



16 April 2019



Source: Eikon Thomson Reuters

**Market data**

EPIC/TKR	AVO
Price (p)	40
12m High (p)	64
12m Low (p)	32
Shares (m)	194.6
Mkt Cap (£m)	77.8
EV (£m)	67.2
Free Float*	60%
Market	AIM

\*As defined by AIM Rule 26

**Description**

Advanced Oncotherapy is developing next-generation proton therapy systems for use in radiation treatment of cancers. The first system is expected to be installed in Harley Street, London, during 2019; it will be operated through a JV with Circle Health.

**Company information**

Exec. Chairman Michael Sinclair  
CEO Nicolas Serandour

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[www.advancedoncoterapy.com](http://www.advancedoncoterapy.com)**Key shareholders**

Board & Management	11.4%
Yantai CIPU	23.1%
DNCA Investments	6.2%
Brahma AG	4.1%
Barrymore Investments	4.1%
AB Segulah	3.3%

**Diary**

2Q'19 2018 finals

**Analysts**

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# ADVANCED ONCOTHERAPY

## Preparing for commercialisation

Advanced Oncotherapy's (AVO) goal is to deliver an affordable and novel proton beam therapy system (PBT), based on state-of-the-art technology developed originally at the world-renowned CERN. 2018 was characterised by the achievement of a number of technical milestones, the successful integration of all the module types that constitute the LIGHT accelerator, and the acceleration of the proton beam to an energy of 52MeV, sufficient to treat superficial tumours. Meanwhile, AVO has started to gear up its commercial infrastructure through the recruitment of a Chief Commercial Officer (CCO) with experience in PBT solutions.

- **Strategy:** AVO is developing a compact and modular PT system at an affordable price for the payor, financially attractive to the operator, and generating superior patient outcomes. AVO benefits from the technology know-how developed by ADAM, Geneva, and relies on a base of world-class suppliers.
- **Senior management appointment:** In preparation for the commercialisation of LIGHT, AVO has appointed Moataz Karmalawy as CCO, and President for its US operations. Previously, he was General Manager worldwide for Particle Therapy Treatment at Varian Medical, a global leader and ranked #2 in PBT.
- **Rationale:** Given his experience at Varian, and Philips Medical, Moataz will provide AVO with a wealth of knowledge in the commercialisation of PBT solutions. This appointment is a major coup for AVO and provides a considerable vote of confidence in LIGHT's attractive proposition.
- **Risks:** In 2018, the more complex technical challenges were overcome and progress towards a fully functional accelerator is underway in preparation for CE marking. Execution risk remains; however, establishment of an innovative financing package for providing LIGHT to potential customers has lowered this risk.
- **Investment summary:** Demand for PBT is increasing worldwide, and the need for a small, flexible, affordable and close-to-patient system is desirable. With LIGHT, AVO is aiming to provide customers with a fully integrated PBT solution. AVO's market capitalisation of £78m equates only to the amount of money invested into LIGHT to date, which does not reflect either the enormous technical challenges that have been overcome, or the large market potential.

**Financial summary and valuation**

Year end Dec (£m)	2015	2016	2017	2018E
Sales	0.0	0.0	0.0	0.0
Gross profit	0.0	0.0	0.0	0.0
Administration costs	-6.6	-11.2	-12.9	-14.0
EBITDA	-6.4	-10.8	-12.6	-13.6
Underlying EBIT	-6.6	-11.2	-12.9	-14.0
Statutory EBIT	-8.5	-13.1	-14.5	-17.0
Underlying PTP	-6.7	-11.3	-14.9	-14.3
Statutory PTP	-8.6	-13.2	-16.5	-17.3
Underlying EPS (p)	-7.1	-13.9	-15.6	-7.6
Statutory EPS (p)	-12.3	-14.3	-18.9	-9.7
Net (debt)/cash	8.0	0.9	-9.2	0.7
Capital increase	21.1	13.5	7.3	20.5

Source: Hardman &amp; Co Life Sciences Research

## Gearing up for commercialisation

AVO is aiming, with LIGHT, to deliver not only the next-generation proton accelerating system but also a solution that addresses most of the challenges in the PBT market. Having overcome many of the technical challenges in 2018, AVO is now focusing increasingly on the commercialisation of its fully integrated PBT system.

### Senior management appointment

Today, AVO has strengthened its senior management team with the appointment of Moataz Karmalawy – a veteran in the commercialisation of PBT technology – as its CCO and President for the US operations, with immediate effect. This move is a clear signal that AVO is preparing its commercial infrastructure for LIGHT. In our opinion, the appointment of such an experienced executive from a major competitor is a major coup for the company and should provide the market with greater confidence in LIGHTS's commercial prospects.

Moataz Karmalawy



Source: Varian Medical Systems

#### Moataz Karmalawy

Prior to joining AVO, Moataz was the General Manager for Worldwide Particle Therapy Treatment at Varian Medical Systems (Varian). Prior to that, he spent 10 years at Philips Medical Systems (Philips) in the US.

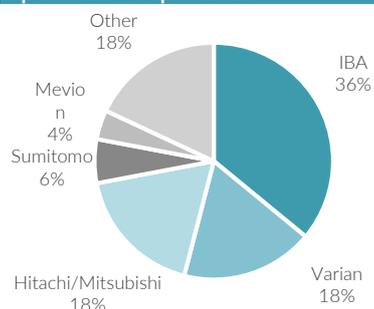
During his 12 years at Varian, Moataz was responsible for all aspects of the company's PBT business worldwide, such as P&L, operations, services, R&D, marketing, sales, finance, and site solutions. When Varian acquired its PBT business, Moataz was central to the integration of the business into the organisation. Subsequent to this, he was a key figure in developing the commercial aspect of Varian's PBT business from \$10m to \$150m in 2018 with a strong order book. At Varian, his main achievements included:

- ▶ development and execution strategy for global sales & marketing covering three-tier plans – market penetration, dominance and expansion in five years;
- ▶ achievement of 50% global market share for Particle Therapy Products;
- ▶ negotiating large complex customer deals, each averaging \$50m worldwide;
- ▶ developing a public-tender response and contract development team, which successfully addressed needs in APAC and Europe;
- ▶ establishment of strategic partnerships with leading financial institutions and medical centres for successful market growth; and
- ▶ increasing reimbursement codes and developing new code with Centers for Medicare & Medicaid Services (CMS).

At Philips, Moataz held a variety of management positions, including VP for Research and Development, VP of Operations, and VP of strategic R&D. Prior to that, he spent five years directing Nuclear Medicine Systems operations at Park Medical Systems in Canada. Moataz holds an M.A.Sc. and a Ph.D. in Engineering, as well as an MBA from Concordia University and McGill University in Montreal, Canada. He also holds a number of patents and has published in major technical journals.

Recruitment of an experienced, high-profile executive from a major industry competitor indicates that LIGHT is an attractive proposition that is providing a disruptive solution in a market which has high medical need. It is also an acknowledgement that much of the technical risk is under control and the focus of the company is being switched from development to commercial activity. This move also expands AVO's geographical reach to the US from its existing base in Europe, and Asia, through its partnership with Yantai CIPU.

### PBT treatment rooms in operation – April 2019



Source: PTCOG

### Varian Medical Systems

Varian is an established and leading manufacturer of medical devices and software for treating cancer and other medical conditions with radiotherapy, stereotactic radiosurgery, stereotactic body radiotherapy, brachytherapy and proton therapy. Its stated mission is to combine the ingenuity of people with the power of data and technology to achieve better clinical outcomes in the fight against cancer. In PBT, Varian currently has 28 rooms in operation, ranking it the #2 manufacturer of proton therapy solutions, and a strong order book of ca.30 rooms.

Varian has two reportable operating segments:

- ▶ **Oncology Systems:** Designs, manufactures, sells and services hardware (such as linear accelerator) and software products for treating cancer with conventional radiotherapy, and advanced treatments.
- ▶ **Proton Solutions:** Develops, designs, manufactures, sells and services products and systems for delivering proton beam therapy.

### Development update

Moataz is joining AVO at an exciting time. During 2018, the company made enormous progress and hit a number of technical milestones that greatly de-risked the whole project. LIGHT has reached the stage where the four different modules (the proton source, the RFQ, the SCDTLs and the CCLs) that constitute the accelerator have been integrated at its Geneva testing site and the proton beam has been accelerated to an energy level of 52MeV, which would be sufficient to treat superficial tumours. While specific testing is still being undertaken, on a broader front, sufficient testing has taken place to show proof-of-concept. The company will undertake a number of actions during 2019 to generate the first complete LIGHT system, which will be used to obtain regulatory approval, via CE marking.

### Daresbury site

In May 2018, a lease was signed between AVO and the UK Government's Science and Technology Facilities Council (STFC) to establish a UK testing and assembly site at Daresbury (Cheshire). The facility will be used to test and assemble a complete and operational version of the LIGHT system for verification and validation for regulatory approval (CE marking). The infrastructure work has already started, together with assembly of the LIGHT system, as both are meant to be built in parallel. The concrete shielding for the proton injector and RF test bunkers is already in place, and delivery of the components has already happened.

### Power transformer delivered to the STFC site



Source: STFC on Twitter, 16 January 2019

### CE marking

AVO is in regular discussions with its Notified Body. On completion of the verification and validation of the LIGHT system, AVO expects to receive CE marking from the Medical and Healthcare products Regulatory Agency (MHRA). Important within this process was the third-party ISO 13485 certification, which demonstrated to the regulators that AVO has met the stringent requirements of the standard. We expect AVO to have all the accelerating structures of LIGHT integrated before the end of 2019, with submission for CE marking happening shortly thereafter. This system will then be dismantled for re-construction at the Harley Street site, with the first patients expected to be treated by the end of 2020.

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