

Avio Presentation Star Conference, Milan

MARCH 22ND, 2023



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Agenda

- **Avio profile**
- Market updates
- Business update
- Financials

Avio : propulsion for space and defence



European heavy launcher
(10.5 tons in GTO)
Avio: Strap-on boosters

250 € Mln
Mkt Cap
~45%
Free Float



Ariane 6
NEW 2023



1,200
Employees
4%
Mgmt Share



Vega C
NEW 2022



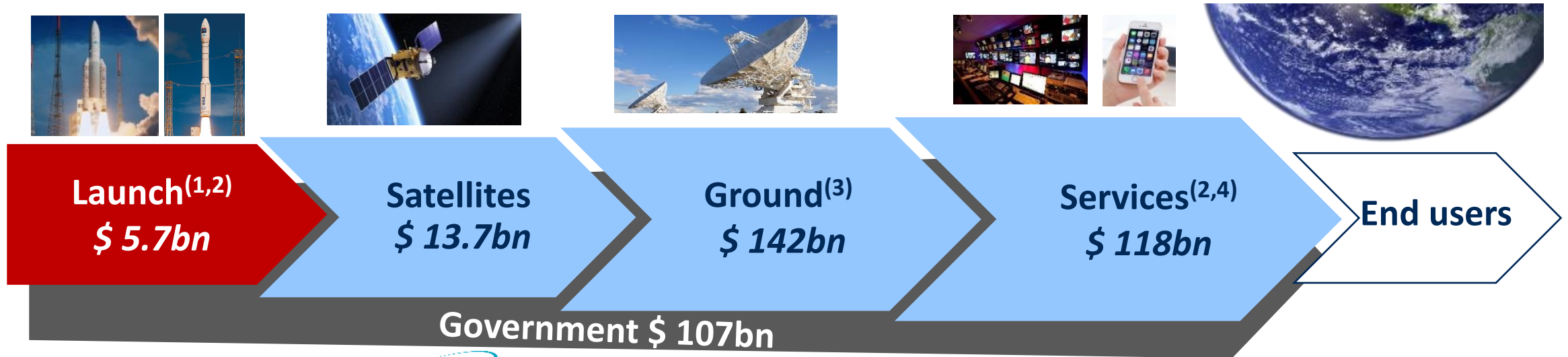
Tactical Propulsion Systems



European light launcher (2.3 tons in LEO)
Avio: System integrator

The launch segment : the gateway to the Space economy

Global space value chain (2021)



Source: Satellite Industry Association (2022)

(1): Includes launcher manufacturing and launch service activities

(2): Commercial services revenues only

(3): Includes GNSS chipsets and Related

(4): Includes commercial humanflight



Industrial operations in Europe and French Guyana



Main stage integration



Propellant casting

 Colleferro, Rome
(GMT +1) N41.727 E13.0030

- SRM design, production
- Mission analysis
- Flight Software
- Stage integration
- Testing

 French Guiana
(GMT -3) N4.003 E52.999

Avio runs three facilities at the European Spaceport :

- SRM casting and integration
- Vega launcher operation

 Paris
(GMT +2) N48.856 E2.351

Large SRM
design/integration



SRM Manufacturing



Upper stage integration

55 years of track record in Space launch

Avio Product history

Ariane 1-3



Separation engines

Ariane 4



9 tons Boosters

Ariane 5



230 ton Boosters

Vega



Complete launch system

Vega C



Ariane 6



Two launch systems with a common first stage engine

IFD



Space Rider



Vega E



Coordinated family of products and applications



Agenda

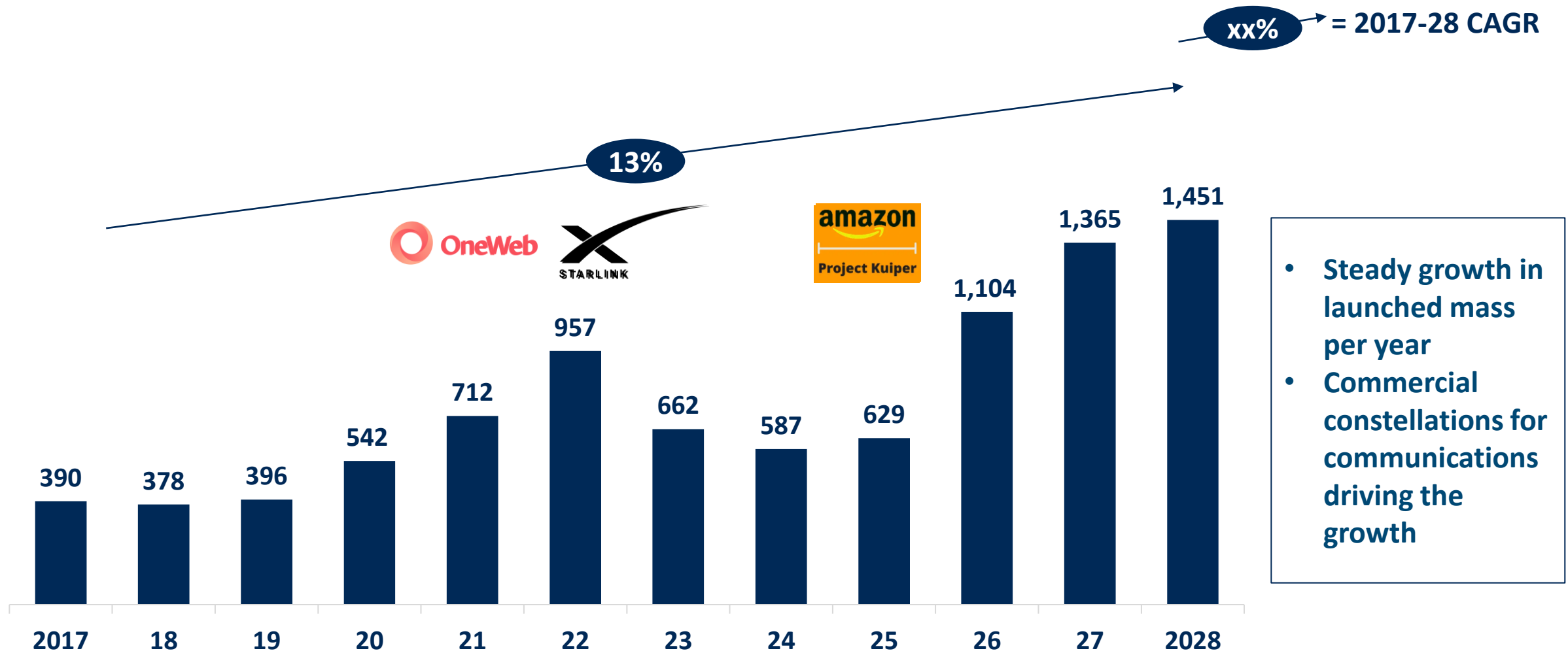
- Avio profile

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Steady growth in launch rates and launched mass at global level



Future launch market value is concentrated on Government LEO sats

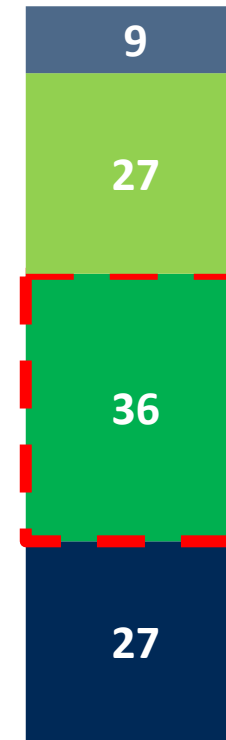
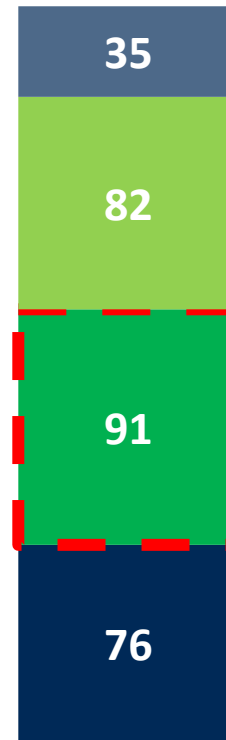
2022-2031 Expected satellite market by operator type

== = Vega C/E
Target market

100%=8,360 Tons

100%=284 \$ Bln

100%=99 \$ Bln



Mass in tons

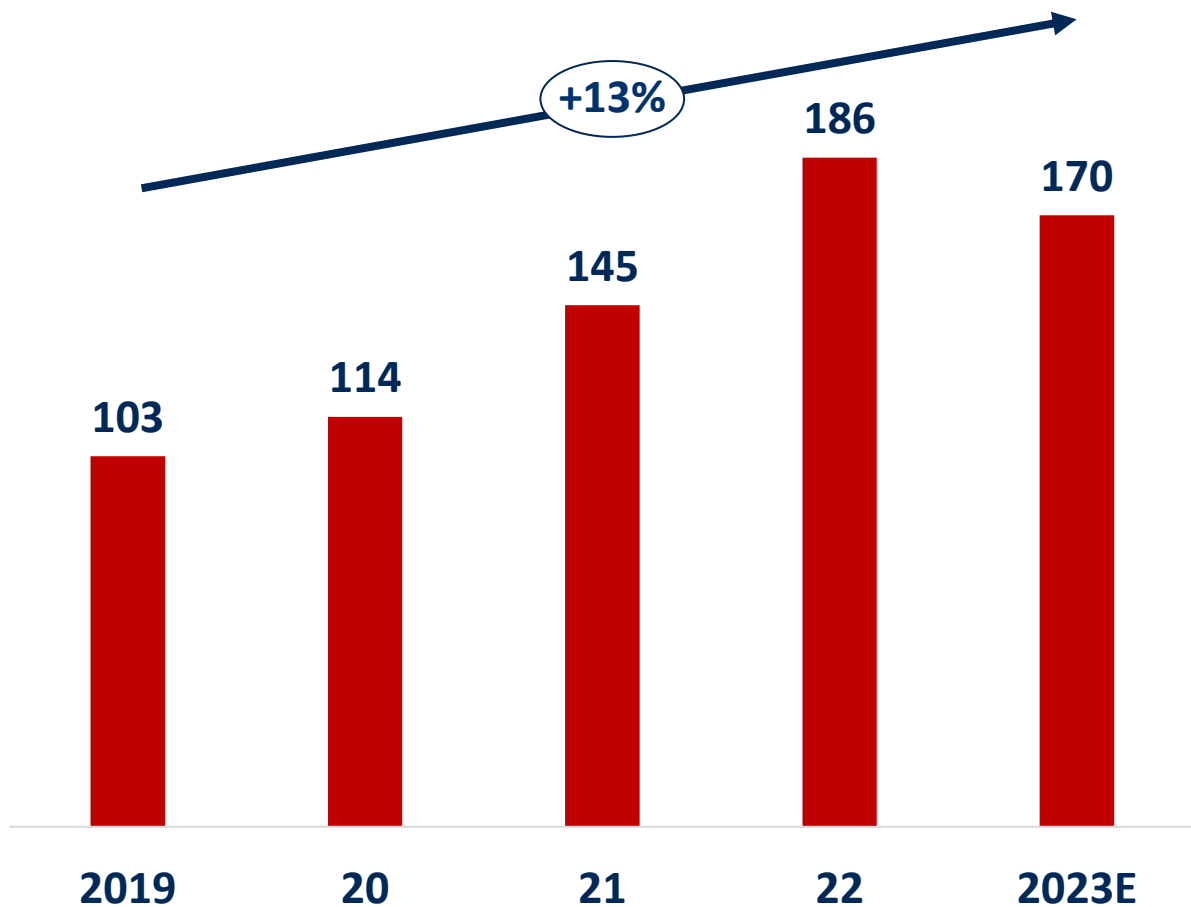
Sat Value

Launch Value

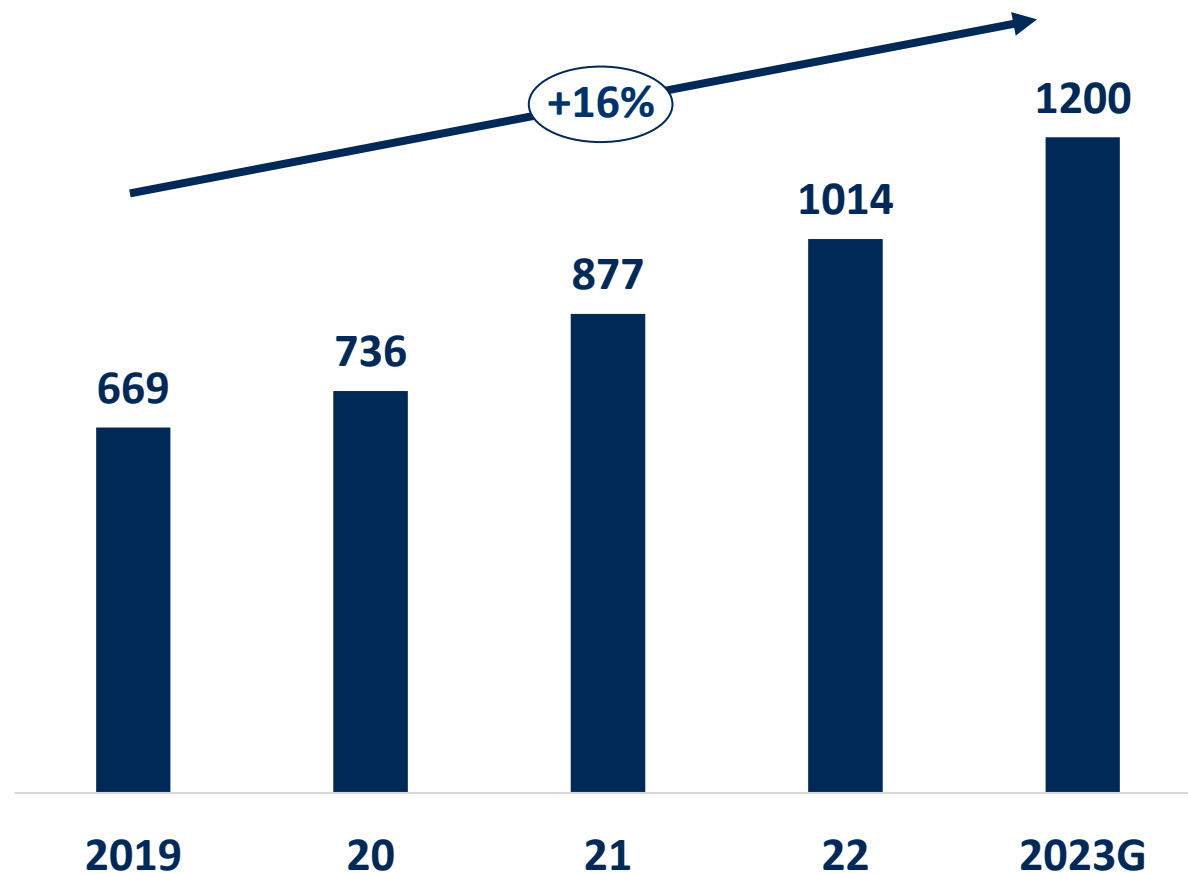
■ Commercial LEO ■ Government LEO ■ Government non-LEO ■ Commercial GEO

Evolution of the number of global launches and Avio backlog

of orbital launches



Avio Net Order Backlog evolution 2019-2023E (€ - M)



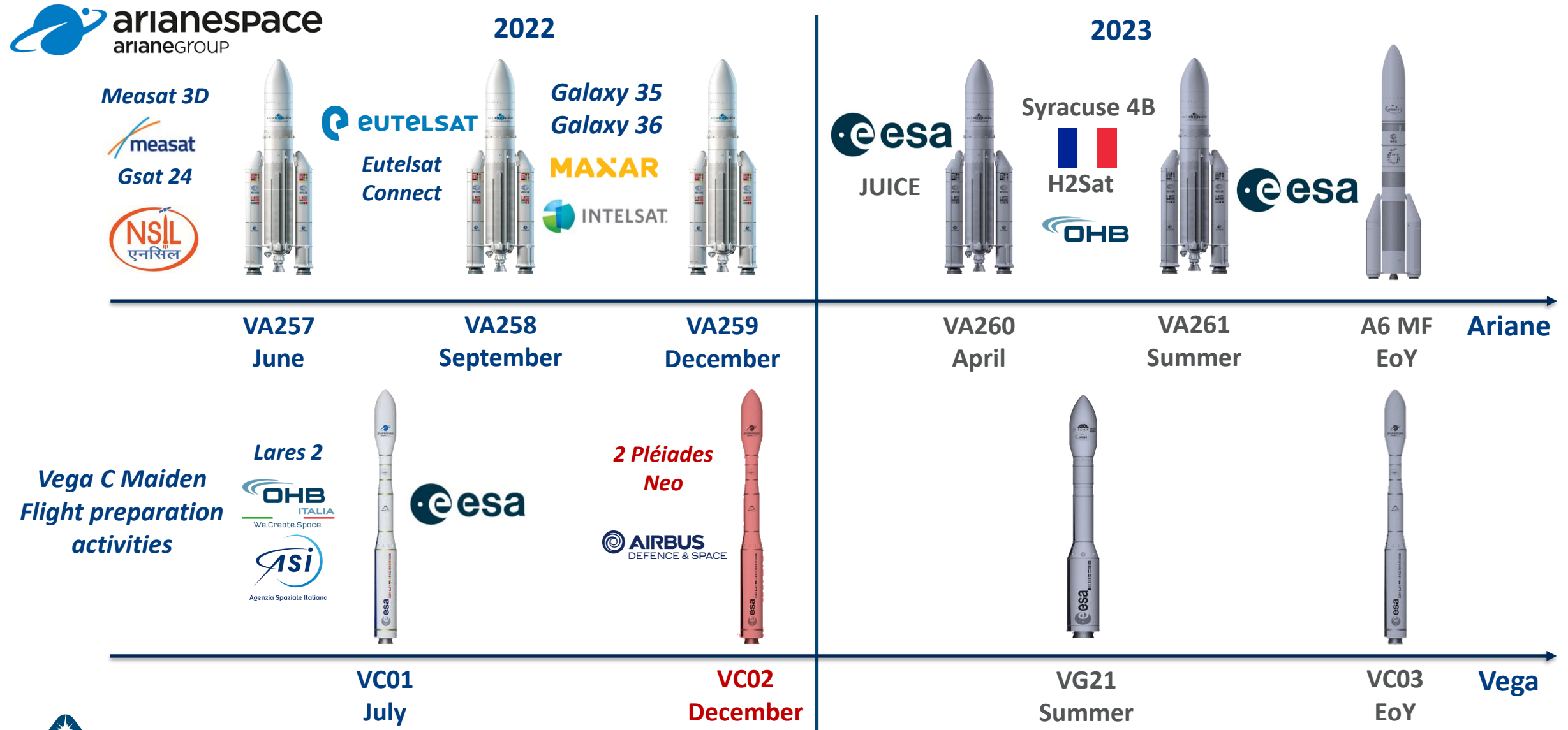
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2022-23 flight schedule



Successful Vega C Maiden Flight : a boost for its commercial appeal



Vega C



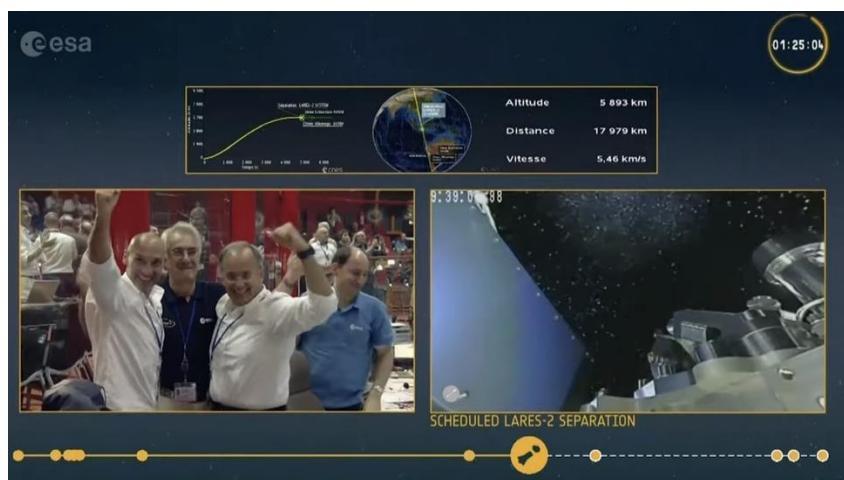
Vega C lift-off



Stage separation



Mobile gantry visit



Mission Success : reached 5,893km altitude



Lares 2 satellite orbital injection



Payload fairing separation

Launchers reach product maturity after ~30 flights



Vega/Vega C



Ariane 5



Falcon 9



Soyuz



GSLV



Electron (R.Lab)



H2



L1 (V. Orbit)



Astra



Firefly Alpha



ABL Launcher

Reliability launch 1-30

86.4%

87%

90%

90%

60%

90%

90%

60%

20%

0%

0%

Reliability launch 30-onwards

99%

100%

100%

100%

New launchers suffered from high failure rates within the first few launches



VC02 anomaly and path to return to flight

Independent Enquiry Commission findings

- VC02 anomaly caused by an **over-erosion of the Z40 Carbon-Carbon nozzle throat insert** likely due to the inhomogeneity/weakness of the material
- The acceptance criteria used were not sufficient to detect the type of defect. However, **no weakness of Z40 design** has been revealed.
- **The launcher Safety System (SAS) behaved nominally**
- **The failure does not affect the Vega launcher** (with uses different material for Z23), which **will return to flight by the summer**.
- **Vega C launcher will return to flight by end 2023** with new C-C material (already ordered and in delivery now), after a static firing test of Z40
- A robust **Return-to-Flight plan** has been defined by the Commission. The European Space Agency announced a dedicated program to cover costs, funded with **~30M € drawn from available ESA funds**
- Risks associated with implementation of RtF plan accounted for within risk provisions in Avio accounts

Nozzle throat

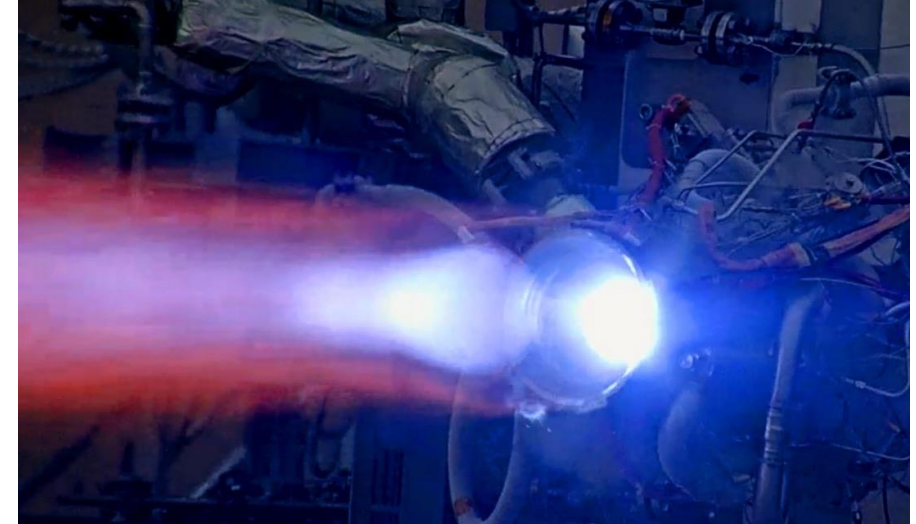


Z40 Nozzle

Successful tests of Vega E's M10 : 1st LOX-Methane engine in Europe

Vega E:

- M10 engine first prototype (DM1): first 24 firings completed in summer 2022
- More than 1,300 seconds of cumulative testing, all successful
- Development at completion funded at ESA 2022 MC
- Second set of static firing tests on development model 2 (DM2) in 2023

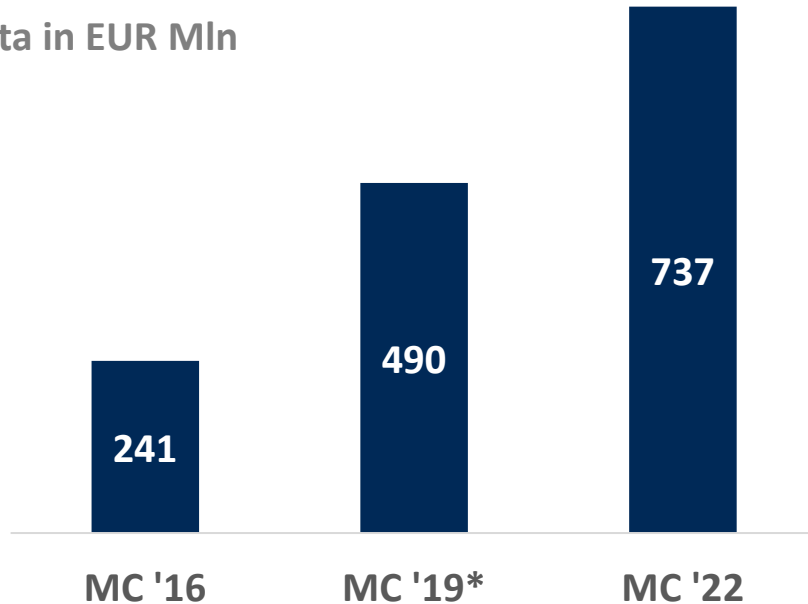


700M € of new developments from ESA for new launcher products



ITA Launchers budget in ESA

Data in EUR Mln



Vega C Adaptation Vega E Completion



P120C Performance upgrade



Space Rider at completion



Re-usable upper stage

€700 Mln new orders expected for Avio starting from 2023

*As announced at the 2019 ESA MC
SOURCE: ESA and ASI

Arianespace reached record-level backlog for Vega/Vega C



Booked



Under negotiation



Prospect identified

Launch contracts in backlog:

- ~20% Commercial/Export customers
- ~80% European Institutional Customers

2

2

4

4-5

4-5

4-6



2022

2023

2024

2025

2026

2027

Ariane 6 Maiden Flight slipped to the end of 2023



**Ongoing A6 combined tests
in Kourou**



**Hot firing test of the A6 upper stage in
Lampoldshausen, Germany, October 2022**

**ESA-Ariangroup Press Briefing on
October 2022 highlighting main
upcoming milestones before
Maiden Flight:**

- Successful completion of Vinci test in Germany**
- Successful Vulcain test and combined tests in French Guiana**
- System Design review before launch**

“Next Gen EU” projects to develop next-gen launcher technology

**Next
Gen
EU**



Ministero delle Imprese
e del Made in Italy



Space Transportation Systems (STS) : €185 M

- Technological demonstrator of a LOX-Methane powered two stage to orbit small launcher
- Two experimental launches (single stage and two stage respectively)
- Composite cryo tanks, simplified Avionics (software-based) and non-pyro separation systems

High Thrust Engine (HTE): €100 M

- 60ton thrust class LOX-Methane engine
- Innovative thermodynamic cycle, delivering high specific impulse



Incremental orders in the defense business anticipate further growth

ASTER 30 Booster



Medium-Range Air Defense:

- More than 2,000 units produced to date
- New Production Orders expected in H1 2023 >€ 80 M
- Additional demand in the coming years requiring extended production rate

CAMM-ER SRM



Short Range Air Defense:

- First Production Contract for IT MoD signed in Q1 2023 >€ 20 M
- Additional opportunities expected to be finalized within FY 2023

Teseo Mk2E Booster



New Anti-Ship Missile:

- Development contract signed in FY 2022 for >€ 10 M

Undisclosed

New Initiatives:

- Research Program ongoing for a new training system
- R&D for innovative propulsion systems for new European Defense Programs

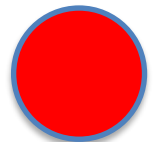
Avio : medium-term opportunities outweigh short-term challenges



Opportunities

- Vega C+/Vega E/Space Rider roadmap defined and funded at ESA MC 2022
- Vega backlog full until 2027
- Robust Ariane 6 flight backlog
- Defense business growing
- PNRR unique opportunity to strengthen product/technology base (STS, HTE) for competitiveness in the long term

Challenges



- P120 slower than expected ramp-up in 2023-24 due to Ariane 6 delay
- Vega C Return to flight post VV22 to slow down Vega production for 2023
- Energy prices and inflation volatility continues

FY 2023 Guidance

• Net Order Backlog	• Min €1,150M • Max €1,250M	• New orders expected for both development and production • ESA MC 2022 subscriptions and Italian PNRR contracts to turn into backlog
• Net Revenues	• Min €330M • Max €350M	• New development projects ramp-up (Vega E, Space Rider, VegaC+, liquid propulsion)
• EBITDA Reported	• Min €19M • Max €25M	• Enduring impact of inflation and under-absorption of fixed costs due to reduced production • Estimated impact of 6M non-recurring costs*
• Net Income	• Min €2M • Max €6M	• Marginal effect of financial charges and taxation

Outlook beyond 2023



Increasing backlog and net cash position **support expectation for double-digit revenue growth in 2024-27**



Market **demand growing more than anticipated** (2X market growth by 2031) in both space launch and tactical propulsion – **full commercial backlog for Vega, Ariane and Aster**



Secured EU and ESA institutional funding support across the decade for both Ariane and Vega development and production support activities



PNRR (Next Gen EU) projects providing additional opportunity for **new strategic technologies and products** focus on **liquid propulsion** to open new markets



Further opportunities coming for **defense and tactical propulsion** systems due to the evolution of the geo-political situation



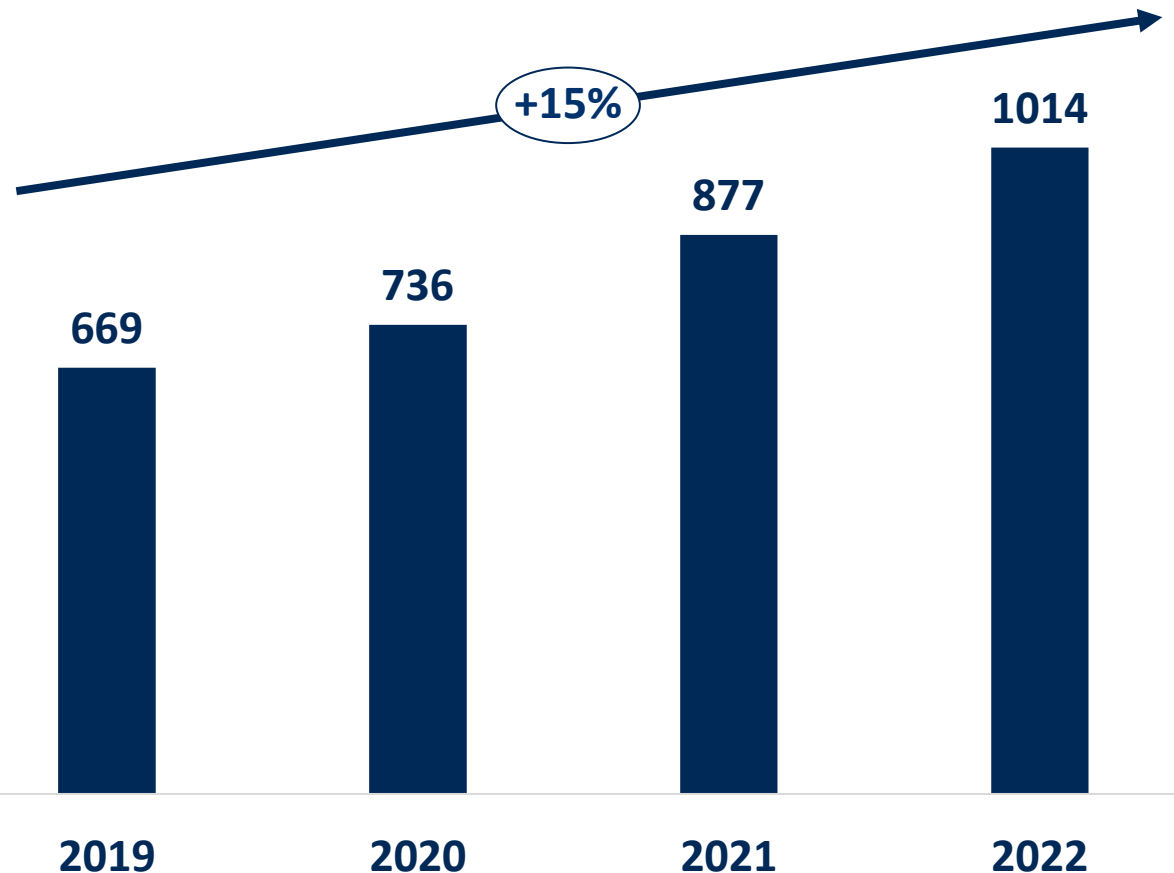
Improved scenario **for energy prices but still challenging for inflation**

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Net order backlog evolution 2019-2022

Net Order Backlog evolution 2019-2022 (€ - M)



Comments

New contracts signed in 2022 for ~€500M include:

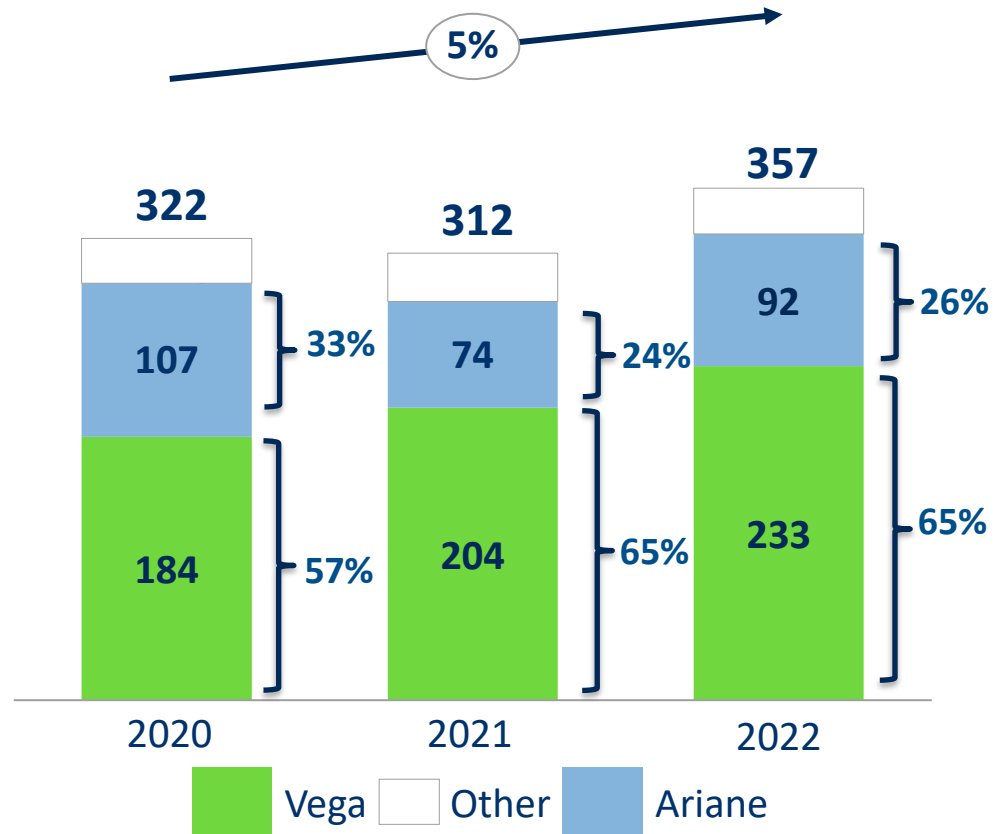
- Vega C Production B4 procurement and improvement program (~€200M)
- Vega C/E Development including PNRR contracts (~€80M)
- P120C production and development (~€100M)
- Tactical production and development (~€50M)

Order intake does not include:

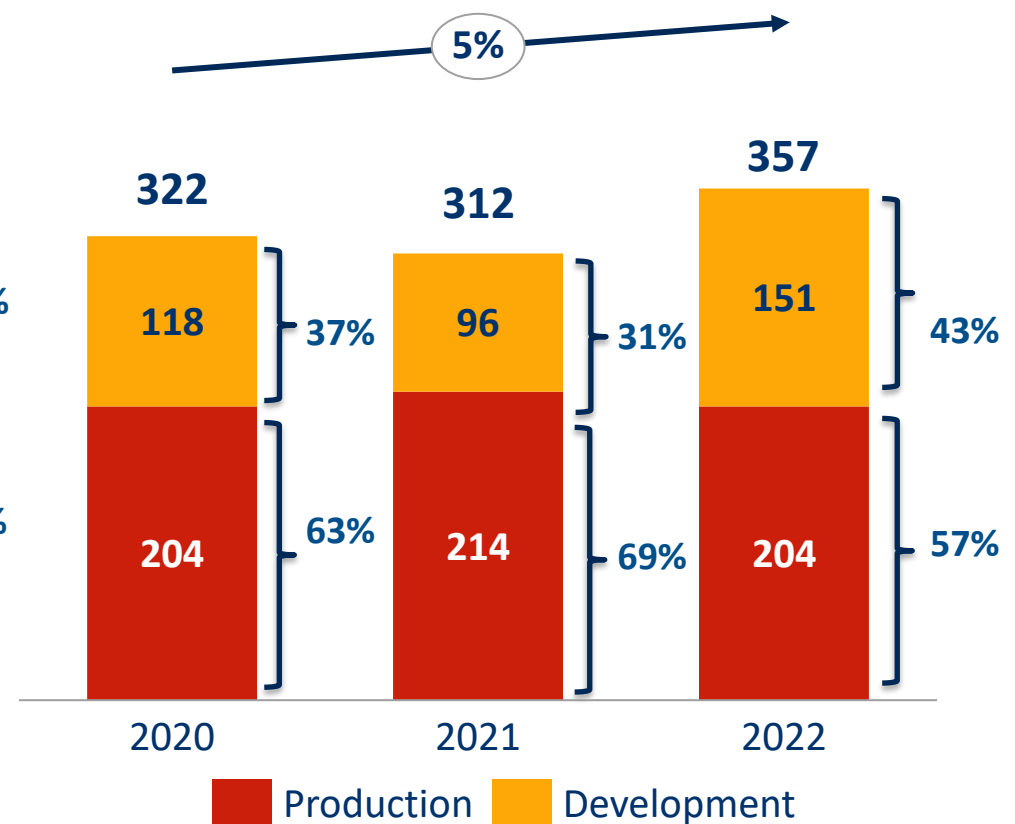
- Next Gen EU/PNRR signed yesterday for >285 € M
- Effects of 2022 ESA Ministerial Council

Net revenues evolution 2020-2022

by Line of Business (€ - M)



by Activity (€ - M)



Net Revenues higher than prior year for increase in Vega development and P120C activities, partially offset by lower Ariane 5 Production in phase-out

FY 2022 results vs 2021 and 2020

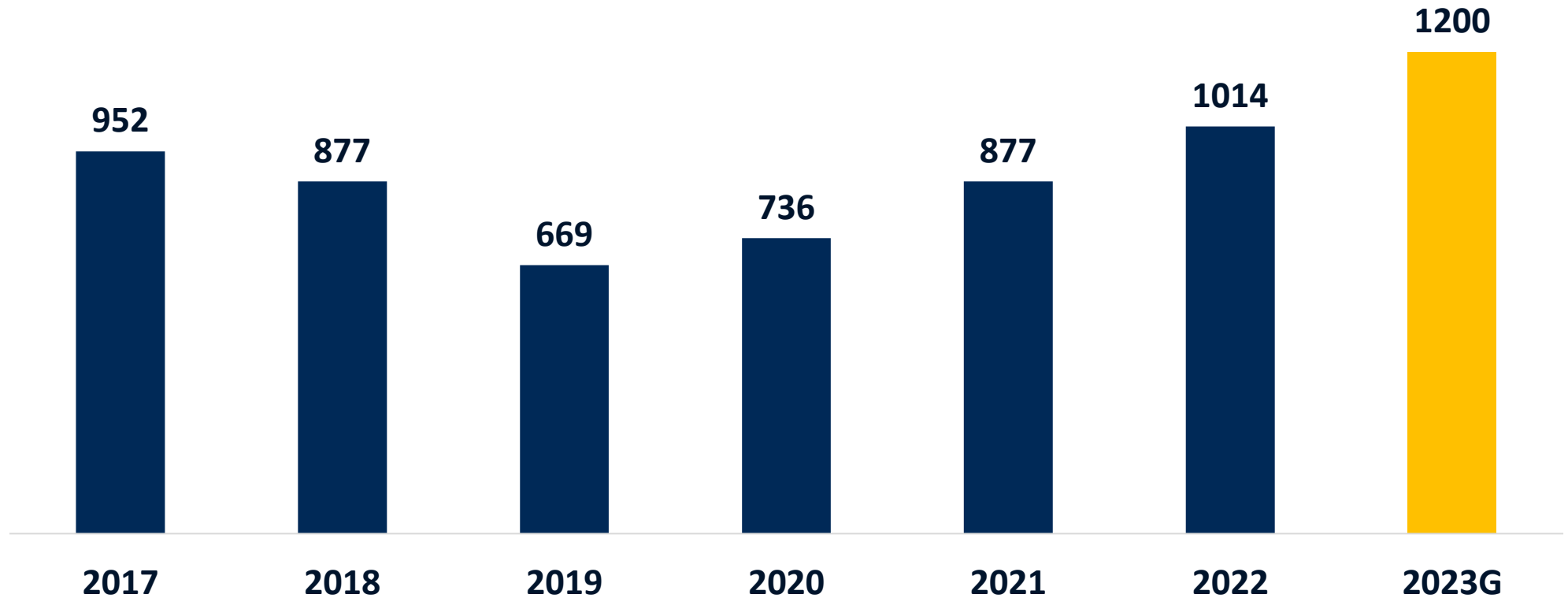
	FY 2020	FY 2021	MAIN ECONOMICS	FY 2022	Comments
	€ - M	€ - M		€ - M	
	322,0	311,6	NET REVENUES	357,3	• Increase in revenues driven by development of Vega C, M10 engine for Vega E and Space Rider
N/R 8.1	35,2 11,3%	30,0 8,4%	EBITDA REPORTED % on net revenues	21,4 6,0%	• EBITDA lower than in 2021 for sharp increase in energy costs and inflation
	43,3 13,9%	37,7 10,6%	EBITDA ADJUSTED % on net revenues	27,8 7,8%	
	15,9 5,1%	8,9 2,5%	EBIT REPORTED % on net revenues	2,2 0,6%	
	24,0 7,7%	16,6 4,6%	EBIT Adjusted % on net revenues	8,6 2,4%	• Decrease in Vega P80 depreciation
	15,4 4,9%	8,6 2,4%	PROFIT BEFORE TAXES % on net revenues	1,4 0,4%	• Net income neutral tax effect
	14,9 4,8%	9,1 2,5%	NET INCOME % on net revenues	1,3 0,4%	

(1) One-off positive contribution resulting from other revenues from settlement of Law 808/85 payables, extraordinary provisions for risks for Vega C return to flight activities and for the execution of future programs . Law 808/15 concerns the public financial support for the development of certain projects in the aerospace and defense sector

Order backlog historical trend and guidance 2023

Data in € - M

Order
Backlog



ESA Ministerial
Council

ESA Ministerial
Council

PNRR

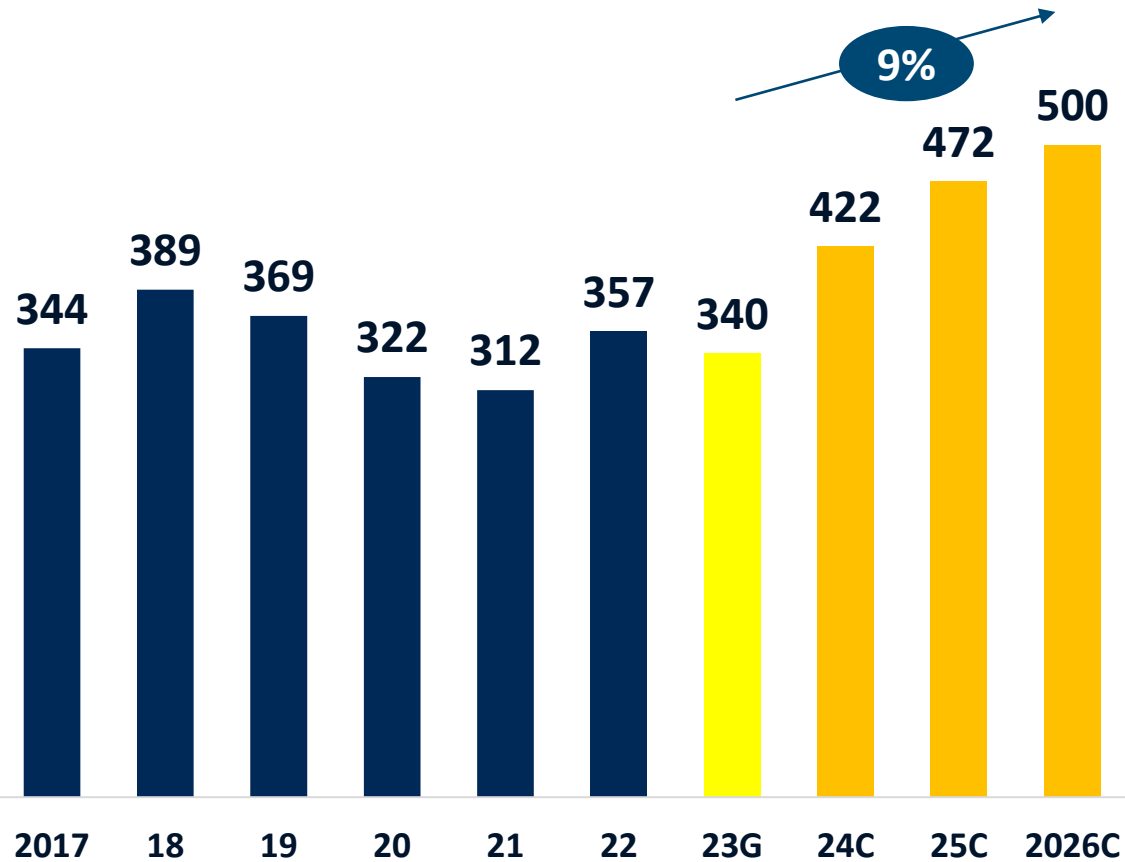


Revenues and Adjusted EBITDA historical trend, 2023 Guidance and consensus

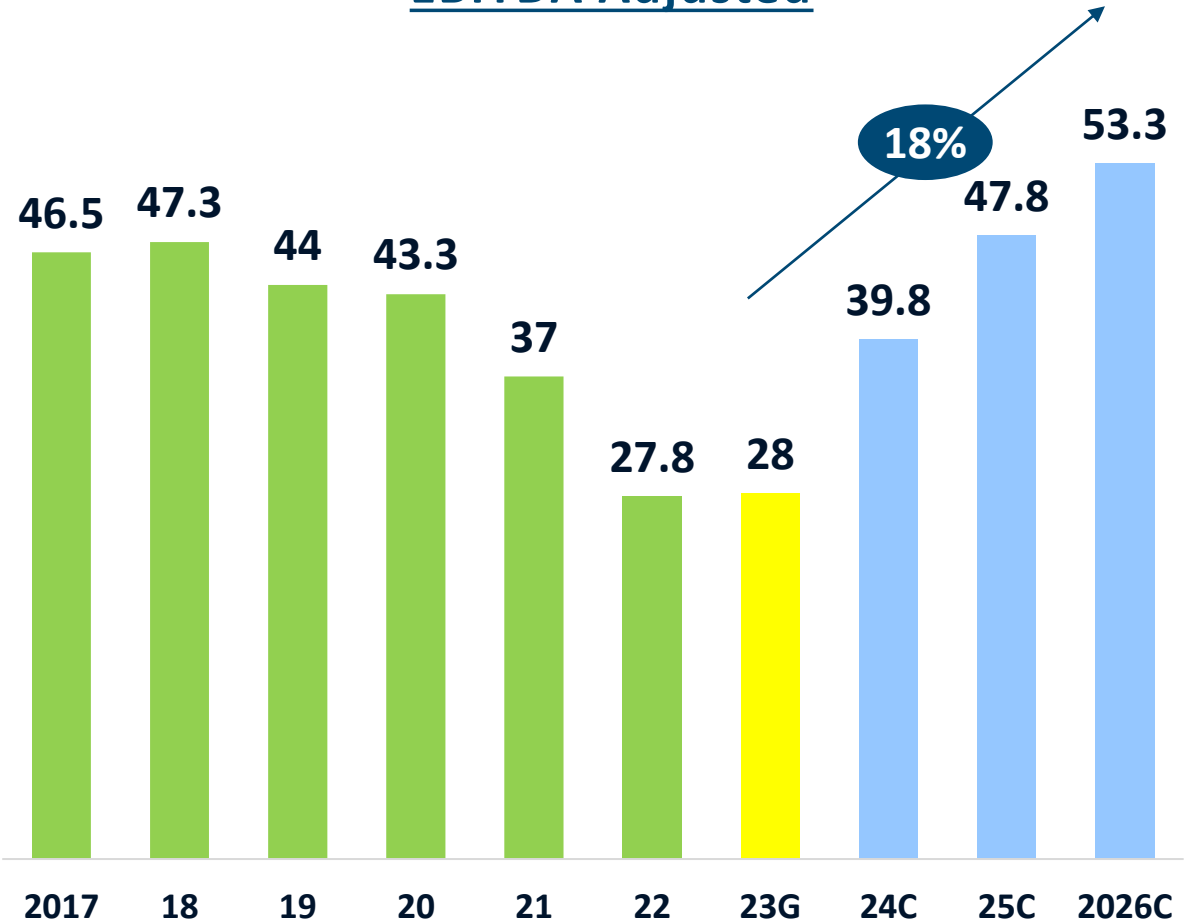
Data in Euro Mln

xx% = 2022-26 Exp. CAGR

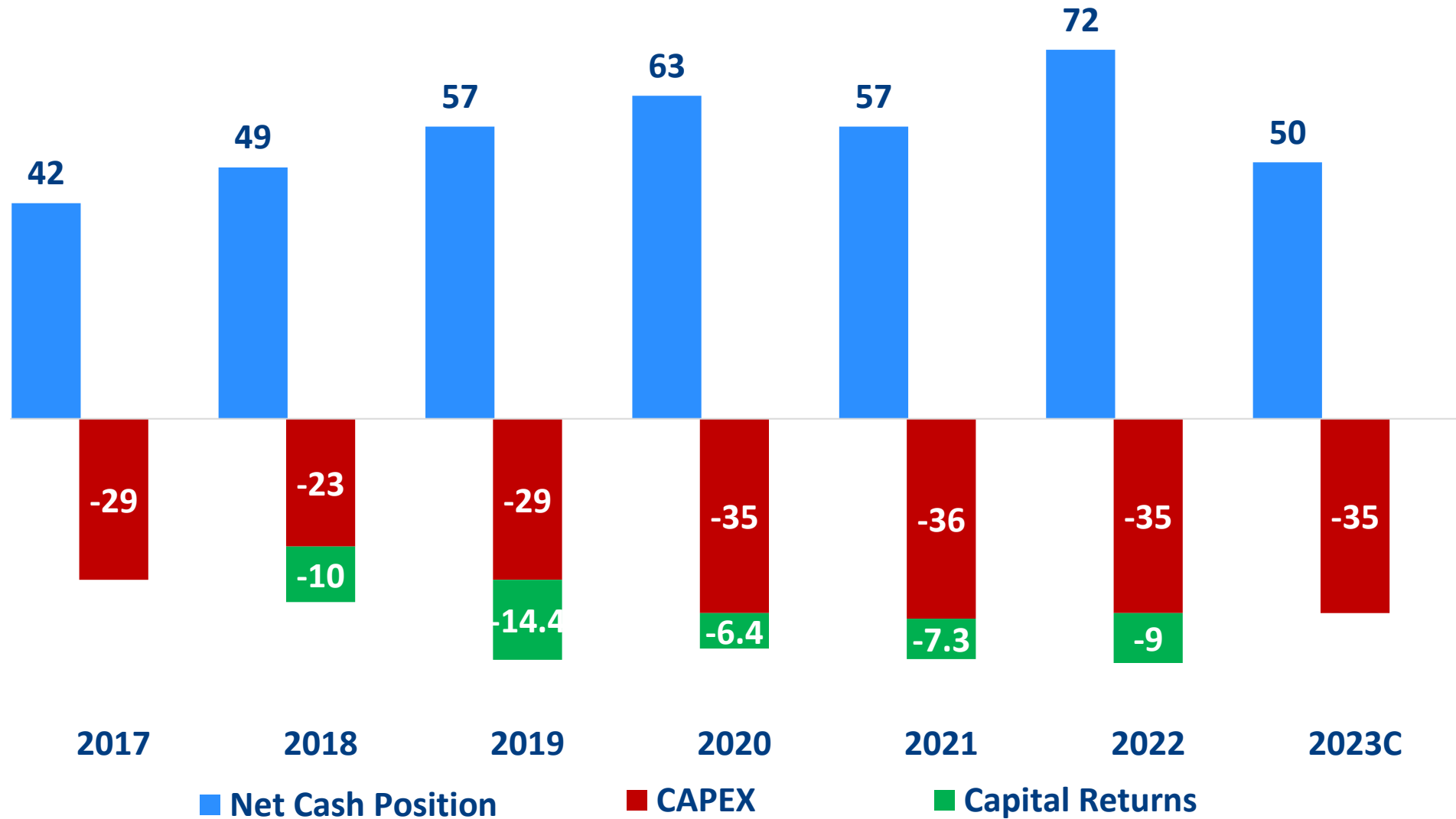
Revenues



EBITDA Adjusted



Sustained Cash generation for CAPEX and returns to shareholders

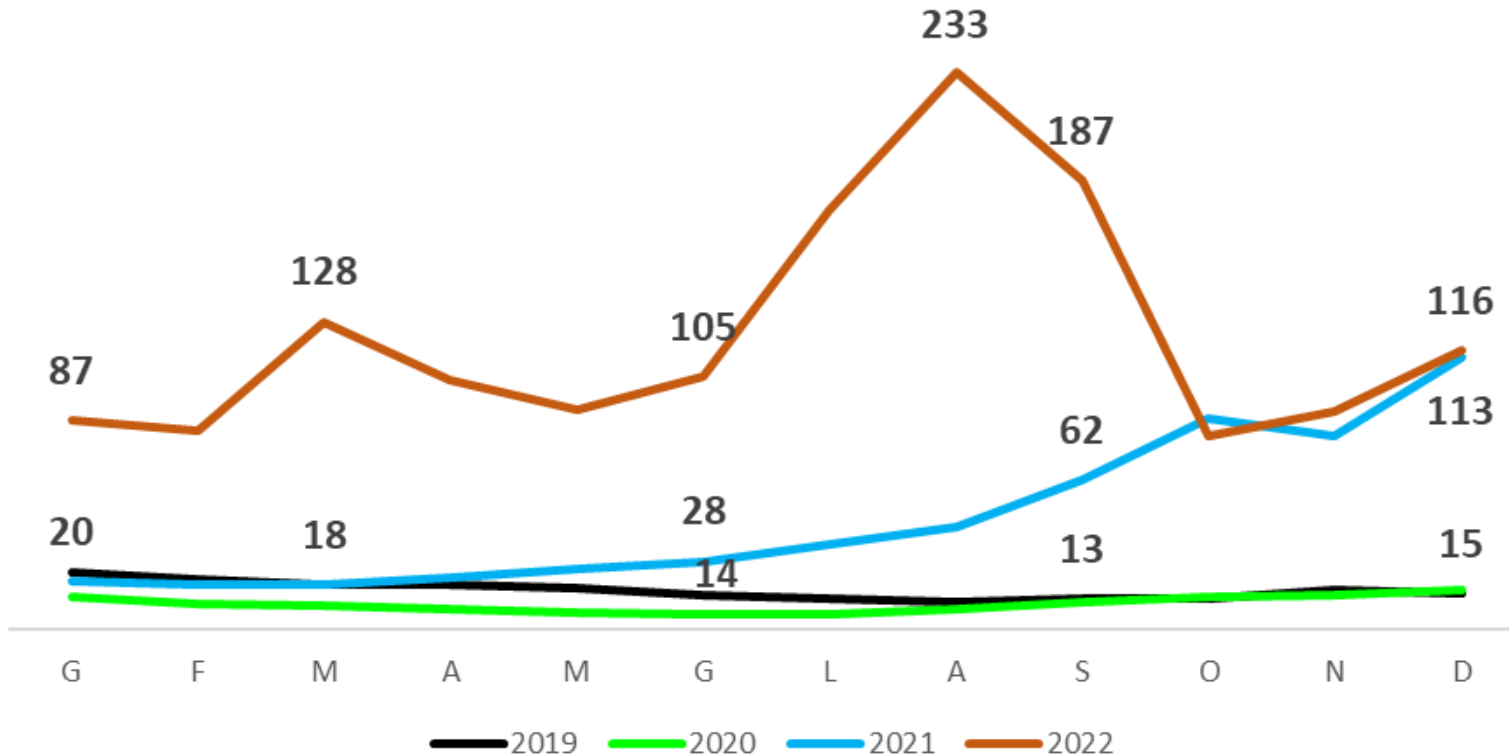


Appendix

Gas price increase since 2H 2021 with hit in 2022 impacted industrial production costs



Italian average monthly gas prices 2019-2022 (€/MWh)



Ongoing actions

- Investment in a new thermoelectric steam generation equipment
- Assessment of investments in photovoltaic and solar plants

Year	Yr avg Gas price €/MWh
2022	123
2021	46
2020	10
2019	16

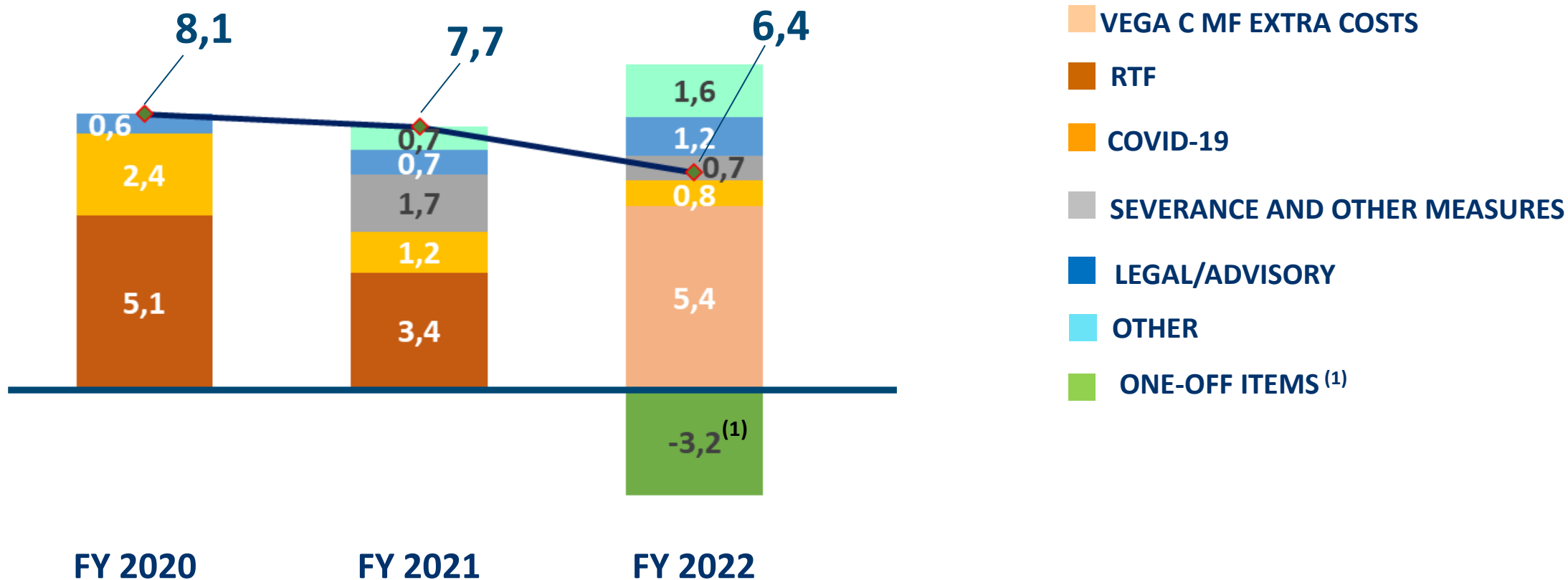
Expected in near future

- Expected trend for 2023 Gas price with current forecast¹: 55 €/Mwh

Evolution of non-recurring costs

Data in €-M

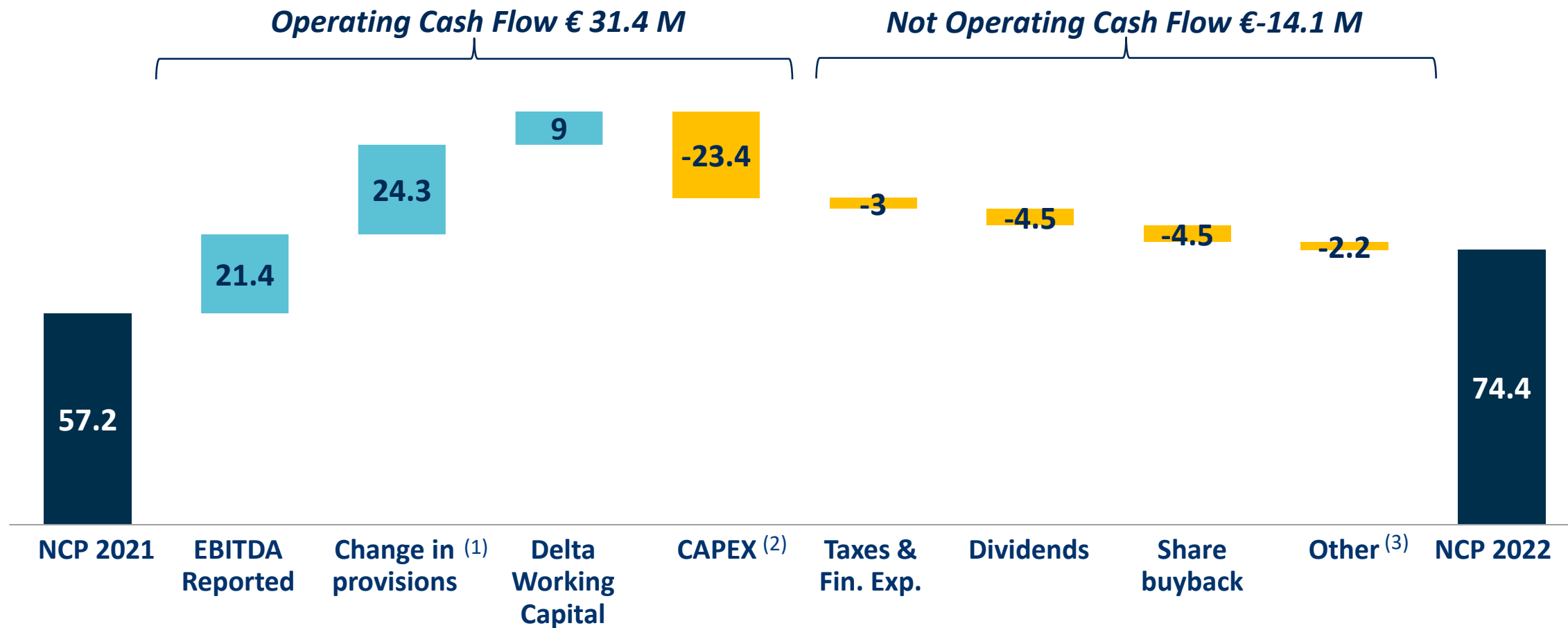
Non recurring costs by nature



(1) Include one-off positive contribution resulting from other revenues from settlement of Law 808/85 payables, extraordinary provisions for risks for Vega C return to flight activities and for the execution of future programs . Law 808/15 concerns the public financial support for the development of certain projects in the aerospace and defense sector

2021-2022 Net Cash Position bridge

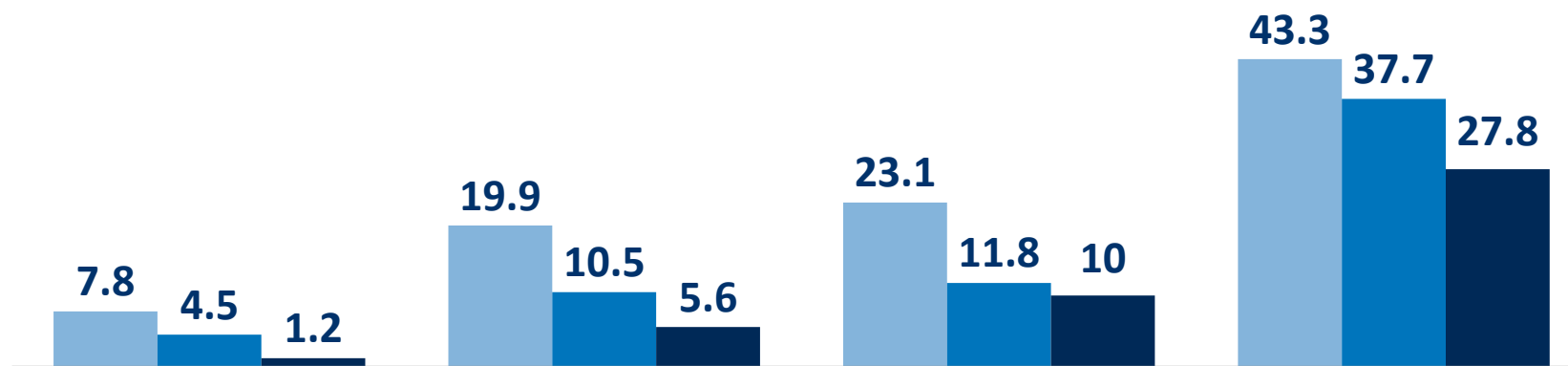
Data in €-M



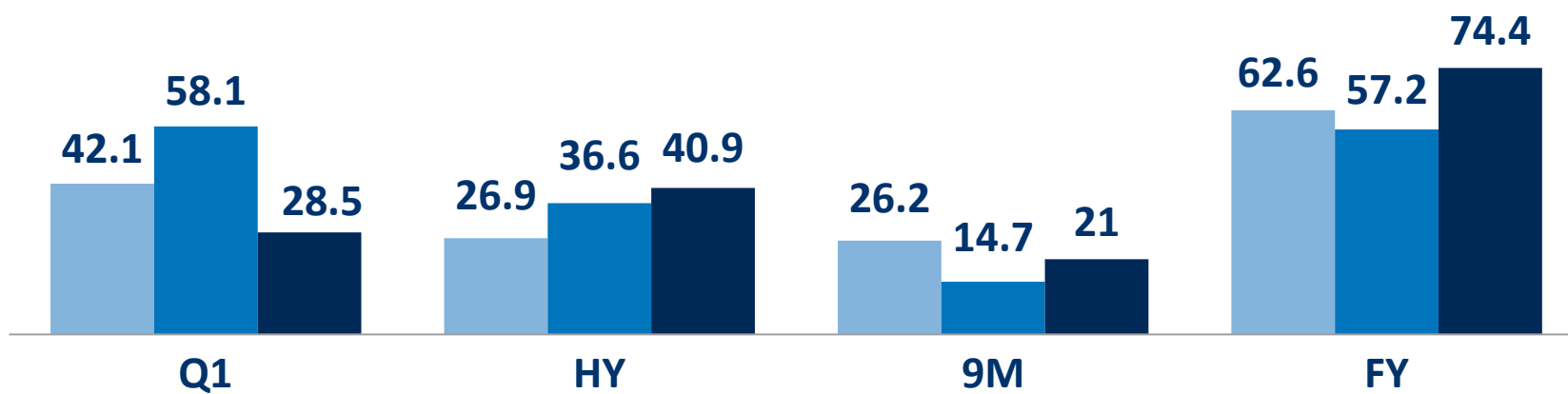
- (1) Increase in provisions for extraordinary accruals for risks for Vega C Return to Flight activities (net of expected ESA compensations) and for the execution of future programs
- (2) Net of P80 assets offset within settlement of Law 808/85 payables
- (3) Net effect from goodwill and other items

EBITDA and Cash generation heavily concentrated on Q4s

EBITDA Adjusted (€ - M)

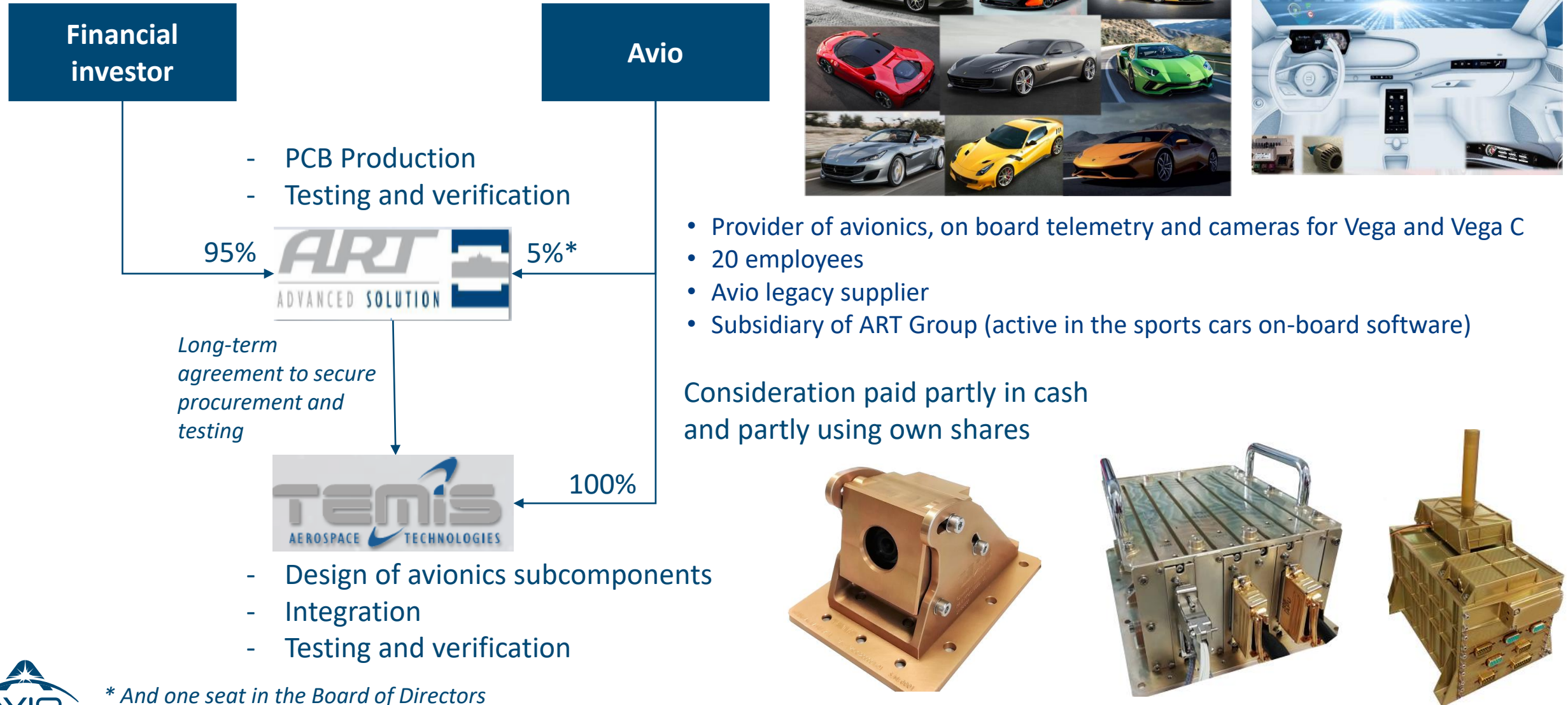


Net Cash Position (€ - M)



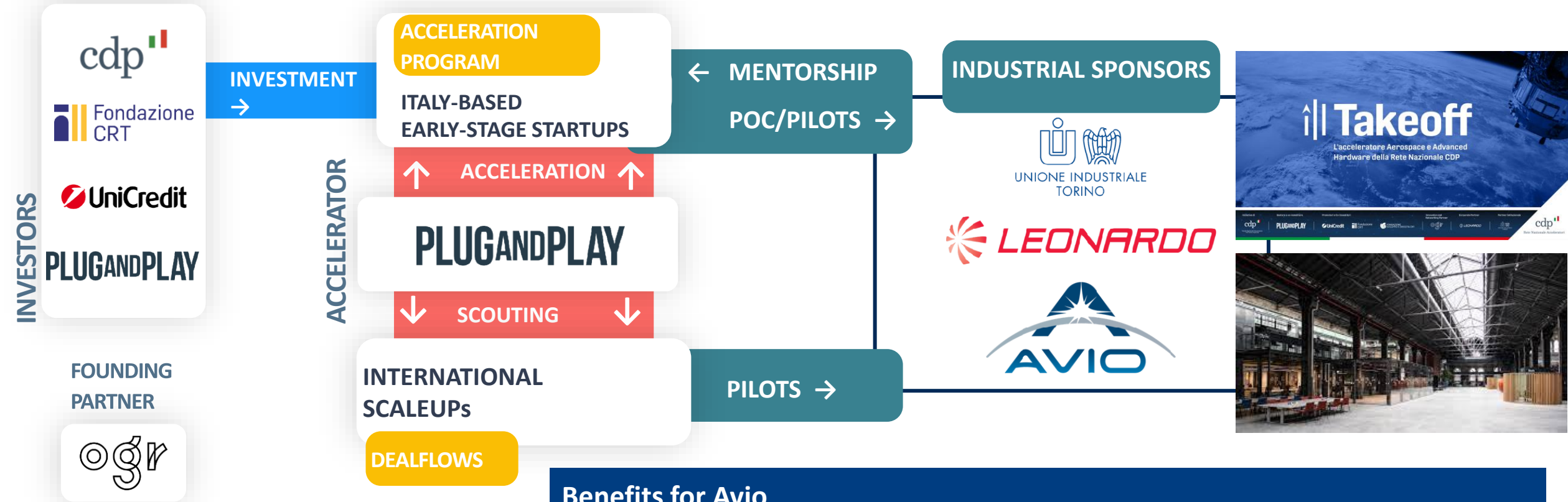
2020 2021 2022

Temis & ART deal structure



Enabling open-innovation through participation to CDP space startup accelerator

Participation to Turin CDP aerospace start-up accelerator “Takeoff”



Benefits for Avio

- Explore the Italian start-up ecosystem with a structured approach
- Additional access to worldwide selected start-ups according to Avio's needs through customized dealflow service
- Access new technologies and outsource development and research projects

Kuiper constellation leveraging also European Ariane 6 for deploying, leading to upgrades and perfo improvement also for the Vega program



Total constellation size



3,236 sats

Deployment time limit



2026 for 1,618 sats

Launch strategy



- 12 New Glenn (Blue Origin)
- 38 Vulcan (ULA)
- 18 Ariane 64



Development and production effort



P120

+10% propellant
and firing time



+10% performance for
Vega C and Ariane 6



P160



New 4562 Building
under construction

- 18 A64 launches booked, of which 16 with the more powerful version A64+ with new P160 engine
- Total expected order for Avio of 72 boosters
- P160 development already started thanks to initial ESA funding and production starting in 2024

CONTACTS

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