Scale research report - Update

Mynaric

Technology

21 September 2020

Taking initial share of market

Recent newsflow demonstrates that not only are government and commercial entities planning satellite constellations deploying optical communications links but also that Mynaric is being selected as a supplier of laser communications terminals for these constellations. Given Mynaric's focus on the creation of terminals that can be manufactured and deployed in relatively high volumes, this puts it in a good position to take market share as demand for terminals starts to grow.

Suppliers chosen for US defence constellation

In August 2020 the US Space Development Agency (SDA) announced that it had awarded contracts to build 10 satellites each for the first phase of its low earth orbit (LEO) communications network to Lockheed Martin and York Space Systems. Examination of the contract documentation suggests that Lockheed has selected Tesat to supply the optical communications terminals and York Space has selected both Mynaric and SA Photonics. The satellites must be ready for launch by September 2022. Shortly afterwards Mynaric announced that it had secured its first win in the US governmental market, which was in the mid-seven-digit euros range.

Preparing for volume delivery

This initial phase of the SDA constellation will require a total of 68 laser terminals, which management believes is around three times the entire number of laser terminals that have been built collectively by any supplier so far. The SDA has plans to expand the constellation to 300–500 satellites. These volumes are likely to present a challenge to Mynaric's competitors, which have historically produced individual bespoke items. In contrast Mynaric has focused on developing product for delivery in high volumes. It expects to manufacture around 30 terminals this year and to be able to produce 100–500 units/year by 2022. This puts it in a good position to take market share as constellation owners such as the SDA move from the pathfinder phase to full-scale deployment of hundreds of satellites.

Valuation: Analysis of potential revenue

Since Mynaric is not expected to start delivering significant numbers of commercial units until H221 and to generate an operating profit until FY22, we present a scenario analysis rather than a peer group comparison of multiples. This analysis shows that a constellation of 100 LEO satellites could require €75m of Mynaric's laser communications terminals and a cluster of 250 airborne communications platforms could require €113m of equipment.

Consensus estimates

Year end	Revenue (€m)	EBITDA (€m)	EBIT (€m)	PAT (€m)	DPS (€)	P/E (x)
12/18*	1.4	(7.4)	(7.8)	(7.8)	0.0	N/A
12/19	0.4	(6.5)	(7.7)	(7.8)	0.0	N/A
12/20e	3.9	(8.2)	(10.3)	(10.8)	0.0	N/A
12/21e	43.4	1.8	(2.3)	(2.7)	0.0	N/A

Source: Hauck & Aufhauser, Kepler Cheuvreux and MainFirst. Note: *Restated.

Price	€79.20
Market cap	€253m

Share price graph

Share details

Code	M0Y
Listing	Deutsche Börse Scale
Shares in issue	3.2m
Last reported net cash as at end June 2020 (excluding €6.4m lease liabilities)	€6.7m

Business description

Mynaric designs and manufactures laser communication terminals and ground stations for airborne and spaceborne networks and applications. Its objective is to become the world's leading provider of network equipment for the aerospace communication industry using its serially produced and low-cost laser communication products.

Bull

- Wireless laser technology gives faster data rates than conventional microwave transmission.
- Wireless laser technology potentially brings internet connectivity to remote regions without installing fibre optic cable.
- Tech is cost effective for mega-constellations.

Bear

- Technology not proven in complete satellite or airborne communications networks yet.
- Rate of commercial roll-out dependent on network operators securing funding.
- Limited number of potential network operators to which it can sell equipment.

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H120 technical and commercial progress

German government bans deliveries to first customer

At the time of our May note, Mynaric had released information about two customers for its satellite terminals. The names of these customers were not disclosed. In October 2019 the first customer, who we now know is based in China, placed an order for multiple laser communication flight terminals under an initial contract valued at €1.7m for a product validation mission that was scheduled for H220. The second customer, which is based in Europe, signed a multi-million-euro contract in January 2020 for terminals to be deployed as part of a product validation in H221. During H120, initial volumes of the CONDOR space terminals went through their final test and qualification phase ahead of planned delivery to the Chinese customer in H220. Having recognised the strategic importance of laser communications products, Mynaric had proactively sought clearance from the German government to export terminals to China even though neither the country, customer nor application was on the government's embargo list at the time. At the end of July, prior to shipping the first terminals to its Chinese customer, Mynaric was advised by the German government that the planned export was banned, prompting speculation that a US entity had put pressure on the German government. This cannot be substantiated, but it is worth noting that in early September Mynaric announced that its US subsidiary had been selected as vendor for laser communication products by an undisclosed customer, stating that the selection represented Mynaric's first win in the US governmental market. The value of the contract associated with this is in the mid-seven-digit euros range.

The China export ban is a blow, but not a mortal one. The terminals that were being prepared to ship to this customer will be sold to other customers, so there will not be any inventory or IP write-downs, though Mynaric will have to return the estimated €0.5m in down-payments it has received so far. The ban means that the step-change in revenues attributable to product delivery has been pushed back from FY20 to FY21. Consequently the FY20 consensus revenue estimate, which were for €5.2m in May, was cut back (it is now €3.9m), though there was no change to the FY21 revenue estimate because of a view that revenues from a US entity would replace those previously attributable to the Chinese customer. Prior to the ban, at which point it immediately terminated negotiations, Mynaric had been working on a buy-out of its business in China. Management is pursuing claims for compensation from the German government with regards to both the lost contract and the potential buy-out. Any potential settlement, which is likely to take some time, will be upside to the consensus estimates. In our opinion, the key issue with the ban is that it delays a working demonstration in space of the complete communications system by a year. However, the risk associated with the lack of a live test in space has been extensively reduced because the terminals have gone through lengthy tests in simulated conditions in Mynaric's laboratory.

First win in US governmental market

As noted earlier, we have inferred that recent US win is related to the first phase of a satellite communications network for the SDA. In August 2020 the SDA announced that it had awarded a $187m contract to build 10 satellites for the first phase of its LEO communications network to Lockheed Martin and a $94m contract to build 10 satellites to York Space Systems. Established satellite builder Lockheed is purchasing optical communications equipment from an undisclosed company in Backnang, Germany, where Tesat is based. Newcomer York Space is purchasing equipment from an undisclosed company in Los Angeles, which is the site of Mynaric's US operation, and from an undisclosed company in Los Gatos, California, which is where SA Photonics is located. The SDA has specified that optical communications equipment from any one vendor must work with equipment from the other vendors. Seven satellites of each batch of 10 will have four optical inter-satellite links, the other three will have two optical cross-links. Each batch of 10 satellites must be delivered and ready for launch by September 2022. The Transport part of the constellation will eventually consist of 300–500 satellites.

First shipment of airborne terminals imminent

During H120 Mynaric completed manufacture and initial testing of the initial pre-series volumes of its HAWK AIR airborne terminal. These units have gone through further extensive testing because the first customer, which is based in the US, intends to use the units in demonstrations to their potential customers, so the equipment needs to be extremely robust. Mynaric intends to ship terminals to its first customer in this segment in the coming weeks.

H120 financials

Transition to pre-series production and test

The German accounting metric 'operating output' is more significant than revenue for Mynaric at its stage of evolution, as it includes the value of the increase in finished goods and work in progress, and the amount of development activity on projects that are not linked to specific customer contracts. The total during H120 was €6.5m, more than double the H119 level (€2.5m), reflecting intensifying work preparing space and airborne terminals for customer deployment during H220.

Exhibit 1: Analysis of total operating performance

€m	H120	H119	Notes
Sales revenues	0.3	0.1	65% from customer in Asia and 35% from customers in Europe during H120 compared to 100% of revenues from customers in Europe during H119.
Increase in finished goods and work-in-progress	0.9	0.2	Primarily attributable space and air terminals in production during H120 compared with optical ground stations in H119
Other own work capitalised	4.8	1.8	Cost of development activity.
Other operating income)	0.5	0.4	H120 includes €0.2m grant income.
Total operating performance	6.5	2.5	

Source: Mynaric data

The cost of materials (€2.7m) more than quadrupled as a result of intensified production activity. Personnel costs were almost double (€7.5m) as the total number of employees increased from 95 to over 150 during the period, with additions in test, production, design, business development and marketing. Other operating expenses more than doubled to €3.1m as a consequence of higher rental costs following the move to larger premises during H119 and higher third-party costs. H120 losses after tax were double the prior year period at €8.0m.

Continuing to raise finance to support product development

Net cash reduced by €2.3m during H120 to €6.7m (excluding €6.4m IFRS 16 lease liabilities) at the period end. In addition to €7.9m cash consumed in operations, the company invested €4.8m in intangible assets, primarily the capitalised costs of developing the CONDOR and HAWK AIR terminals, and €1.7m in fixed assets, most of which related to test equipment. In February 2020, Mynaric raised €12.3m (gross) through a private placement, which was substantially oversubscribed, at €42.50/share. The funds raised are being used to increase production capabilities, to accelerate customer acquisition, particularly in the US, and to secure and strengthen Mynaric's market position by investing in advanced developments underpinning next-generation technologies. In August Mynaric issued a convertible bond of €5.0m to a qualified investor. The bond has a term until end December 2020 and a fixed conversion price of €56.00/share, representing 0.09m new shares if fully converted. The company has also taken out a €2.5m loan.

Outlook: Faster 'internet-in-the-sky'

Negligible impact of pandemic on Mynaric's operations

The global COVID-19 pandemic appears to have had a negligible effect on the day-to-day operation of Mynaric and does not appear to have had any material impact on potential customers' plans for launching satellite constellations. If anything, the pandemic has highlighted the importance of providing broadband-quality communications to people across the globe, including those in remote or rural locations where it is not economically practical to provide terrestrial optical communications networks. For these people, provision of broadband via a satellite-based or airborne-based optical communications networks represents a viable alternative. This topic was explored in more detail in an interview with Bulent Altan, Mynaric's CEO and a SpaceX veteran.

Increasing acceptance of free-space optical communications

The SDA constellation demonstrates that free-space optical communications links are starting to be deployed in satellite networks. Similarly the US Defense Advanced Research Projects Agency (DARPA) announced in May this year that it was commissioning a pair of small satellites that will carry optical inter-satellite links for broadband data, commenting that these could form the basis of future optically meshed computer networks in LEO. In the commercial arena, leaks of early beta test results from SpaceX's Starlink constellation indicate that the LEO format can deliver the low latency, which is key for internet transmission: typically 30–50ms compared with 600ms to 2000ms for a traditional communications satellite in geo-stationary orbit. (Please refer to our report, The small satellite market – Small is beautiful, for more detail on why low latency is important.) Starlink already has over 650 satellites in orbit. It intends to start deploying in-house optical communications terminals on its satellites by the end of 2020. If it can demonstrate enhanced data rates using optical rather than traditional microwave links, it is likely that other satellite operators will adopt laser communications technology which, not being so vertically integrated, they will need to purchase from third parties.

Valuation

Mynaric's share price has recovered from the widespread coronavirus-related sell-off in March and is now substantially above the pre-pandemic level (€79.20 vs €61.8m in early February).

Exhibit 2: Analysis of potential revenues

Internet LEO system				
Cost of payload* (€m)	2.0	1.5	1.0	0.75
% payload composed of Mynaric systems	50%	50%	50%	50%
Number of satellites in constellation	50	100	300	1000
Revenues attributable to Mynaric (€m)	50	75	150	375
UAV, aircraft, balloon-based system				
Cost of payload (€m)	1.00	0.90	0.68	0.51
% payload composed of Mynaric systems	50%	50%	50%	50%
Number of platforms in constellation/cluster	50	250	500	1000
Revenues attributable to Mynaric (€m)	25	113	169	253

Source: Edison Investment Research. Note: *Payload is the part carrying out the communications or sensing function.

Since Mynaric is still at the pre-commercial phase and is not expected to generate operating profit until FY22, an analysis based on peer multiples is of limited use. We continue to present a scenario analysis (Exhibit 2) showing potential revenues achievable if the technology is deployed in communication systems of different sizes. We split the analysis into two types of system. The first looks at communication networks based on smaller LEO satellites, which typically have more than 100 satellites each. The second looks at communication networks based on many more, less expensive platforms, which may be unmanned aerial vehicles (UAVs), aircraft or balloons. A communications satellite such as that used in the first scenario requires space-qualified terminals, which are more expensive than those on an airborne platform.

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