

## Mynaric

**Technology**
**10 November 2021**

### Customer engagement intensifying

During H121 Mynaric continued to broaden its customer base and expand capacity. This is in readiness to supply the requirements of the US Space Development Agency (SDA) and others as they roll out networks of hundreds of small, cost-effective satellites at speed.

### Expanding capacity to support customer demand

Mynaric is expanding capacity to support production of 2,000 laser communications terminals per year in future and has refined its space and airborne terminal designs for volume manufacture. These actions put Mynaric in a good position to take market share as the SDA and others move from the pathfinder phase to full-scale deployment of hundreds of satellites. For example, Mynaric has been selected by SpaceLink to provide terminals for its proposed satellite network providing data relay services and by Cloud Constellation for its proposed network providing secure cloud storage on satellites. The group recently signed a multi-year agreement with Northrop Grumman worth at least US\$35m, under which Mynaric will be the strategic supplier of laser communications tailored to the needs of specific US government space programmes. Mynaric has also started a joint demonstration campaign of its airborne terminals with high-altitude platform specialist H3 HATS.

### Planning US IPO

Mynaric's H121 results show the effects of the preparations across the group for pre-series production. Revenues jumped from €0.1m to €1.3m year-on-year, all attributable to the US space sector. Losses after tax more than doubled to €16.1m, reflecting higher personnel costs and the cost of materials. Net cash (there is no debt apart from finance leases) decreased by €24.8m to €18.4m. Mynaric has recently filed a prospectus relating to a potential IPO and listing in the United States under the ticker MYNA to improve the company's access to US capital markets.

### Valuation: Analysis of potential revenue

Management does not expect Mynaric to be profitable until the medium term, so we present a scenario analysis rather than a peer-group comparison of multiples. This analysis shows a constellation of 100 low earth orbit (LEO) satellites could require €75m of Mynaric's laser communications terminals and a cluster of 250 airborne communications platforms could require equipment, with an estimated €113m in revenues attributable to Mynaric.

#### Consensus estimates

Year end	Revenue (€m)	EBIT (€m)	PBT (€m)	EPS (€)	DPS (€)	P/E (x)
12/19*	0.1	(9.8)	(9.7)	(3.4)	0.0	N/A
12/20*	0.7	(20.1)	(20.6)	(6.2)	0.0	N/A
12/21e	4.0	(24.8)	(28.0)	(5.9)	0.0	N/A
12/22e	19.3	(7.2)	(10.5)	(1.8)	0.0	N/A

Source: Company data, Refinitiv. Note: \*Restated.

**Price** €58.10  
**Market cap** €238m

#### Share price graph



#### Share details

Code MOY  
 Listing Deutsche Börse Scale  
 Shares in issue 4.1m  
 Net cash at end June 2021 (excluding lease liabilities of €7.9m) €18.4m

#### Business description

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

#### Bull

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

#### Bear

- Technology not yet proven in complete satellite or airborne communications networks.
- 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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## H121 technical and commercial progress

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### Broadening customer base

We have previously [inferred](#) that Mynaric has been selected as one of the vendors of laser communication products for the first phase of the SDA's proposed satellite communications network, with the associated contract in the mid-seven-digit euros range. Mynaric has also been selected by Telesat to supply multiple units of its CONDOR inter-satellite terminals to the Defense Advanced Research Projects Agency's Blackjack programme. The terminals are scheduled to be delivered by the end of 2021 to the system integrator. Mynaric has recently signed a multi-year, strategic agreement with Northrop Grumman as a strategic supplier of laser communications tailored to the needs of specific US government space programmes. The agreement encompasses business worth at least \$35m over the agreement term from the supply of products and associated services. Northrop Grumman will separately issue a purchase order for a set of spaceborne terminals to seal the new relationship. Earlier this year Mynaric submitted bids relating to multiple US government space programmes with a combined value in the mid-double digit million dollar range to Northrop Grumman. The US government has not awarded the relevant contracts for these programmes yet.

While the US governmental market is by far the most important market for Mynaric at present, the company is also attracting the attention of other customers. The first U.S. company to launch and operate Synthetic Aperture Radar (SAR) satellites, Capella Space, has secured options for up to 20 Condor terminals for delivery from Q422 onwards. The terminals will enable Capella Space to forward the data it collects with compatibly equipped government satellites and military operations on the ground. In August 2021 Mynaric signed an agreement with SpaceLink to provide terminals for satellites in medium earth orbit (MEO) with a total order volume of up to \$28m and the first deliveries scheduled for Q123. SpaceLink has also ordered an undisclosed number of smaller, third-generation terminals (see below) for delivery by late 2022. These will be deployed at the LEO end of LEO-MEO relay links connecting third parties' LEO satellites to SpaceLink's MEO data relay service. The service will be offered to commercial and government customers. In May 2021 Mynaric and Cloud Constellation signed a memorandum of understanding under which Mynaric's laser communication products will form the critical connections between Cloud Constellation's LEO satellites. During the first phase of the planned partnership, Mynaric will provide all the inter-satellite terminals for the first 10 satellites of Cloud Constellation's proposed SpaceBelt network. SpaceBelt is intended to provide Data-Security-as-a-Service and further secure cloud storage and management services to the US government and security-sensitive commercial customers.

### Continued refinement of spaceborne terminals

In May 2021 Mynaric successfully demonstrated that its second generation spaceborne terminal was compliant with the SDA's optical intersatellite link (OISL) standard and will thus be compatible with products from other OISL vendors implementing the same standard. Mynaric was the first manufacturer to demonstrate compatibility. Customer feedback on the second generation spaceborne product has helped define a third-generation product, the CONDOR Mk3. This is smaller, lighter and lower power than the previous generation. Importantly, it is designed for mass-manufacture, supporting the cost, volume and lead-time ambitions of customers such as the SDA.,

### Start of joint demonstration of airborne terminals

On the airborne side of the business, the US aerospace and defence customer who received two pre-series airborne terminals during Q420 has started to use these terminals for demonstrations in various deployment scenarios. In October 2021 Mynaric announced that it had started a joint demonstration campaign with German-based H3 HATS, which specialises in high-altitude platforms. Initial flights used two of Mynaric's HAWK terminals, one on the ground and one mounted

in the fuselage payload bay of an aircraft, to successfully demonstrate stable bidirectional laser links with 10Gbps speed between the terminals. Importantly, the tests used pre-series production terminals rather than one-off prototypes or technology demonstrators, making them the world's first demonstration of an industrialised optical communications terminal for airborne applications.

## Getting ready for volume production

After building close to a dozen terminals in FY20, primarily for in-house testing, Mynaric is in the process of constructing around 50 terminals this year which will be used for in-house testing, refinement of production processes and initial customer deliveries. Mynaric believes that this total of 50 terminals represents a higher number than have ever been brought into use by all of its commercial competitors combined. As part of getting ready for volume shipments, in June 2021 Mynaric opened a new production hall at its facility in Germany. This facility recently reached high double-digit annual production rates and is on track for triple-digit production for 2022 to meet the market demand from both commercial and government customers, with an ultimate annual production target of 2,000 terminals. Importantly, Mynaric has brought manufacturing of critical optical components in-house. It has also brought most of the testing in-house, significantly accelerating the development cycle. In February 2021 Mynaric announced that it was opening an office in Washington DC to be closer to US government organisations. August 2021 the company announced that it was expanding its existing capabilities in the Los Angeles region to include assembly, integration and test capabilities for electronic components. The ability to fully source, design and build terminals in the US supports the requirements of security-sensitive US customers.

## H121 financials

### Preparing for pre-series production

Exhibit 1: EBIT summary		
€m	H121	H120*
Sales revenues	1.3	0.1
Increase in finished goods and work-in-progress	1.0	0.7
Other own work capitalised	2.5	4.8
Other operating income	0.3	0.5
Cost of materials	(4.4)	(2.5)
Personnel expenses	(10.8)	(7.6)
Depreciation, amortisation and impairment of intangibles	(1.9)	(0.8)
Other operating expenses	(4.2)	(2.1)
Operating loss	(16.2)	(7.0)

Source: Mynaric data. Note: \*Restated.

Revenues grew strongly in H121, this time including €0.4m of products delivered, as well as €0.9m in associated services, reflecting successful customer acquisition efforts. All the H121 revenues were attributable to customers in the United States operating in the space segment. In contrast H220 revenues totalled €0.6m, all attributable to the airborne segment and H120 revenues totalling €0.1m were attributable to services provided to a customer in Belgium in the space sector. Cost of materials, investment in inventory, personnel expenses and other operating expenses all showed large increases year-on-year, with the number of personnel rising from 146 at end H120 to 214 at end H121 to support higher levels of development and of production capacity. As initial development work on the airborne terminals completed in June 2020 and initial work on the spaceborne terminals completed in March 2021, the amount of development work capitalised reduced significantly y-o-y but depreciation on capitalised development more than doubled.

### US IPO sought to support future development

Net cash totalled €43.2m (excluding IFRS 16 lease liabilities) at the end of FY20 following a programme raising €66.7m cash (net). This cash total reduced by €24.8m during H121 to €18.4m

(excluding €7.9m lease liabilities) at the period end. In addition to €18.2m cash consumed in operations, €3.8m of which related to inventory build-up, the company invested €2.5m in the capitalised costs of developing space-borne terminals and €3.5m in fixed assets. Capitalised development costs were approximately half prior year levels, as the initial development programmes came to an end. Expenditure on tangible assets was around double year-on-year, reflecting the preparation of the serial production hall near Munich and US expansion.

While management has not provided formal guidance, it expects H221 revenues to be 'significantly higher' than H121 and FY21 revenues to be 'significantly higher' than FY20, with losses widening year-on-year. It expects a 'substantial rise' in both orders and sales revenues during FY22, along with significantly increasing costs, with further revenue increases in subsequent years resulting in the group reaching profitability 'medium-term'. On 4<sup>th</sup> November Mynaric announced a public offering in the US of up to 4.0m American Depositary Shares (ADSs), at a price which has yet to be determined, with every 4 ADSs representing one ordinary Mynaric share. Mynaric expects to grant the underwriters a 30-day option to purchase up to an additional 0.6m ADSs.

## Outlook: Increasing acceptance of free-space optical communications

The SDA and Blackjack constellations demonstrate that free-space optical communications links are starting to be deployed in satellite networks. In the commercial arena, SpaceX already has over 1,700 satellites in orbit in its Starlink constellation (see our report [The small satellite market – Small is beautiful](#) for more detail) some of which carry optical communications terminals built in-house. In August SpaceX announced it would add laser crosslinks to all future satellites, enabling satellites to communicate with each other while reducing reliance on ground-stations. This is likely to encourage other satellite operators to adopt laser communications technology.

## Valuation

**Exhibit 2: Analysis of potential revenues**

<b>Internet LEO system</b>				
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
<b>UAV, aircraft, balloon-based system</b>				
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 communications/sensing function.

Because Mynaric is still at a pre-commercial phase and is not expected to generate operating profit until FY22 or later, 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, such as Tranche 1 of the SDA's network, scheduled for deployment in 2024, 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 or aircraft. 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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