

European Investment Casting Market Review

Market Evolution & Trends

Part 1 : 2019

Part 2 : Forecast 2020

19 October 2020



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EICF Executive Director

European Investment Casting Market Review

Report Content



PART 1

- ☐ European Union Economic context
- ☐ European Investment Casting Sales 2019
- ☐ Sales by Region – 2019
- ☐ Market Segment Review 2019

PART 2

- ☐ EU(27) + UK Economic Context Forecast 2020 & 2021
- ☐ European Investment Casting Forecast Sales 2020
- ☐ Sales by Region – Forecast 2020
- ☐ Market Segment Review Forecast 2020
- ☐ Prospects

- 
- *The European Industry acting in the field of Investment casting is non related to any political institution but it corresponds to the geographical location where these companies carry out its activity within the different European countries*
 - *The Study represent the volumes of sales produced by the European foundries and addressed to the different Market Segments analyzed, independently from the location of those Market and end users*



The European Investment Casters' Federation (EICF) is the Investment Casting Association of reference in Europe representing the interests of the European Investment Casting industry.

The EICF intends all information contained in its market research reports to be accurate, authentic and reliable at the time of publication. Information contained in the Market research reports is based on a methodology that combines the realization of direct surveys with the European IC industry, data from recognized end users European Market applications reports, interviews with industry leaders, review of National Foundry association reports, studies on the overall economy of the EU and Europe and media releases.

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As a consequence the EICF is unable to guarantee or take any responsibility for the accuracy, completeness, reliability and usefulness of any information taken from this report and in particular in what respect to any business decisions taken based on it

Market segments established are as per end user application

Segment	Sector	Application
High Added Value	Aerospace	Commercial
		Defence
	Power Generation	IGT new
		IGT Spares

Automotive	Passenger Cars	Combustion Engine
		APV Engine
		Non engine parts
	Commercial Vehicles	Combustion Engine
		APV Engine
		Non Engine parts

Other Applications	Defence	Guns & Mechanics
		Electronics
		Other
	Oil & Gas	Pumps
		Valves
		Other
	Bio Medical	Medical implants
		Equipment
		Other
	General Engineering	Nuclear
		Electronics
		Mechanical
	Commercial	Food
		Instrumentation
		Other



High Added Value Components

Typically ... Aerospace and Energy components



Automotive

Typically ... Automotive and engine parts



General Engineering

Typically ... Different sort of mechanical solutions for different sectors including Nuclear; Defence; Electronics.



Bio Medical

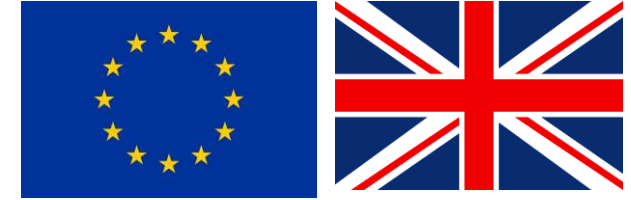
Typically ... Hip & Knee prosthesis solutions

European Investment Casting Market Review

Report Content



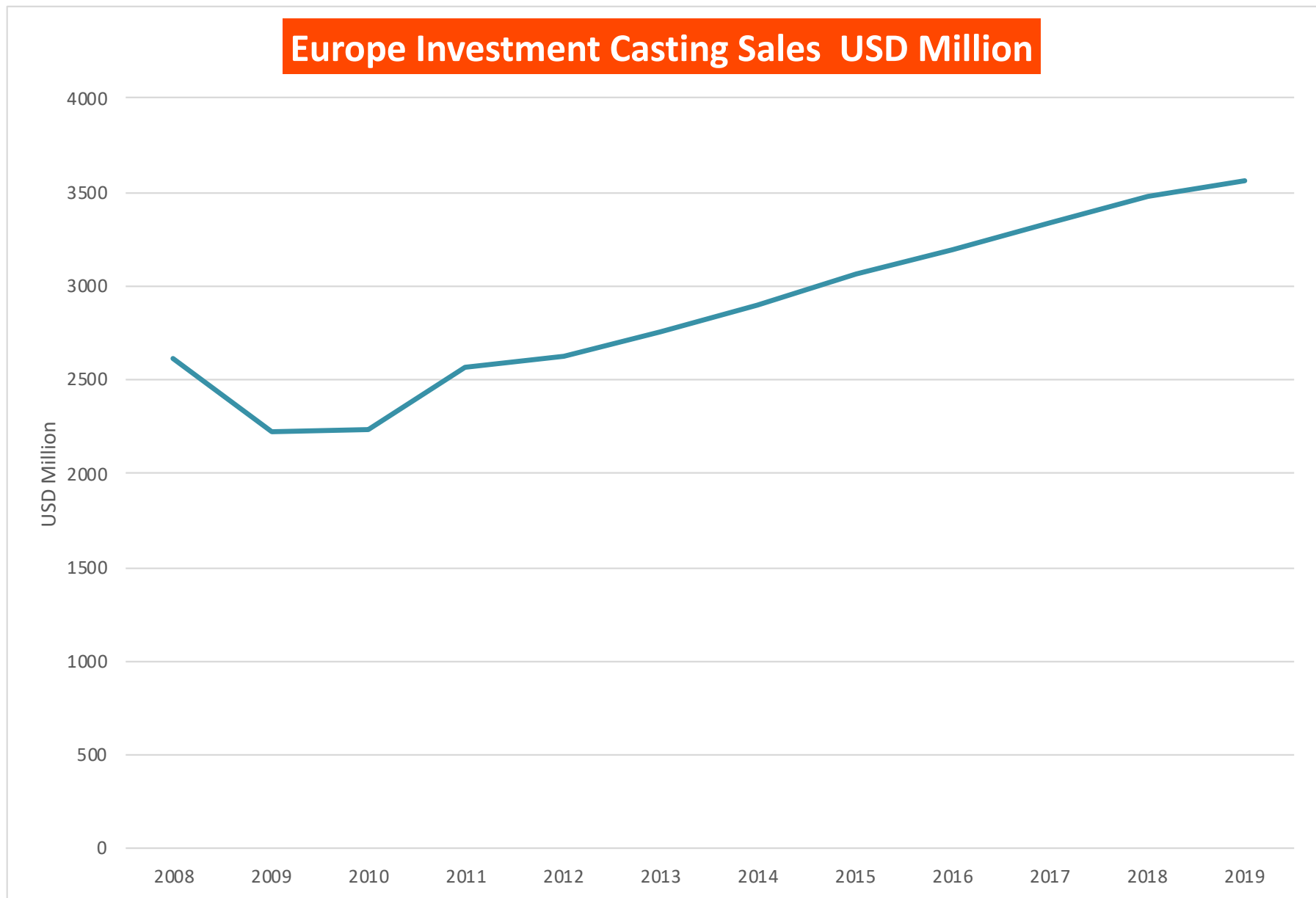
PART 1



EU DATA	EU (UK INCLUDED)	
	2018	2019
GDP GROWTH (YoY)	2.0	1.5
INFLATION (YoY)	1.9	1.4
UNEMPLOYMENT (YoY)	6.8	6.7



European Investment Casting Sales Trend – Growth slow down in 2019





2019	
EU GDP GROWTH	1.4
IC EUROPE MARKET GROWTH	2.1

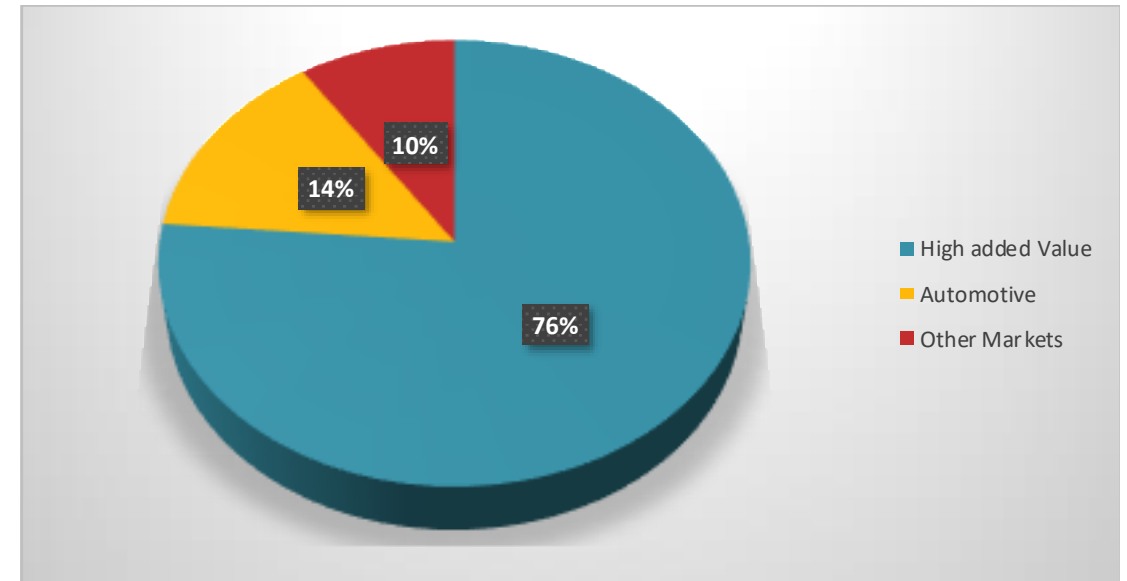
European Investment Casting Sales Trend vs GDP Growth

2018	
EU GDP GROWTH	1.9
IC EUROPE MARKET GROWTH	4.4

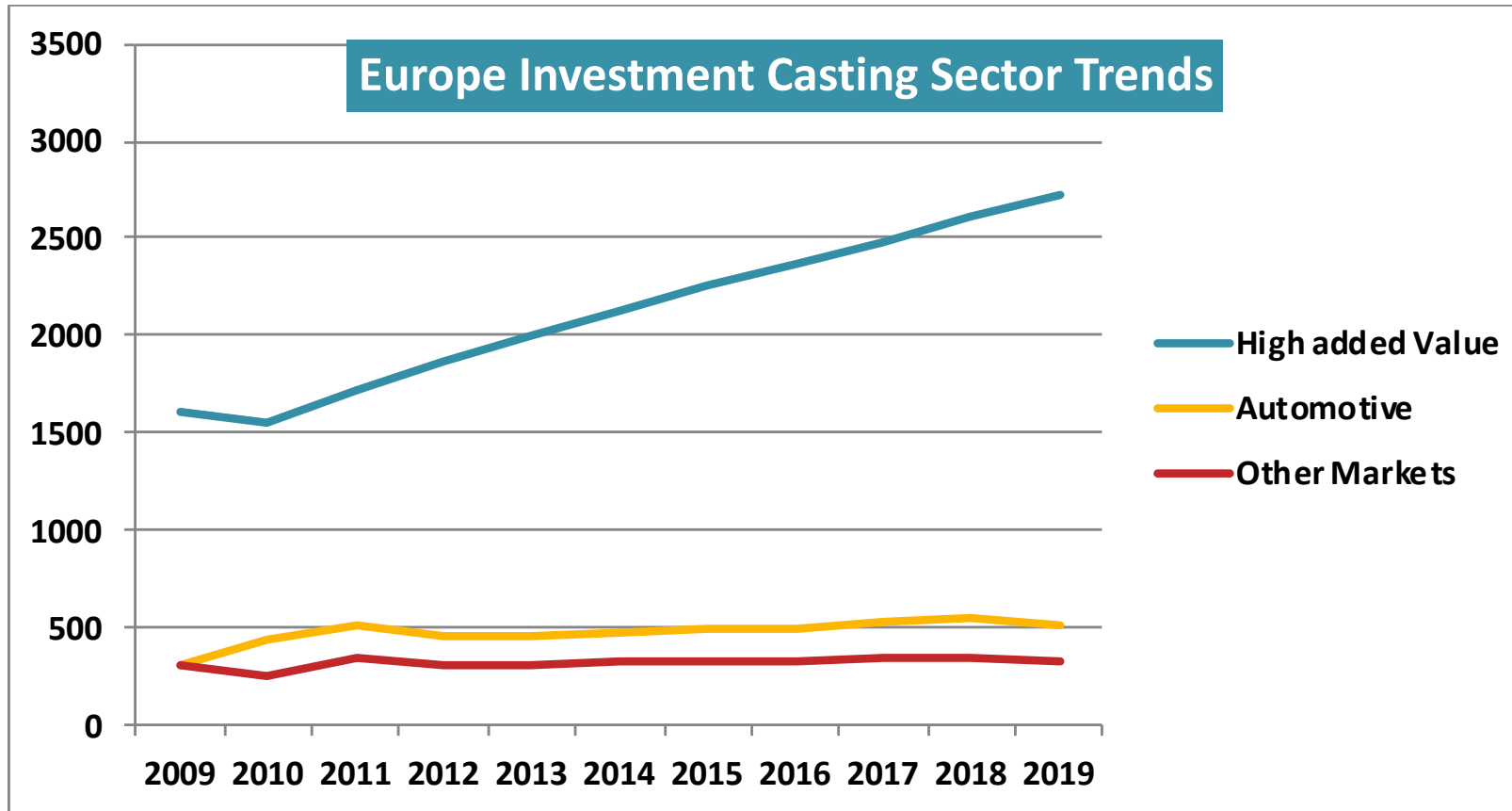


2019	
EU GDP GROWTH	1.4
IC EUROPE MARKET GROWTH	2.1

MARKET STILL ABOVE GDP GROWTH
BUT SLOW DOWN

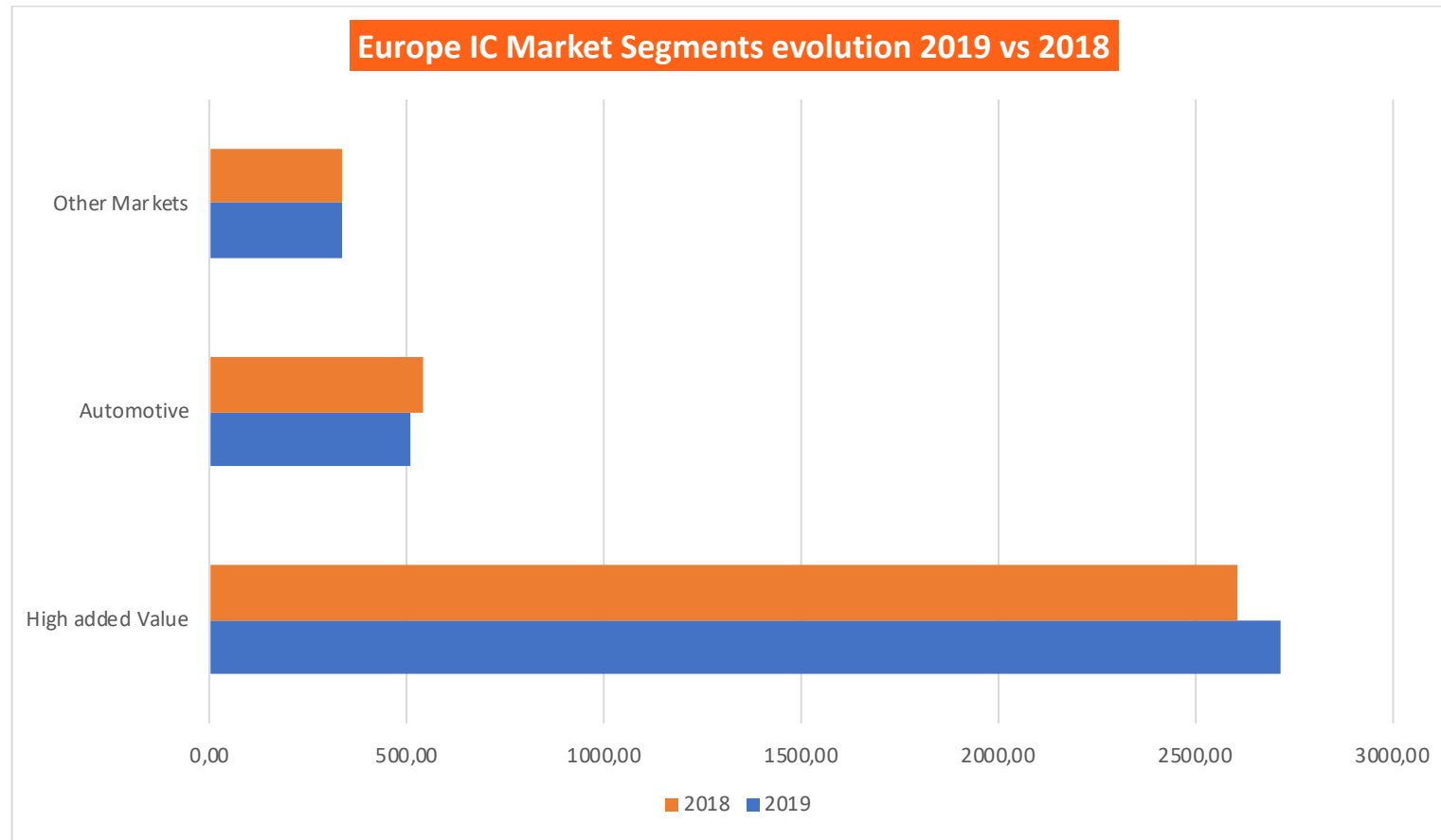


2019 –Relative position increase of High Added Value vs Automotive



Variation 2019 vs 2018	
Other Applications	-1.5%
Automotive	-5.8%
High Added Value	+4.2%
Overall IC Market	
	+2.1%

- The growth of the High Added Value sector continues based on Aerospace applications resulting in an average 4,2 % growth
- The automotive sector experiments a significant decay in 2019 (-5,8 %)
- Other Applications castings experiment a slight decay (-1,5 %)



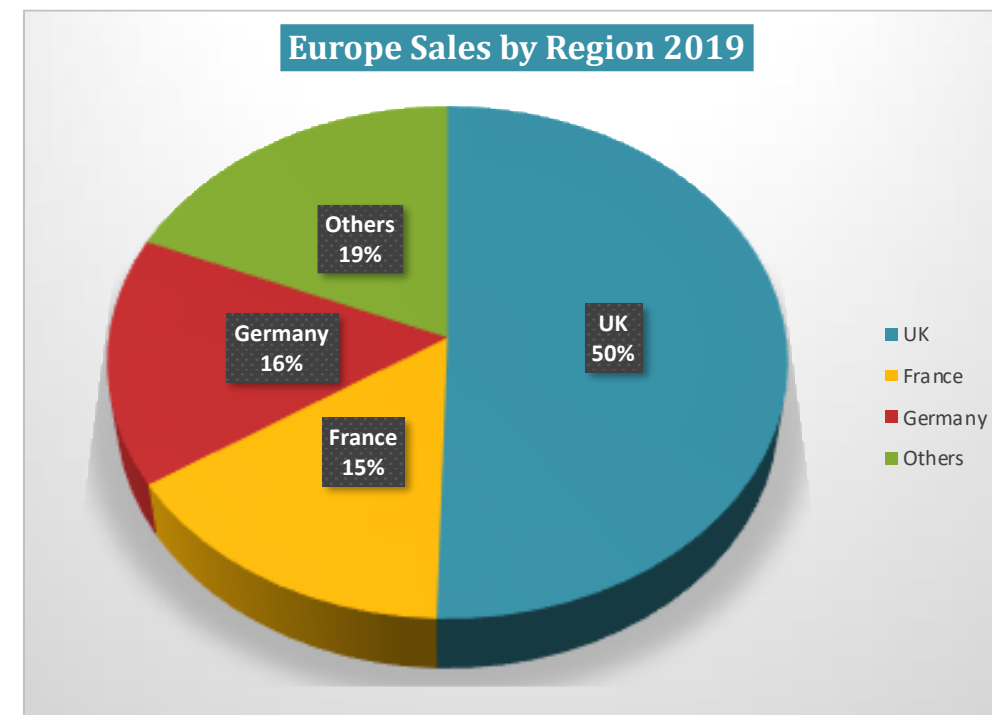
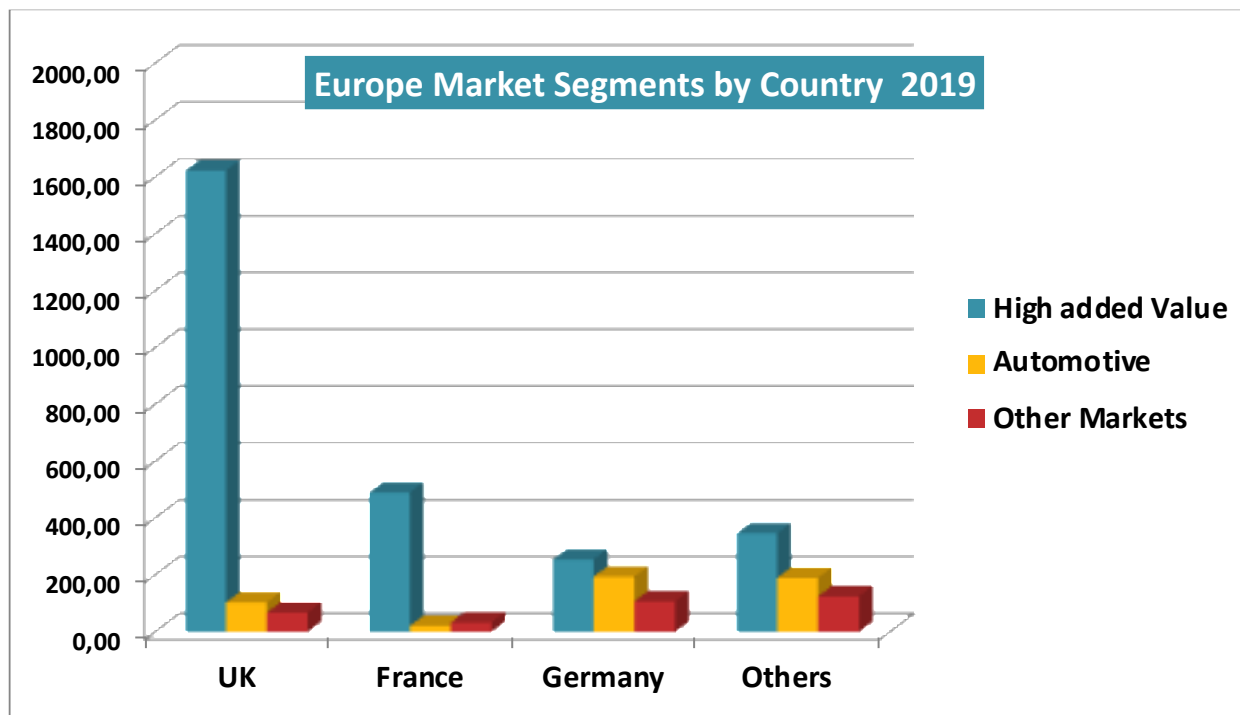
Variation 2019 vs 2018

Other Applications	-1.5%
Automotive	-5.8%
High Added Value	+4.2%

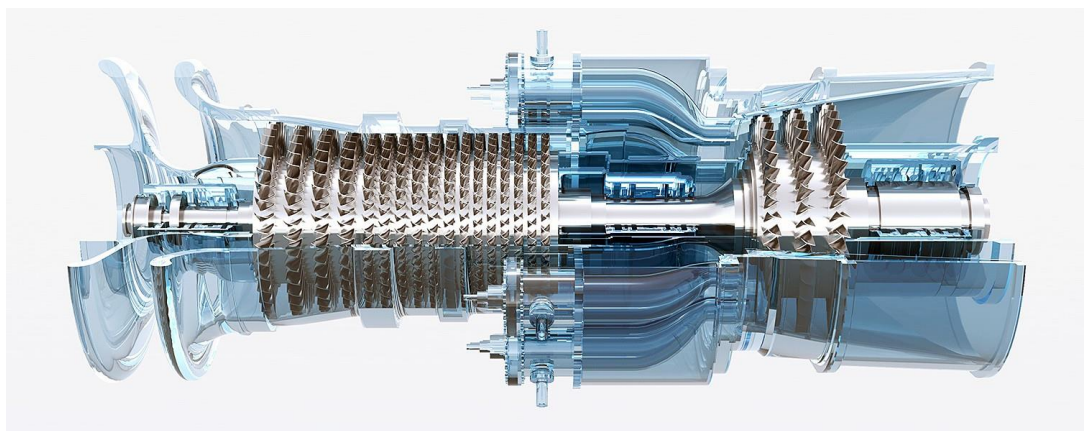
Overall IC Market	+2.1%
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Notes

- ❑ The European Union [EU] economy growth 1.4 % percent year-on-year in 2019 (average figure)
- ❑ European Investment casting growth in 2019 is 2.1 %. Above GDP average values
- ❑ Resulting in an estimated total sales value of **USD 3,557 BILLION**
- ❑ Overall European Investment Casting sales show a **slowdown in growth trend** from previous years
- ❑ High added value market segment shows good performance based on aerospace sales
- ❑ Automotive market segment experimented a significant down fall
- ❑ Other applications market segment show a light decay



2019			
MUSD	High added Value	Automotive	Other Markets
UK	1623,5	103,6	68,0
France	490,1	20,6	33,0
Germany	255,0	194,0	107,3
Others	347,0	190,2	125,0



ICI Sales High Added Value 2019	
↑	+4.2%

COMMERCIAL AEROSPACE

High Added Value Segment

- 2019 has represented a strong year for Airbus with deliveries record and increased new orders over Boeing (*Airbus had retained an orders lead over its rival every year since 2012*)
- 2019 Boeing's deliveries took a severe hit following two 737 MAX crashes and the subsequent deliveries halt and grounding of the fleet.

2019		
AIRBUS	DELIVERIES	863
	NET ORDERS	768
	BACKLOG	7482

9.4 years of shipments

At 2018 production rate

2019		
BOEING	DELIVERIES	380
	NET ORDERS	-87
	BACKLOG	5625

7 years of shipments

High demand
market upon
supply chain

COMMERCIAL AEROSPACE

High Added Value Segment

2019
Boeing & Airbus
data vs Aircraft Models

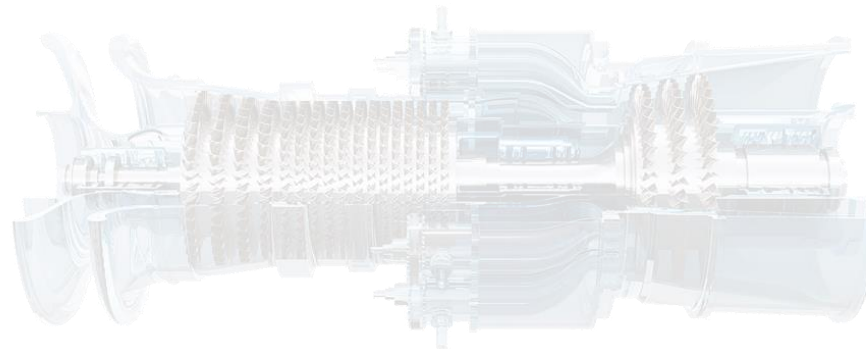
Boeing, Airbus: 2019 Orders & Deliveries Through 31 Dec.

Deliveries	Airbus	A220	A320	A330	A350	A380	TOTAL
		48	642	53	112	8	863
	Boeing	737	747-8	767	777	787	TOTAL
		127	7	43	45	158	380
Net Orders	Airbus	A220	A320	A330	A350	A380	TOTAL
		63	654	89	32	-70	768
	Boeing	737	747-8	767	777	787	TOTAL
		-183	0	26	-4	74	-87
Gross Orders	Airbus	A220	A320	A330	A350	A380	TOTAL
		118	796	104	113	0	1,131
	Boeing	737	747-8	767	777	787	TOTAL
		67	0	26	38	112	243
Backlog	Airbus	A220	A320	A330	A350	A380	TOTAL
		495	6,068	331	579	9	7,482
	Boeing	737	747-8	767	777	787	TOTAL
		4,585	17	94	383	546	5,625

Source : Forecast International

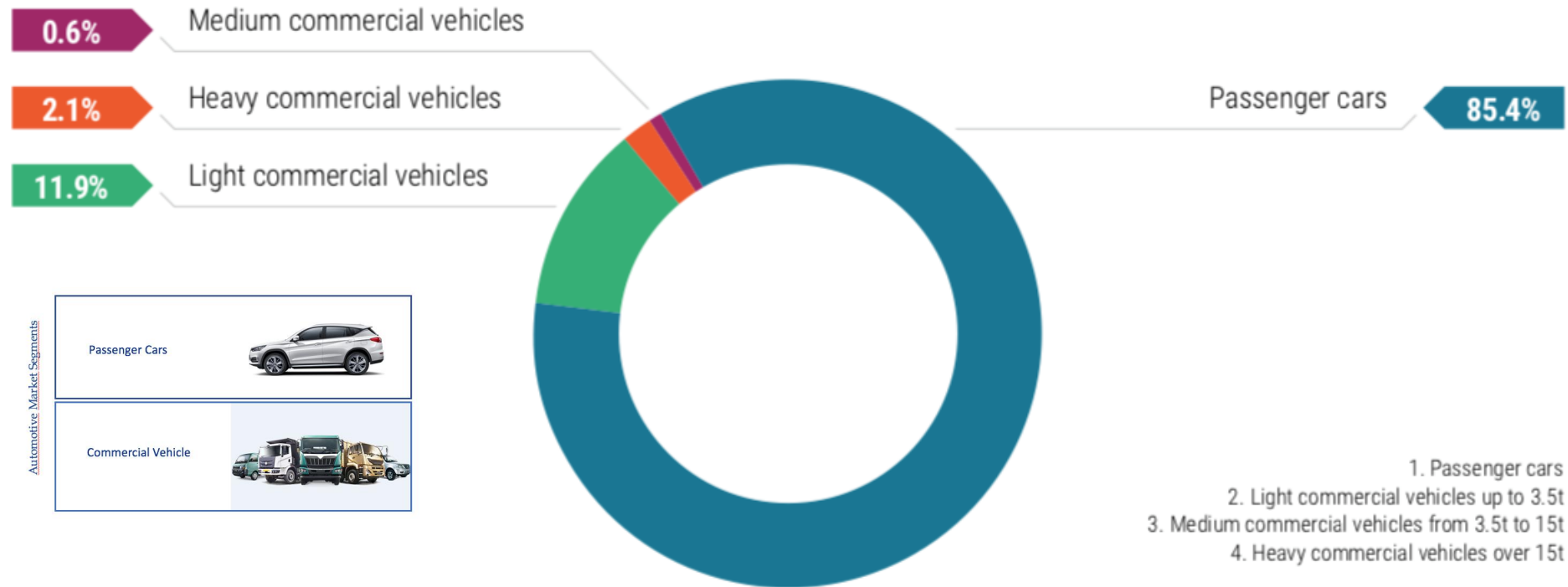
IGT

- ❑ 2019 have seen some isolated signs of demand recovery within a general decay. Market operates at “make to order”. Service parts represent significant share of the demand
- ❑ OEM emphasis are focused to improve efficiency, to cut the cost of gas-fired power
- ❑ The world is switching to renewable energy. Gas might be needed as a backup fuel for generating electricity on renewables turndown, but other technologies are also considered.
- ❑ Opportunities for manufactures look at China switching from coal to much cleaner natural gas.
- ❑ Growth will depend in part on climate policies worldwide, and the ability of renewables to cope with the the additional demand of electricity



EU motor vehicle production by type

% SHARE / 2019



18.5 million motor vehicles
were manufactured in the EU in 2019

WWW.ACEA.BE

ICISalesAutomotive2019	
↓	-5.8%

Automotive

Automotive Market Segments

Passenger Cars



Commercial Vehicle



Automotive Passenger Car Registrations

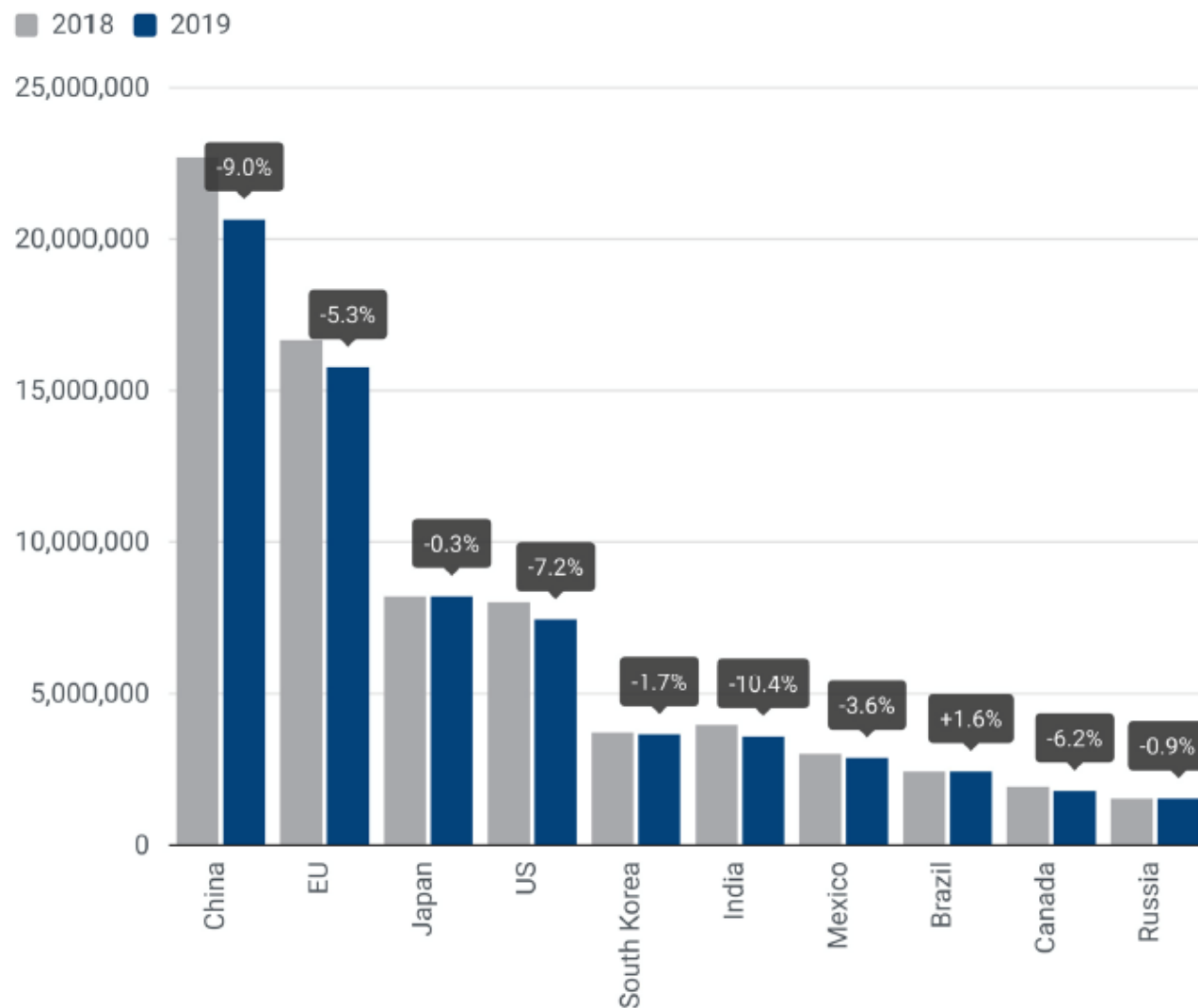
- ❑ The European passenger car market recorded modest growth during 2019 (+0.4%), recovering from a negative performance in the first half of the year. New car sales remained above 18 million units, with a global market share of 24.2%.

Automotive Passenger Car Production

- ❑ Although European sales were slightly in positive territory in 2019, passenger car production decreased by 4.6% to 18.5 million units, attributable to adverse trade flows and inventory reductions. (EU -5.3%)

Automotive Passenger Car World Production - 2019

Automotive



SOURCE: IHS MARKIT, OICA

COMMERCIAL VEHICLE

Automotive

Automotive Commercial Vehicle Registrations

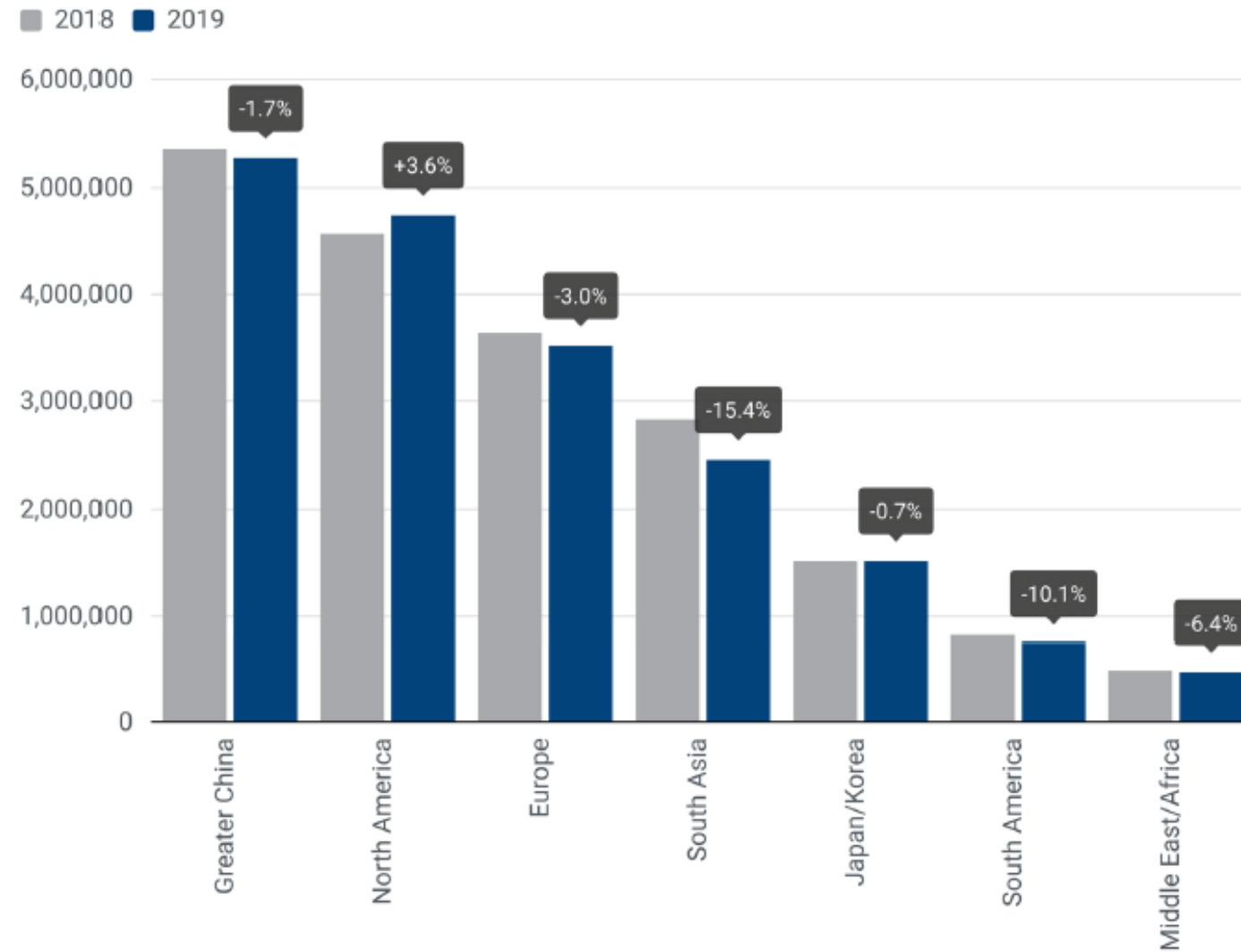
- ❑ In 2019, new commercial vehicle (CV) registrations in the EU increased by 2.5% to 2,546,830 units

Automotive Commercial Vehicle Production

- ❑ Commercial vehicle output on the European continent posted a 3.0% decline in 2019, with 3.5million units built in total.

Automotive Commercial Vehicle Production - 2019

Automotive



SOURCE: IHS MARKIT

Other Applications

Other applications (general engineering, bio-medical and commercial ... castings) Segment

- ❑ A slight slowdown is being observed within 2019 in Europe

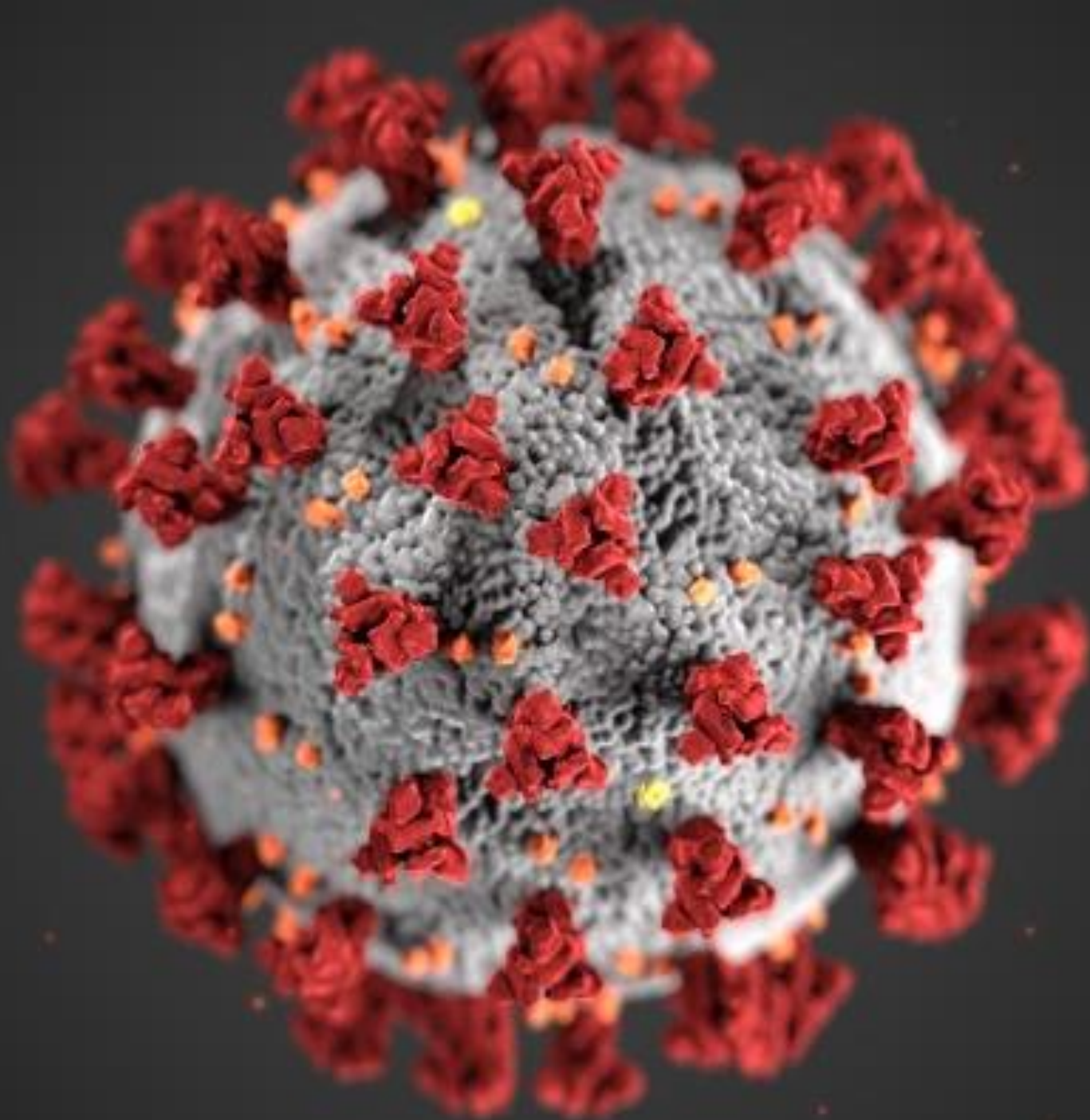
ICISalesOtherApplications2019	
	-1.5%

European Investment Casting Market Review

Report Content



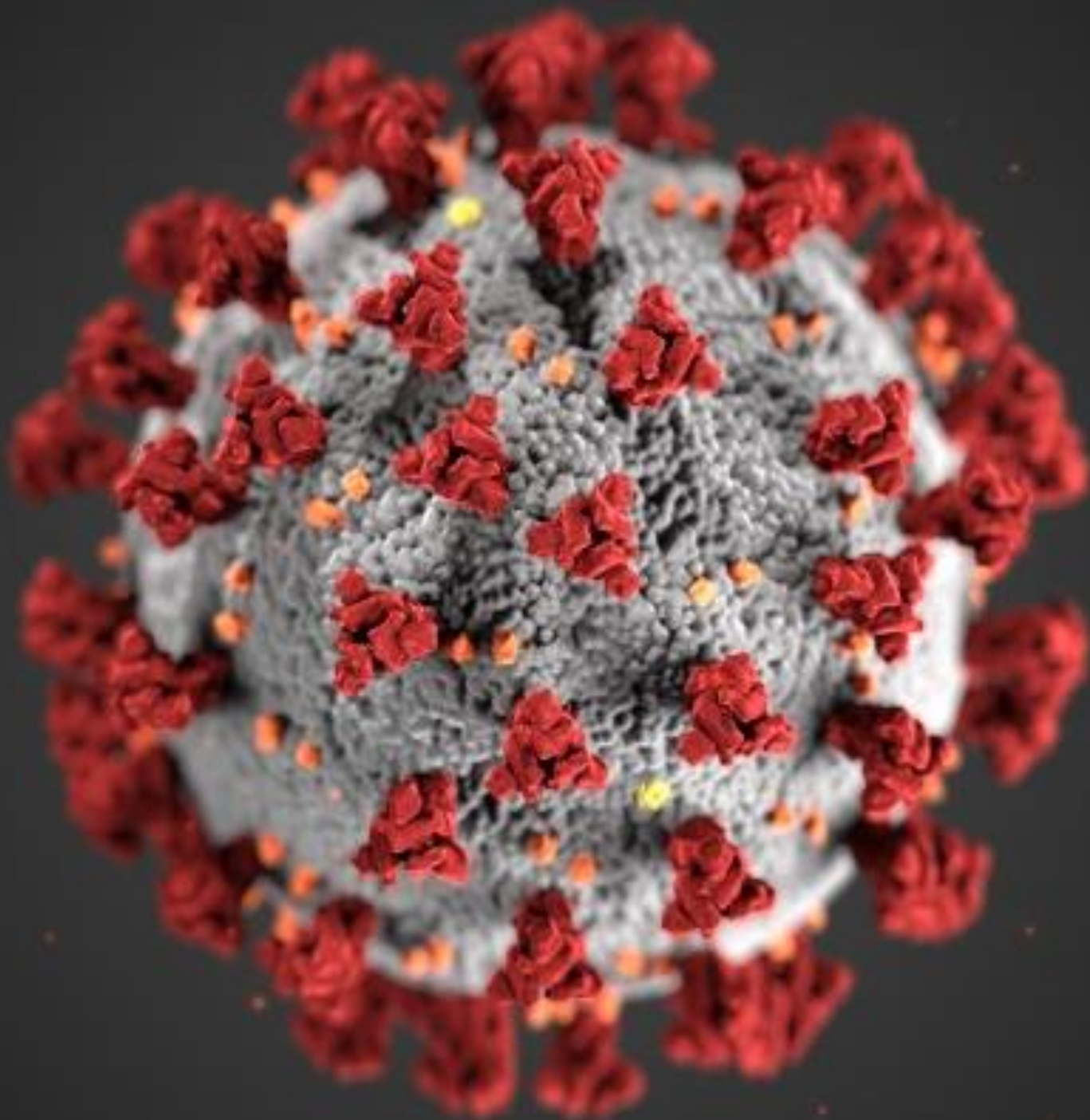
PART 2



European Investment Casting Industry

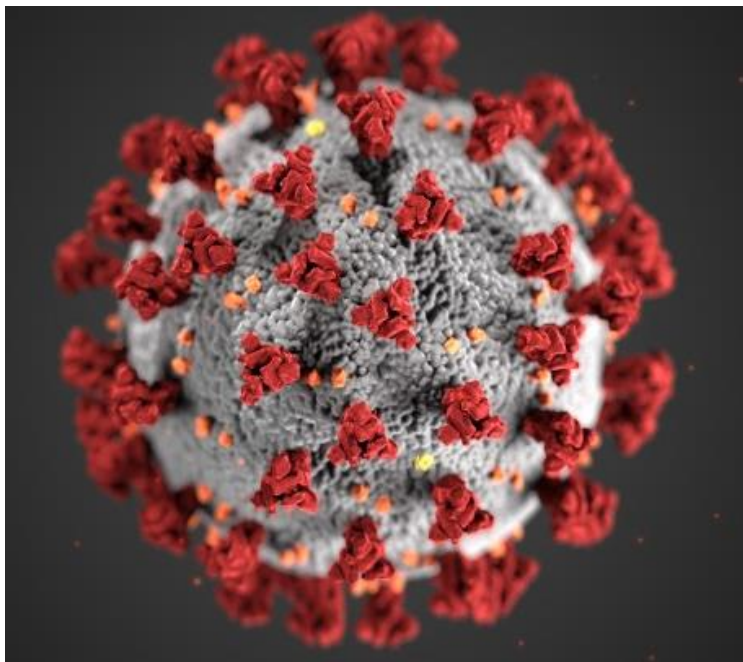
Covid-19 – Impact

Forecast 2020

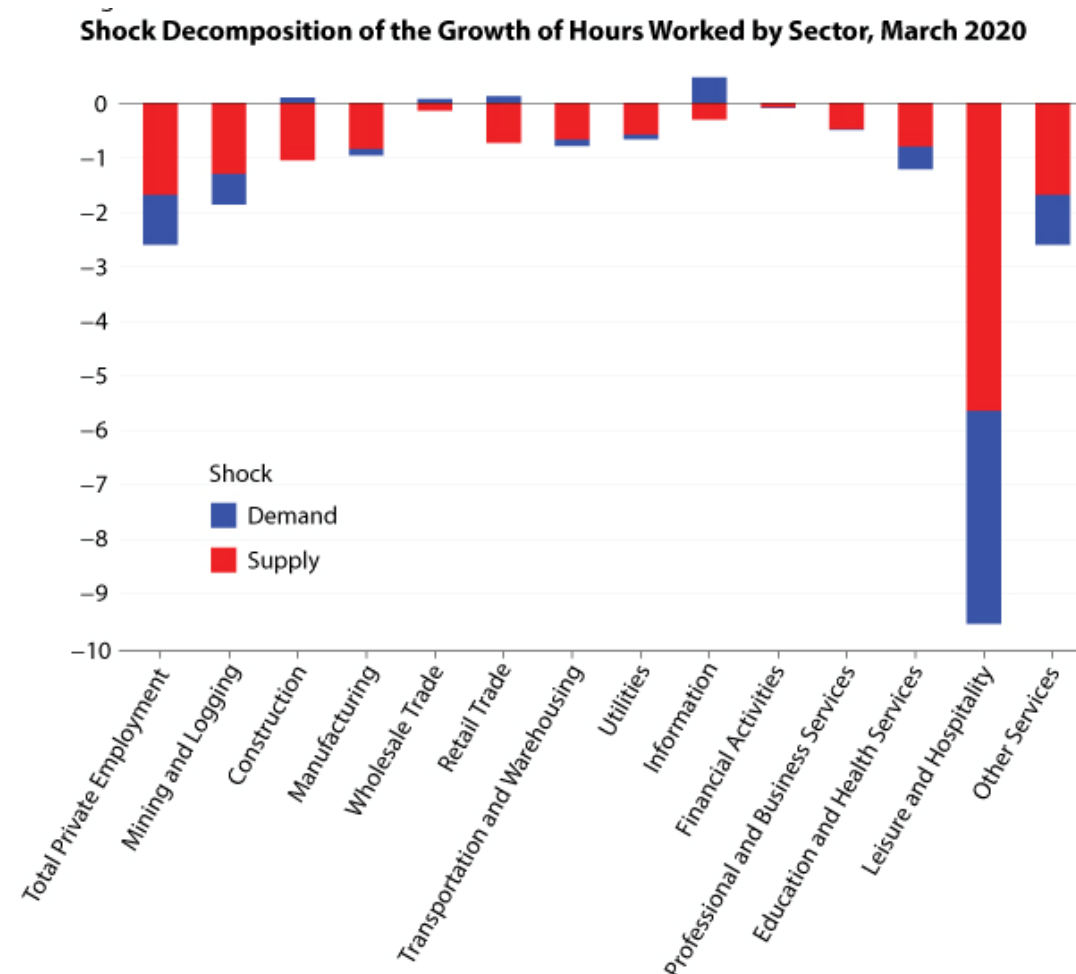


Covid-19 – Impact

- By directly affecting production and demand
- By creating supply chain and market disruption
- By its financial impact on firms and financial markets



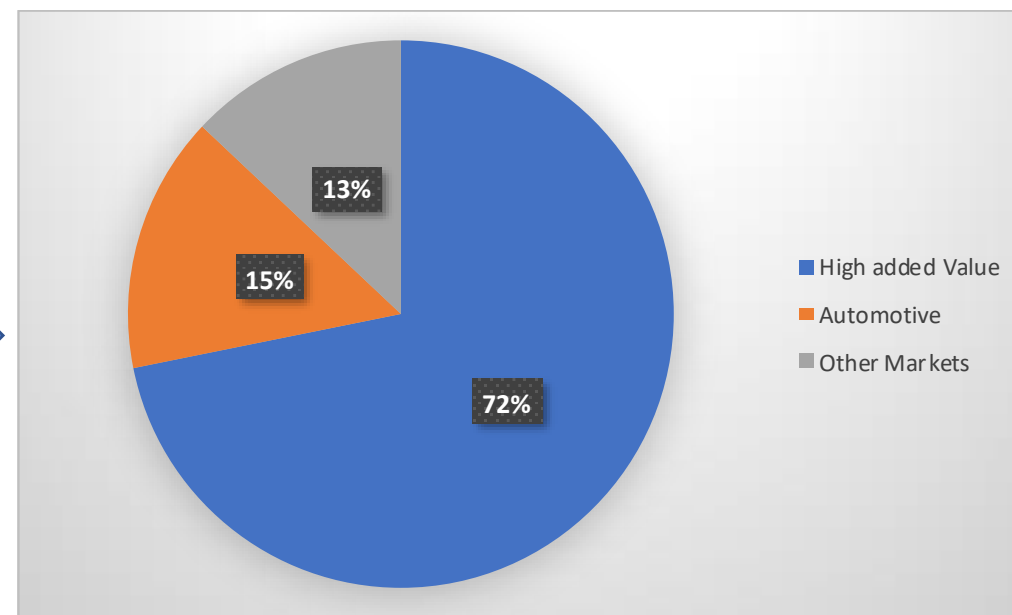
The pandemic produces simultaneous Supply & Demand Shock



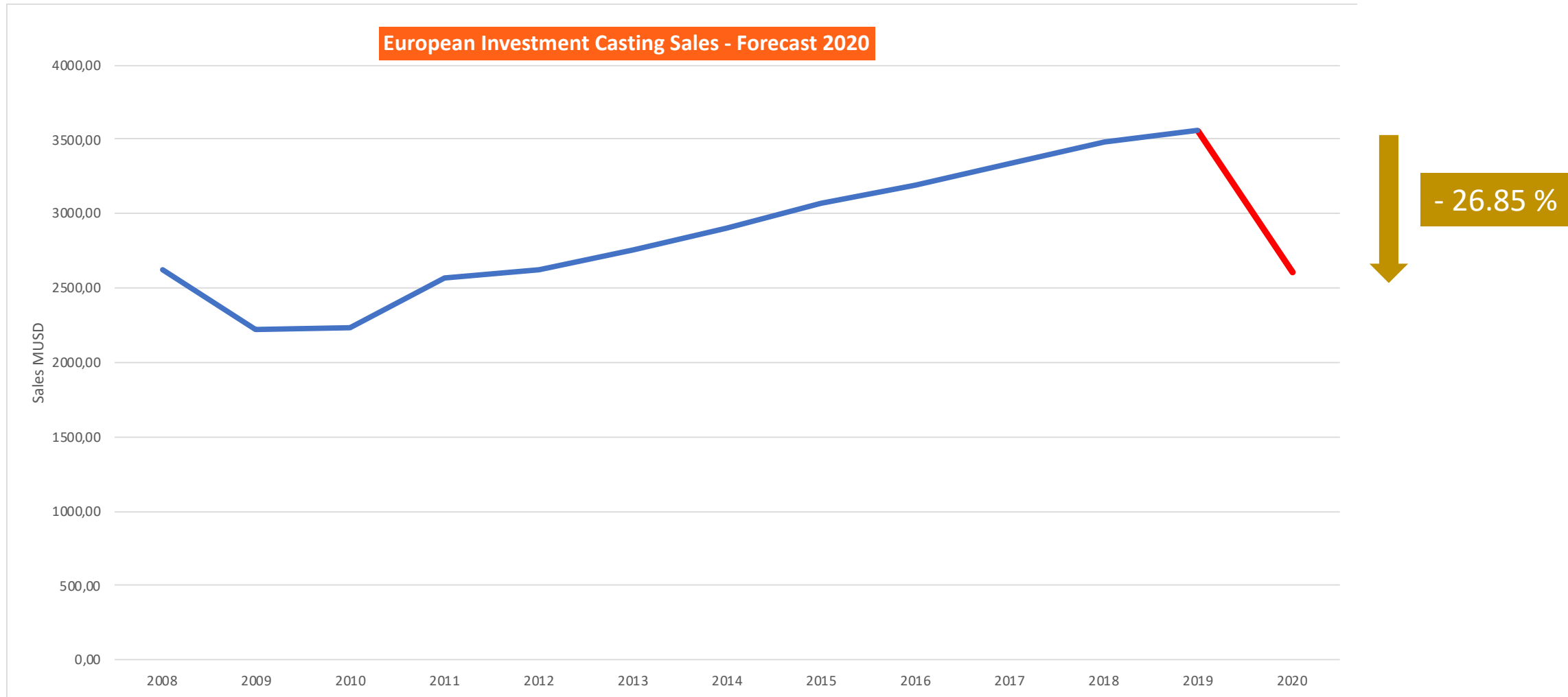
SOURCE: Brinca, Duarte, and Faria-e-Castro (2020).



EU DATA	EU 27	
	FORECAST 2020	FORECAST 2021
GDP GROWTH (YoY)	-7.4	6.1
INFLATION (YoY)	0.6	1.3
UNEMPLOYMENT (YoY)	9.0	7.9
UK DATA	UK	
	FORECAST 2020	FORECAST 2021
GDP GROWTH (YoY)	-8.4	6
INFLATION (YoY)	1.4	2.1
UNEMPLOYMENT (YoY)	6.8	6

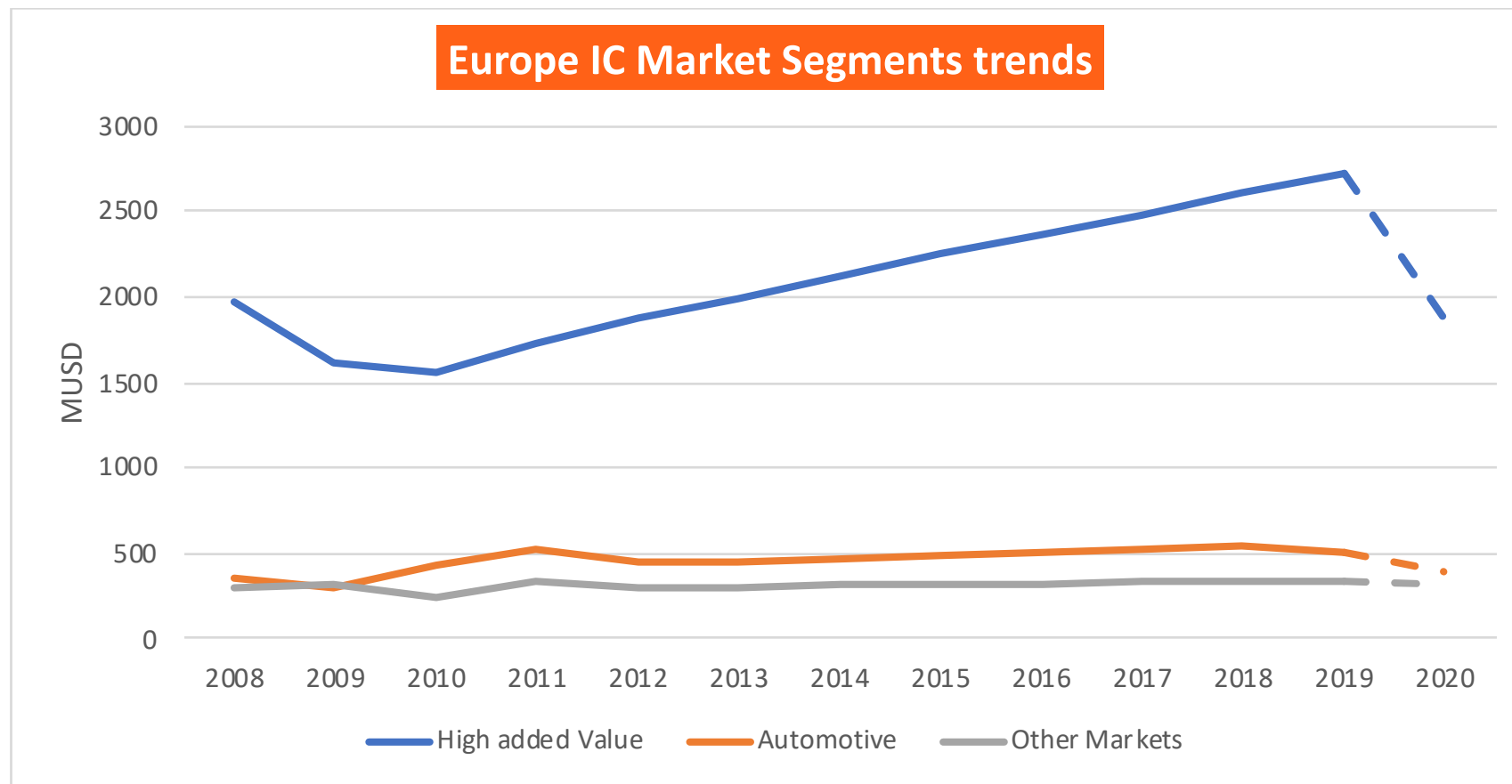


Relative position DECREASE of High Added Value

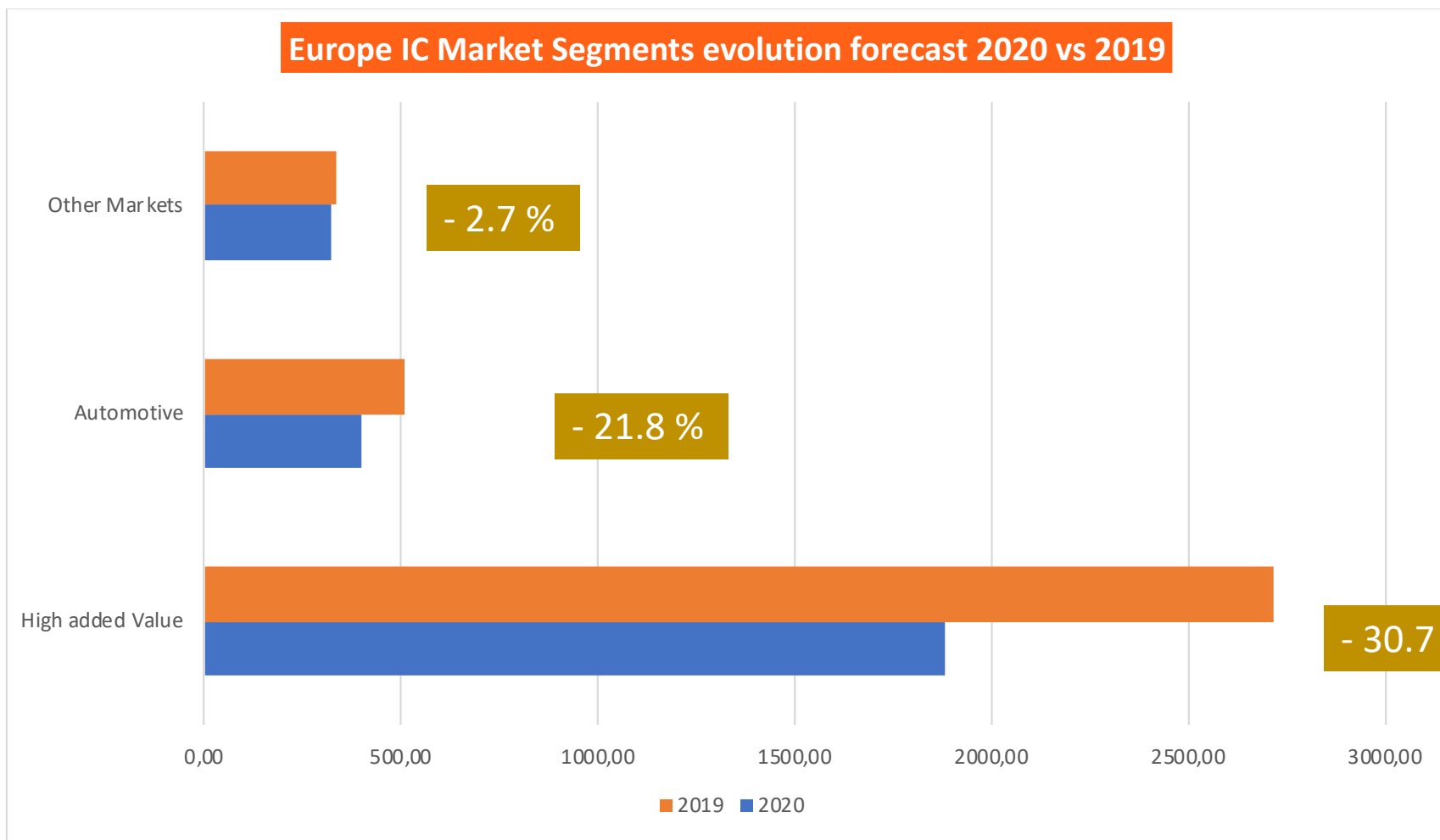




2020	
EU + UK FORECAST GDP GROWTH	-7.4 \div -8.4
IC EUROPE MARKET FORECAST GROWTH	-26.85



Variation 2020 vs 2019	
Other Applications	-2.7%
Automotive	-21.8%
High Added Value	-30.7%
Overall IC Market	-26.8%



Notes

- ❑ The combined European Union + United Kingdom [EU+UK] economy growth is forecasted 2020 between **-7.4 %** to **-8.4 %** in terms of GDP YoY evolution
- ❑ European Investment casting evolution forecast for 2020 is **- 26.85 %**
- ❑ Clearly European IC Industry is mostly associated to mobility where the economical pandemic impact is being very high
- ❑ Resulting in an estimated forecast total sales value of **USD 2,602 BILLION**
- ❑ Commercial Aerospace submarket segment is forecasted as the most affected with an estimated forecast drop of **- 38 %** whilst Defence Aerospace **-15 %** and IGT **- 11%**
- ❑ Automotive is forecasted to continue the observed decay of 2019 magnified by the pandemic effect **- 21.8 %**
- ❑ Other Applications market segment is forecasted to experiment an overall decay of **- 2.7%** . However the behaviour of the market subsegments is bound to be different with Defence and some Commercial applications (Food Industry ...) forecasting an increased output.

Notes :

Market Segments Contraction

❑ High Added Value

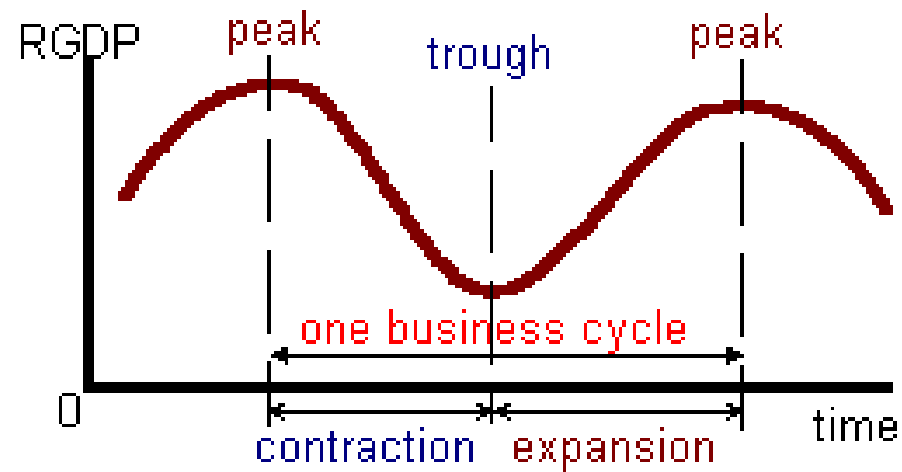
levels of 2012

❑ Automotive

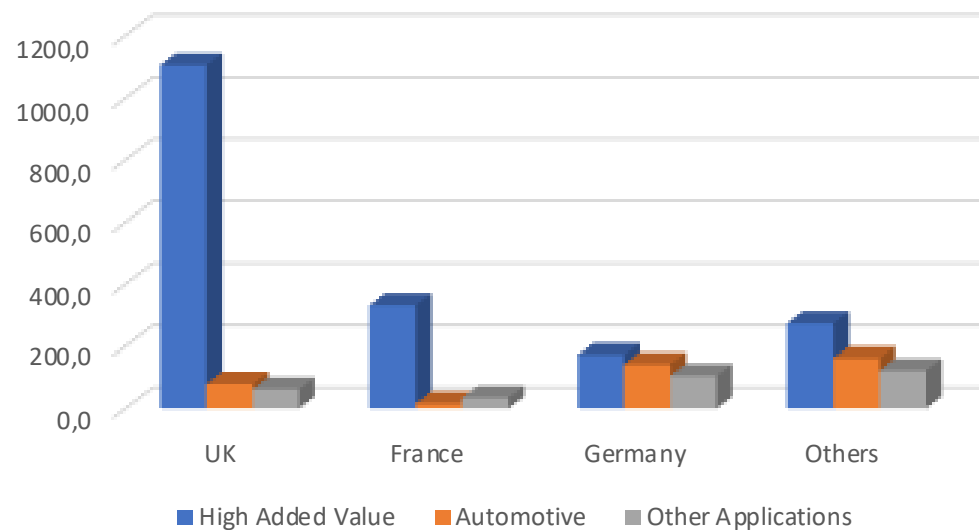
levels of 2010 - 2011

❑ Other Applications

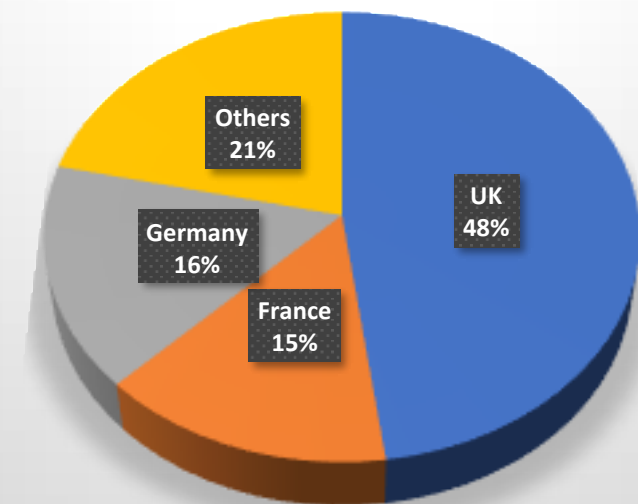
levels of 2016



Europe IC Market Segments by Region Forecast 2020



Europe IC sales by region forecast 2020



2020

MUSD

	High added Value	Automotive	Other Markets
UK	1104,1	79,0	62,2
France	331,3	15,6	34,1
Germany	171,6	141,7	105,4
Others	273,2	161,2	122,6

COMMERCIAL AEROSPACE

High Added Value Segment

- Airbus pandemic impact affecting production and deliveries Q2 & Q3. Still balance of new net orders coming in.
- Boeing pandemic effect in addition to 737 MAX uncertainty. Big drop in deliveries Q2 & Q3 Net orders profile dominated by cancellation

August 2020		
AIRBUS	DELIVERIES	284
	NET ORDERS	303
	BACKLOG	7501

August 2020		
BOEING	DELIVERIES	87
	NET ORDERS	-378
	BACKLOG	5160

Future delivery profile to be redefined as per OEMs production settlement & profile demand adjustment

COMMERCIAL AEROSPACE

High Added Value Segment

August 2020		
AIRBUS	DELIVERIES VARIATION August 2019	-43.2%

August 2020		
BOEING	DELIVERIES VARIATION August 2019	-68.4%

2020	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Airbus	31	55	36	14	24	36	49	39					
	Q1	122		Q2	74		Q3	88		Q4	0		284
Boeing	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	13	17	20	6	4	10	4	13					
	Q1	50		Q2	20		Q3	17		Q4	0		87

2019	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Airbus	39	49	74	70	81	76	69	42	71	76	78	138	
	Q1	162		Q2	227		Q3	182		Q4	292		863
Boeing	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	46	49	54	23	30	37	19	18	26	19	24	35	
	Q1	149		Q2	90		Q3	63		Q4	78		380

Source : Deliveries Forecast International

COMMERCIAL AEROSPACE

High Added Value Segment

2020
Boeing & Airbus
data vs Aircraft Models
31 August 2020

Boeing, Airbus: 2020 Orders & Deliveries Through 31 Aug.							
Deliveries	Airbus	A220	A320	A330	A350	A380	TOTAL
		13	239	7	25	0	284
	Boeing	737	747-8	767	777	787	TOTAL
		11	1	19	14	42	87
Net Orders	Airbus	A220	A320	A330	A350	A380	TOTAL
		42	262	-5	4	0	303
	Boeing	737	747-8	767	777	787	TOTAL
		-410	-1	9	-1	25	-378
Gross Orders	Airbus	A220	A320	A330	A350	A380	TOTAL
		58	291	0	21	0	370
	Boeing	737	747-8	767	777	787	TOTAL
		23	1	9	5	29	67
Backlog	Airbus	A220	A320	A330	A350	A380	TOTAL
		524	6,091	319	558	9	7,501
	Boeing	737	747-8	767	777	787	TOTAL
		4,164	15	84	371	526	5,160

Source : Forecast International

COMMERCIAL AEROSPACE


2020 Evolution

High Added Value Segment



Castings Engine supply OEMs drop impact both production & aftermarket

OEM	MRO
70%	30%

ICI Sales Commercial Aerospace Forecast 2020	
	-38%

DEFENCE AEROSPACE

High Added Value Segment

□ Defence applications



Fighter Aircraft

Military Transport Aircraft

Military Fixed-Wing Trainer Aircraft

Special Mission Military Aircraft

Military Rotorcraft

Unmanned Vehicles

□ Defence – NEW DEVELOPMENT



BAE Systems - Tempest

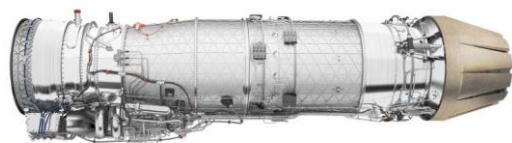


NGF - Dassault & Airbus

DEFENCE AEROSPACE

High Added Value Segment

□ Defence – PRODUCTION ENGINES



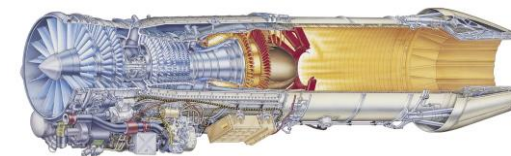
EUROJET
EJ200



EUROPROP
TP400

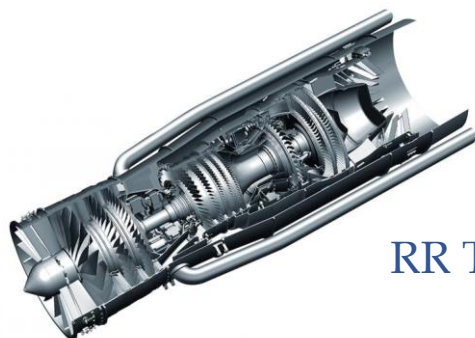


SAFRAN
M88



VOLVO
RM12

□ Defence – NEW DEVELOPMENT ENGINES



RR Tempest engine



Next-generation European fighter engine
Safran-MTU



IC3SalesDefenceAerospaceForecast2020



-15%

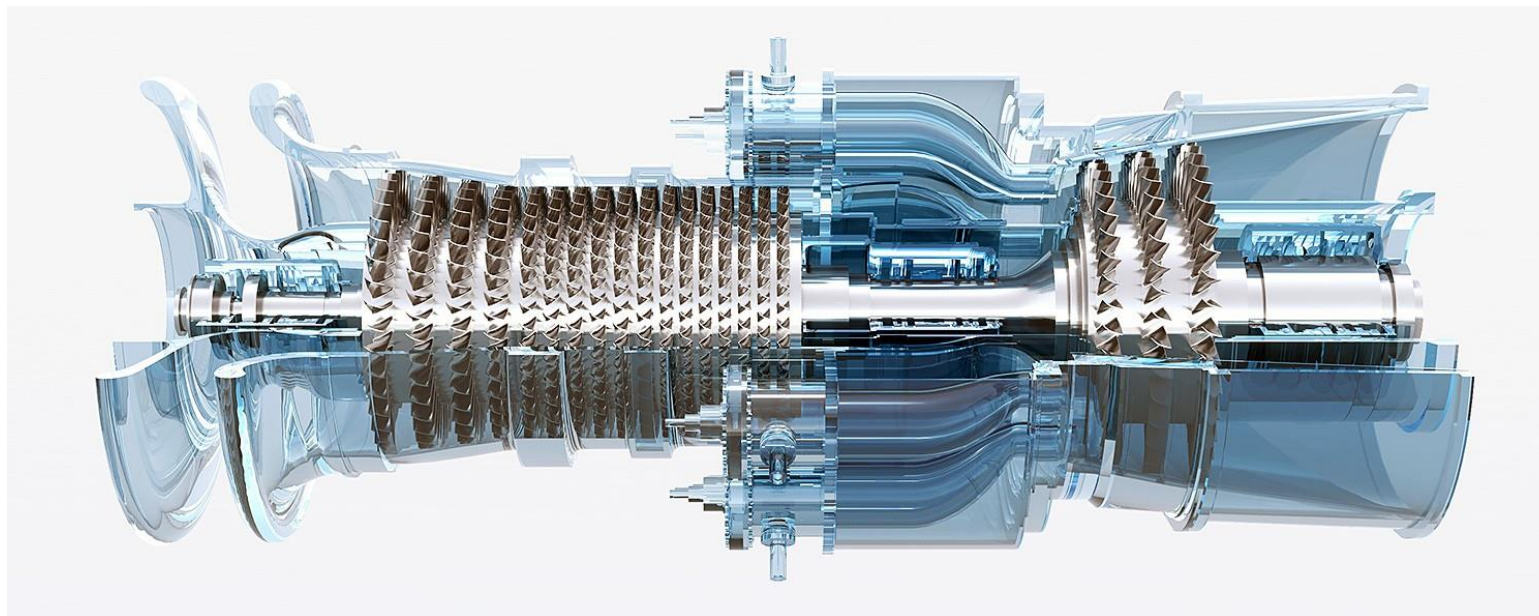
AEROSPACE CHALLENGES

High Added Value Segment

- ❑ Commercial Aerospace severely hit by pandemic both OEM & MRO
- ❑ The OEM is driven by new engine platforms; these platforms contain higher value castings, and some also contain more castings.
- ❑ Growth in MRO will largely be driven in the short term by platforms such as the Trent XWB and Genx as they approach to the firsts overhaul
- ❑ Still backlog orders strong but future production run and delivery profile to be redefined (effect on supply castings programmes)
- ❑ Recovery cadence might be different for narrow body than wide body applications
- ❑ New developments into defence applications
- ❑ Increased use of advanced composite materials and AM solutions
- ❑ Electric (hybrid) propulsion engines new developments – Assessment of Impact on IC applications
- ❑ Time to market improved solutions

INDUSTRIAL GAS TURBINES

High Added Value Segment



IC Sales Industrial Gas Turbine Forecast 2020




-11%

INDUSTRIAL GAS TURBINES CHALLENGES

High Added Value Segment

- ❑ Market segment driven by Powered Electrical generation applications
- ❑ Sales of industrial gas turbines have fallen since last quarter of 2017, under pressure from low-cost renewable energy . OEM focused on stock reduction
- ❑ This drop represents a trend from previous years of the Gas Turbine Electrical Power Generation market; This continuous shrinking rate despite efforts by the companies operating in this sector to adapt to the hostile environment
- ❑ Market operates at “make to order”. Service parts represent significant share of the demand
- ❑ OEM emphasis are focused to improve efficiency, to cut the cost of gas-fired power
- ❑ The world is switching to renewable energy. Gas might be needed as a backup fuel for generating electricity on renewables turndown, but other technologies are also considered.
- ❑ Growth will depend in part on climate policies worldwide, and the ability of renewables to cope with the the additional demand of electricity

ICI Sales Automotive Forecast 2020	
	-21.8%

Automotive

Automotive Market Segments

Passenger Cars



Commercial Vehicle



PASSENGER CARS & COMMERCIAL VEHICLES

Automotive

Automotive Passenger Cars Registrations

- ❑ New passenger car registrations is expected in the European Union to tumble by more than 3 million from 12.8 million units in 2019 to some 9.6 million units this year. 2020 forecast for passenger car registrations down to about -25%


Automotive Commercial Vehicle Registrations

- ❑ Over the first eight months of 2020, demand for new commercial vehicles declined by 28.2% across the European Union

Automotive Passenger Cars & Commercial Vehicles Production

- ❑ EU-wide production losses due to COVID-19 amounted to 3,649,677 motor vehicles from 1 January to 30 June 2020, or some 20% of total production in 2019. This figure includes passenger cars and light commercial vehicles up to 6 tonnes.


Other Applications


IC Sales Other Applications Forecast 2020	
<div>  </div>	<div> <p>-2.7%</p> </div>


Uneven behavior among some subsegments with defence (firearms) application and food industry going strong in the overall market constraint




2019


ICSalesHighAddedValue2019	
	+4.2%


ICSalesAutomotive2019	
	-5.8%


ICSalesOtherApplications2019	
	-1.5%


EuropeICSales2019	
	+2.1%

Forecast 2020

ICSalesHighAddedValueForecast2020	
	-30.7%

ICSalesAutomotiveForecast2020	
	-21.8%

ICSalesOtherApplicationsForecast2020	
	-2.7%

EuropeICSalesForecast2020	
	-26.8%

Aerospace

- ❑ Very much dependant on mobility clearance as per Covid battle fixed and subsequent economy adaptation
- ❑ Recovery to levels of 2019 is forecasted between to 3 to 5 years depending on the application segment (narrow body , wide body)
- ❑ Boeing 737 MAX problems overcome
- ❑ Aerospace market is expected to remain strong once recovery is settled due to the existing , however demand profile to be reconfigured
- ❑ Attention must be given to the technologies applied in the new engine developments and the effect on Investment Casting solutions needed



IGT

- ❑ Realignment of strategies within the main manufacturers in combination with the increased use of renewables plus the climate policies have to redefine the sector
- ❑ Solutions based on Gas Generation aiming to be considered effective on the road to decarbonization
- ❑ It is expected some signs of slight recovery into the sector during H2 2021.
- ❑ Spares for the servicing market will continue to provide some steady demand

Automotive

- ❑ Very much dependant on mobility clearance as per Covid battle fixed and subsequent economy adaptation
- ❑ Europe maintains its position as the world's second largest car producer, representing 24 % of global output. The turnover generated by the auto industry represents over 7% of total EU GDP.
- ❑ Recovery to levels of 2019 is forecasted between to 1.5 to 3 years depending on the application segment (passenger cars , commercial vehicles) and EU policies
- ❑ Recovery might be shaped by technologies adoption. Electrification is likely to remain a top priority for European automakers (European Green Deal)
- ❑ The period to 2024 will likely bring a renewed effort to commercialise both plug-in electric vehicles and hydrogen fuel cell vehicles
- ❑ Attention must be given to the technologies applied in the new engine developments and the effect on Investment Casting solutions needed



Other Applications

- ❑ Very much dependant on general economy activity recovery and investments application
- ❑ Uneven recovery among subsegments
- ❑ Good prospects into the food industry and some defence applications
- ❑ Certainly some reshoring activities will continue with products coming back to European foundries



European Investment Casting Market Review

Market Evolution & Trends

2019 + Forecast 2020

19 October 2020



Carlos Olabe
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