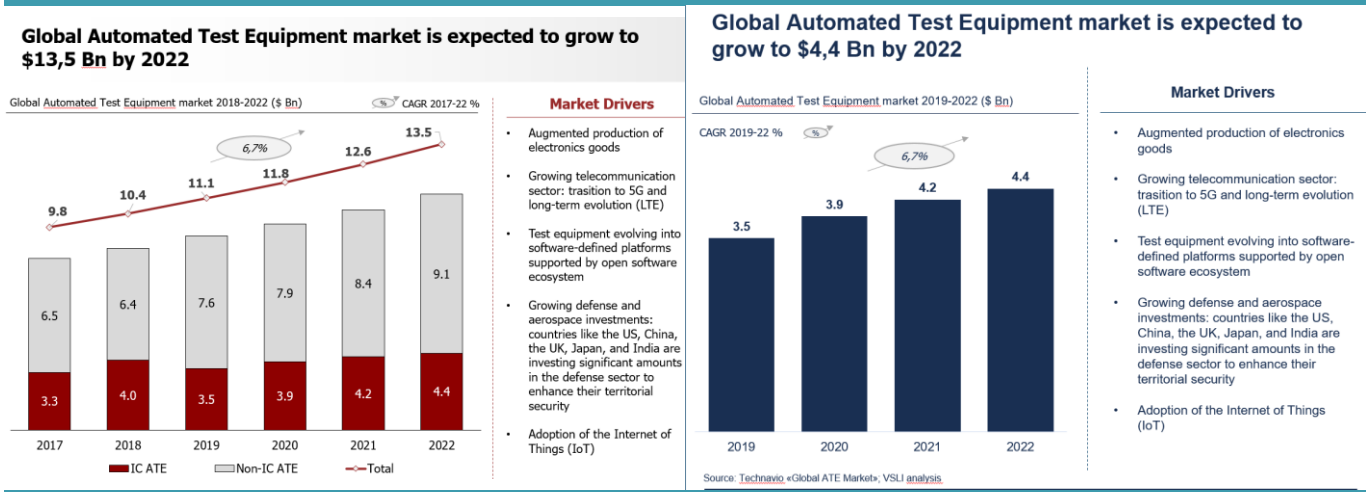
Semiconductor ATE, named for testing *semiconductor devices*, can test a wide range of electronic devices and systems, from simple components (*resistors*, *capacitors*, and *inductors*) to *integrated circuits* (ICs), *printed circuit boards* (PCBs), and complex, completely assembled electronic systems.

ATE systems are designed to reduce the amount of test time needed to verify that a particular device works or to quickly find its faults before the part has a chance to be

used in a final consumer product. To reduce manufacturing costs and improve *yield*, semiconductor devices should be tested after being fabricated, to prevent defective devices ending up with the consumer.

The semiconductor ATE architecture consists of a master controller (usually a *computer*) that synchronises one or more source and capture instruments. Historically, custom-designed controllers or *relays* were used by ATE systems. The DUT is physically connected to the ATE by another robotic machine, called a handler or *prober*, and through a customised Interface Test Adapter (ITA) or "fixture" that adapts the ATE's resources to the DUT.

The ATE market



Source: ELES

Global ATE market expected to grow to $4.4bn by 2022

The global ATE market is expected to grow to $4.4bn by 2022, driven by a growing telecommunication sector – transition to 5G and long-term evolution (LTE) with test equipment evolving into software-defined platforms supported by open software ecosystems. Additional growth will come from growing defence and aerospace investments: countries like the US, China, the UK, Japan and India are investing significant amounts in the defence sector to enhance their territorial security.

Competitors

Semiconductor and semiconductor test markets highly competitive

The semiconductor equipment industry is intensely competitive and is characterised by rapid technological change and demanding worldwide service requirements. Significant competitive factors include product performance, price, reliability, lead time, customer support and installed base of products.

ELES is one of the leading worldwide suppliers of semiconductor test handling equipment, but it faces substantial competition in its various markets, which represent a significant percentage of the worldwide market. Furthermore, some of ELES's current and potential competitors are part of larger corporations that have substantially greater financial, engineering, manufacturing and customer support capabilities, and have more extensive product offerings than ELES.

In the semiconductor test market, ELES faces competition from two dominant suppliers headquartered in the US and Japan, both of which are substantially larger than ELES's test business. While ELES is among the leading worldwide suppliers of test contactors, this market is very fragmented, with a large number of global and local competitors.

To remain competitive, we believe ELES will require significant financial resources to offer a broad range of products, maintain customer support and service centres, and to invest in R&D of new products. Failure to introduce new products in a timely manner, or the introduction by competitors of products with actual or perceived advantages, could result in a loss of competitive position and reduced sales of existing products.

Detailed below is a table summarising the competitors and their product offering, as well as selected summaries of some of the leading players.

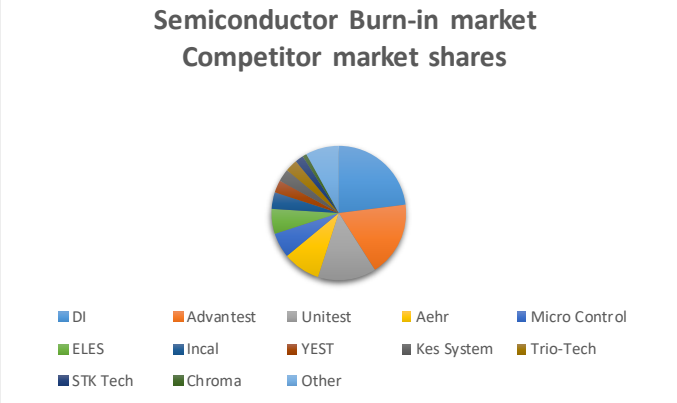
ELES's competitors

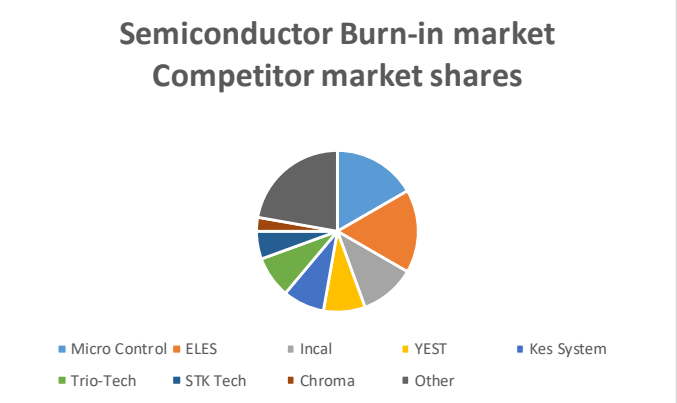
Company	Country	Products/Services	Approx. revenues
Insight- DI	Korea	Burn-in systems/boards; focused on memory testing	$90m
AEHR Test Systems	US	Full wafer test system, advanced burn-in and test system	$40m
Micro Control Company	US	High-power burn-in boards	$25m
Incal	US	High-power burn-in test systems	$20m
Yest	S. Korea	Burn-in test systems	$15m
Sunright	Singapore	Test and burn-in or TBI system	$15m
Trio Tech	China	High-power burn-in boards	$10m
STK	Japan	High-power burn-in boards	$10m
KO Machine	Korea	Burn-in systems/boards	$5-10m
EDA Industries	Italy	Burn- in and environmental chambers	$5-10m
Yahmada	Japan	Burn-in test systems	$5-10m
UniTest	Korea	Major focus on memory testing	$5-10m
Delta	US	Major focus on Delta Systems	$5m
Advanced Microtechnology	US	Burn-in systems/boards	$2m
Reltech	UK	Test systems for HTOL	$2m
Mictrotest	Italy	Burn-in and HTOL solutions	$2m

Source: ELES

Detailed below are market share graphs for both the whole of the semiconductor test market and the segment in which ELES competes.

The semiconductor testing industry – total market and segmental (ex-DRAM) market shares





Source: ELES

The ATE industry



Source: WSTS, Worldwide Semiconductor Revenue forecast

Teradyne

Teradyne is a leading global supplier of automation equipment for test equipment

Teradyne, through one of its standalone businesses, is a leading global supplier of automation equipment for test and industrial applications. Teradyne designs, develops, manufactures and sells automatic test systems used to test semiconductors, wireless products, data storage and complex electronics systems in the consumer electronics, wireless, automotive, industrial, computing, communications, and aerospace and defence industries. Teradyne's industrial automation products include collaborative robotic arms, autonomous mobile robots, and advanced robotic control software used by global manufacturing and light industrial customers to improve quality, increase manufacturing and material handling efficiency, and decrease manufacturing costs.

Teradyne's automatic test equipment and industrial automation products and services include i) semiconductor test systems, ii) defence/aerospace test instrumentation and systems, iii) storage test systems, iv) circuit-board test and inspection ("Production Board Test") systems (collectively, these products represent "System Test"), v) industrial automation ("Industrial Automation") products; and vi) wireless test ("Wireless Test") systems.

Cohu

Cohu is a leading supplier of semiconductor test and inspection handlers and micro-electro mechanical system (MEMS) test modules

Cohu is a leading supplier of semiconductor test and inspection handlers, micro-electro mechanical system (MEMS) test modules, test contactors, thermal sub-systems, semiconductor automated test equipment, and bare-board PCB test systems used by global semiconductor and electronics manufacturers and test subcontractors.

Cohu offers a wide range of products and services, and revenue from capital equipment products is driven by the capital expenditure budgets and spending patterns of its customers, who often delay or accelerate purchases in reaction to variations in their business.

Cohu consumable products are driven by an increase in the number of semiconductor devices and PCBs that are tested and by the continuous introduction of new products and new technologies by its customers.

Semiconductor ATE is used for both wafer level and device package testing. The semiconductor ATE solutions consist of two platforms focused primarily on the SoC device market. The Diamond series platform, which includes the flagship Diamondx test system, offers high-density packaging for low-cost testing of microcontrollers and cost- sensitive consumer and digital-based ASSP, such as Power Management and ASIC devices, including flat panel display driver devices.

Aehr Test Systems

Aehr Test Systems primarily designs, engineers, manufactures and sells test and burn-in equipment for use in the semiconductor industry

Aehr Test Systems was founded in 1977, and is headquartered in Fremont, California. The Group primarily designs, engineers, manufactures and sells test and burn-in equipment for use in the semiconductor industry worldwide. It provides full wafer contact test systems, test during burn-in systems, test fixtures, and related accessories.

The company offers advanced burn-in and a test system family of packaged part burn-in and test systems, which perform tests during burn-in of complex devices, such as digital signal processors, microprocessors, microcontrollers, and SoC, as well as individual temperature control for high-power advanced logic devices.

Furthermore, Aehr Test Systems provides customer service and support programmes, including system installation, system repair, applications engineering support, spare parts inventory, customer training, and documentation services. It markets and sells its products to semiconductor manufacturers, semiconductor

contract assemblers, electronics manufacturers, and burn-in and test service companies through a network of distributors and sales representatives

UniTest

UniTest is a Korea-based company engaged mainly in the manufacture of semiconductor testing equipment

The company operates its business through two segments: a memory testing equipment segment and a light emitting diode (LED) segment. The memory testing equipment segment produces memory component testers, which are used in mass production and testing for double data rate (DDR) components, high speed memory devices and dynamic random access memory (D-RAM), memory module testers used in mass production for DDR modules, and application level testers used for graphic memory and memory components. The LED segment produces pilot lamps, bars, down lights, photovoltaic inverters and others. In addition, it is engaged in the real estate rental business. The company distributes its products within the domestic market and to overseas markets.

Risks

The operations of ELES, and the implementation of its objectives and strategy, are subject to a number of key risks and uncertainties.

The principal risks and uncertainties, and mitigating factors, are summarised as follows:

- volatile, unpredictable and seasonal nature of the semiconductor equipment industry;
- timing and amount of orders from customers and shipments to customers;
- customer decisions to cancel orders or push out deliveries;
- unexpected expenses or cost overruns in the introduction and support of products; and
- inability to deliver solutions as expected by its customers.

The significant volatility in demand for semiconductors is affected by various factors, such as:

ELES's business and results of operations are subject to significant demand volatility he semiconductor industry

- the overall state of the global economy;
- levels of investment in communications infrastructure and trends of demand in communication devices such as smartphones and wearable devices;
- demand in personal computer and data server industries;
- consumer demand for digital consumer products such as TVs and game devices; and
- trends in industrial equipment markets, such as automobile, robotics and medical equipment.

ELES also believes demand for its products, including semiconductor and component test systems, is affected by the level of demand for personal computers, high-speed wireless and wireline data services, digital consumer products and communication devices, such as smartphones and wearable devices, and data servers. It is likely that advances in technologies used in those products and services will require new testing systems. Without the timely introduction of semiconductor test systems capable of effectively testing and measuring equipment that uses these new technologies, ELES's products and services may become technologically obsolete over time.

A failure by ELES to meet its customers' technical requirements at competitive prices or to deliver conforming equipment in a timely manner could result in its products being replaced by those of a competitor or an alternative technology solution. Furthermore, ELES's inability to secure sufficient personnel appropriate for the business during a period of recovery or its inability to provide a product that meets requested performance criteria at an acceptable price, when required by its customers, would severely damage its reputation with such customers, and could adversely affect future sales efforts with respect to such customers.

ELES faces substantial competition in its businesses

ELES faces many challenges in its businesses, including increased pressure from customers to produce semiconductor and component test systems and mechatronics systems that reduce testing costs, or from customers who have developed internal test solutions.

To compete effectively and maintain and expand its market share, ELES must continue to enhance its business processes to lower the cost of its products or introduce enhancements that lower overall testing costs. ELES also expects its competitors to continue to introduce new products with improvements in price and performance, as well as increasing its customer service and support offerings, and ELES expects new market participants to launch low-price testers. Significant increases in competition may erode ELES's profit margin and weaken its earnings.

ELES's largest customers currently account for a significant part of its net sales

ELES's success depends on its continued ability to develop and manage relationships with its major customers. A small number of such major customers currently account for a significant portion of its net sales. The loss of one or more of these major customers, changes in their capital expenditures or failure of their main products could materially harm ELES's business. Furthermore, if ELES's major customers experience a deterioration in their financial position and are unable to fulfil their payment obligations to ELES, this will also impact ELES's success.

ELES's business is subject to economic, political and other risks associated with international operations and sales

ELES's business is subject to risks associated with conducting business internationally, because it manufactures and sells its products, and purchases parts and components from around the world:

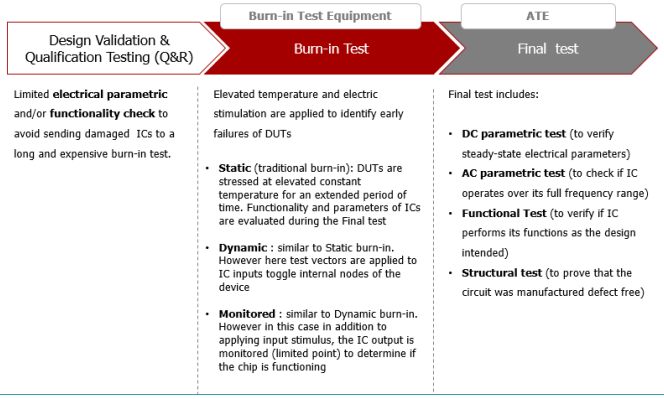
- political and economic instability, including economic and political disruptions, disputes, natural calamities, epidemics or other risks related to countries where ELES procures its components and parts or manufactures and sells its products;
- trade protection measures and import or export licensing requirements;
- differing protection of intellectual property;
- risks with respect to a decline in the quality of procurement and manufacturing, where ELES's suppliers or manufacturing facilities are located in countries that do not have developed infrastructures in mechanical processing and assembly; and
- risks with respect to increases in cost, delays in delivery, or expenses in repairing products where low quality and counterfeit products are mixed into the supply chain.

The semiconductor testing process

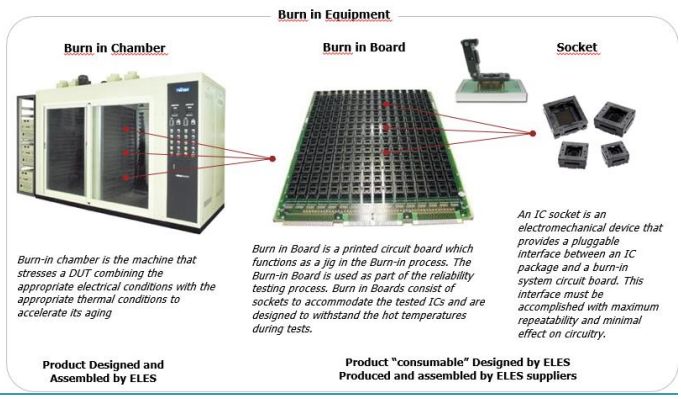
The traditional approach for IC testing entails two different types of test: burn-in and functional test. Burn-in equipment tests the reliability of ICs, environmentally stressing the DUT, and is a complex flow of subsequent phases. ATE is any apparatus that performs tests on the DUT.

Semiconductor testing

Traditional approach for ICs testing entails 2 different types of test: Burn-in and Functional Test



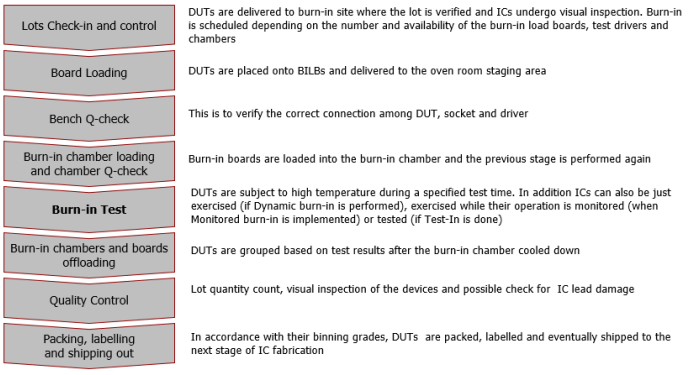
A Burn-in equipment tests the reliability of ICs, environmentally stressing the Device under Test (DUT)



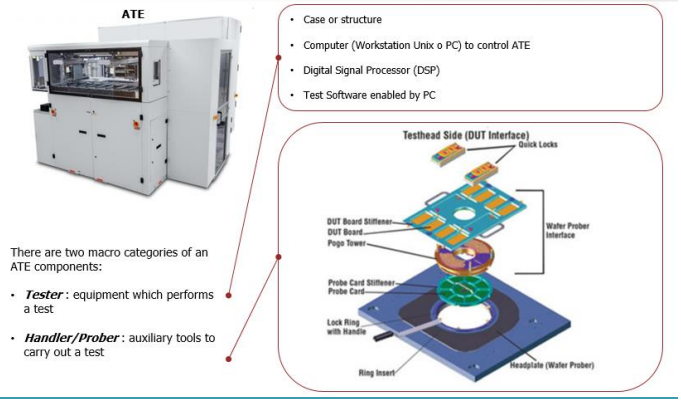
Source: Hardman & Co Research

Semiconductor testing

Burn-in test process is a complex flow of subsequent phases



ATE is any apparatus that performs tests on a device, known as the (DUT)



Source: Hardman & Co Research

Glossary – selected terms

Semiconductor: a Material that has electrical conductivity value falling between that of a conductor, such as a metal, and an insulator, such as glass. Examples are Silicon, Germanium and Gallium Arsenide.

Semiconductor components: Transistors, Diodes and Resistors

Semiconductor devices: electronic components, any basic discrete device or physical entity in an electronic system used to affect electrons, which exploit the electronic properties of semiconductor materials.

Integrated Circuit: an integrated circuit (IC), also known as a chip or microchip, is a small semiconductor-based electronic device consisting of multiple fabricated transistors, resistors and capacitors (devices), manufactured and interconnected on a single substrate. ICs are the building blocks of most electronic devices and equipment.

System-on-Chip: an IC (also known as a "chip") that integrates all components of a computer or other electronic system. These components typically include a central processing unit (CPU), memory, input/output ports and secondary storage – all on a single substrate.

Micro Electro Mechanical Systems (MEMS): MEMs is a technology that, in its most general form, can be defined as miniaturised mechanical and electro-mechanical elements (i.e. devices and structures) that are made using the techniques of microfabrication. The functional elements of MEMS are miniaturised structures, sensors, actuators and microelectronics that can be integrated onto a silicon substrate. Microelectromechanical systems is the technology of microscopic devices, particularly those with moving parts.

Memories: semiconductor memory is a digital electronic data storage device, often used as computer memory, implemented with semiconductor electronic devices on an IC. There are two main kinds of semiconductor memory: volatile and non-volatile.

Built-in Self Test, or BiST, is the technique of Design for Testability, which designs additional hardware and software features into ICs to allow them to perform self-testing (i.e. testing of their own operation – functionally, parametrically, or both) using their own circuits, thereby reducing dependence on external automated test equipment (ATE).

Design for testing or design for testability (DFT) consists of IC design techniques that add testability features to a hardware product design. The added features make it easier to develop and apply manufacturing tests to the designed hardware. The purpose of manufacturing tests is to validate that the product hardware contains no manufacturing defects that could adversely affect the product's correct functioning.

DUT: Device under Test.

RETE: Reliable Embedded Test Engineering

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