

Stock Data

Share Price:	0.15p ¹
Market Cap:	£9.11m ²
Shares in issue:	6,076m ²

¹ Market price 08:00hrs on 19 January 2021

² post-Conditional Placing, Fee shares, Broker Option

Company Profile

Sector:	Electronic and Electrical Equipment
Ticker:	MSYS
Exchange:	AIM

Activities

Founded in 2001, Microsaic Systems plc ('Microsaic', 'MSYS', 'the Group') is a high technology company which develops point-of-need mass spectrometers, designed to improve the efficiency of chemical and biological workflows. Its core products, the compact **MiD**[®] series of mass detectors, are designed to integrate seamlessly with a wide range of third-party OEM providers, or to be standalone. Microsaic's design ethos is to deliver fast, easy to use, powerful mass spectrometry ('MS') performance.

Group website: www.microsaic.com/

1-year Share price performance



Source: [LSE](https://www.lse.com/)

Past performance is not an indication of future performance.

Turner Pope contact details

Turner Pope Investments (TPI) Ltd
8 Frederick's Place
London
EC2R 8AB
Tel: 0203 657 0050
Email: info@turnerpope.com
Web: www.turnerpope.com

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Barry Gibb

Research Analyst

Tel: 0203 657 0061

barry.gibb@turnerpope.com

Andrew Thacker

Corporate Broking & Sales

Tel: 0203 657 0050

andy.thacker@turnerpope.com

Microsaic Systems plc

Microsaic has announced an oversubscribed £5.0m (gross) conditional equity placing at a Placing price of 0.1p/share (the 'Transaction') that was undertaken by Turner Pope Investments with both existing and new investors. A Conditional Broker Option of up to 500m New Ordinary Shares at the same price will now remain open until 5.00 p.m. on 22 January 2021. The new funds raised will be applied to further commercialisation of the Group's unique range of miniaturised mass spectrometry products and services while supporting their further development and related services along with general working capital, as it drives to secure increased sector activity that is expected to accrue globally in a post-Pandemic environment. In conjunction with the Transaction, significant Board changes have also been proposed in to support a planned refocusing of operations with new emphasis on collaboration and revenue sharing opportunities while extending existing sales and distribution channels. All proposals remain subject to a General Meeting, including a share reorganisation which needs to be put to shareholders due to the Placing price being below the current nominal value of the existing ordinary shares.

Abbreviated timetable of events

- Latest time and date for exercise of the Broker Option: 5.00 p.m. on 22 January 2021
- Time and date of General Meeting: 10.00 a.m. on 4 February 2021
- Admission/Commencement of dealing in New Shares: 8:00 a.m. on 5 February 2021

Use of proceeds

Microsaic's new Board of Directors has identified three immediate areas to utilise the funds raised from the Transaction:

- Improved commercialisation of Microsaic's current miniaturised products and services;
- Further development of Microsaic's product and services portfolio; and
- For general working capital purposes.

Recovery plan - Strategic and timely opportunity

The new Board recognises that Microsaic is now presented with a strategic and timely, post-Pandemic opportunity that goes beyond just selling equipment. This includes numerous service-based opportunities across life and environmental science sectors, paired with new distribution channel and OEM partners that are designed to expand global reach and form part of a supply chain that contributes to solving large and ongoing societal problems.

Completion of the proposed Transaction will permit the Group to explore options that may contribute to lower development costs and offer potential to increase higher value recurring revenue streams that, in part at least, are seen resulting from heightened global usage and application of mass spectrometry in a post-Pandemic environment. Specifically, opportunity has been identified to move away from one-off sales of kit that demands significant and costly infrastructural support, in favour of a model able to reduce ongoing development costs through collaboration and joint-ventures, while increasing contribution from higher value-added revenue streams. Greater use of maintenance contracts, which are treated as operating expenditure for clients, might be one such example, alongside premium, value-added services derived from application of data aggregation/AI processing. The extension of sales, marketing and distribution agreements on a shared revenue basis with existing clients and external partners in the life sciences/ environmental services sectors, should also raise operating margins collected from unit and consumables sales.

Boardroom changes to inject new emphasis

The Group recognises that in conjunction with the Transaction, the injection of 'new blood' to contribute to the development of a recovery plan plus new forward vision is now necessary to revitalise operations, reposition the brand and capture the growth potential of its unique product offering. Conditional on General Meeting approval, it is intended that

Gerard Brandon will join the Board as Chairman and Non-Executive Director and Dr. Nigel Burton as a Non-Executive Director immediately upon completion. The current Non-Executive Chairman, Peter Grant and Non-Executive Director, Eric Yeatman, will step down from the Board, although the latter will be retained as a consultant and be a member of a Scientific Advisory Group.

In this respect, it is worth highlighting the experience and recent activity of the two incoming Board Members. Gerry Brandon, for example has enjoyed a successful career in numerous life and environmental sciences enterprises and is currently CEO of [DeepVerge plc](#) (AIM:DVRG). In 2020, Mr Brandon joined what was the similarly encumbered AIM-quoted [Modern Water plc](#) as Non-Executive Chairman. Shortly after completing a strategic review of its operations, he went on to enter a wide-ranging reagents supply agreement followed by a joint venture to develop a first-to-market COVID-19 detection system with Deepverge. The two enterprises subsequently found increased commonality, particularly as they both recognised the long-term product opportunities being presented by the global Pandemic, as a result of which Deepverge went on to complete a takeover of Modern Water through an [all-share offer](#) valuing it at a c.60% premium to its previous 90 trading day average price. Dr. Nigel Burton, a highly experienced investment banker who presently holds a number of Non-Executive positions on AIM-quoted vehicles, was originally on the Board of Modern Water and went to take-up a similar role at Deepverge.

In many respects, the recovery, rejuvenation and modernisation plan now being proposed for Microsaic finds parallels with that designed and rapidly effected by Mr Brandon at Modern Water in 2020. Accepting the fact that both companies had strong and protected technological foundations, excellent customer franchises and significant available market opportunity, particularly in a post-Pandemic environment, post-acquisition policy will centre on reducing costs, extending global reach and provision of value-added services. In providing its shareholders with a full year 2021 forecast for its expanded operations, on [11 January 2021](#) Deepverge guided its shareholders to anticipate in excess of 120% revenue growth in the current year.

Please note that there is no guarantee that this forecast will ever be realised, therefore please do not base investment decisions on this valuation alone and also that past performance is not a reliable indicator of future results.

Background

Founded in 2001 and headquartered in Woking, UK since September 2004, Microsaic is a high technology company involved in the development, sale and support of its proprietary point-of-need mass spectrometers ('MS'). Designed to improve the efficiency of chemical and biological workflows, it was initially established to develop miniaturised MS instruments based on micro-electro-mechanical systems ('MEMS') technology originating at the highly regarded Optical and Semiconductor Devices Group at Imperial College London. Admitted to trading on AIM in April 2011, Microsaic went on to invest substantially in core intellectual property specific to its unique compact chip-based range which now holds over [60 international patents](#).

While retaining product development in-house, all manufacturing is outsourced in order to minimise operating costs. The Group is revenue generating, with over 160 instruments sold to date. By end-2020, it had signed over ten commercial partners across North America, Europe, China, SE Asia and Japan, the majority of which were agreed during 2018-2019. Following on from its [10 April 2018](#) launch of its 4500 MiD® detector, 2019 saw Microsaic increase its revenues by over 50%, lowering its target breakeven to c.100 unit sales per annum in the process with profit margins also improved through focus on key markets, niche and targeted sales. Revenue streams presently include unit sales of systems, consumables and service contracts.

Recent trading

Following the progress Microsaic reported in 2019, [H1 2020 was significantly impacted by the COVID-19 Pandemic](#). During this time, the Group's employees supported steps taken to protect the Group's future by agreeing to temporary pay reductions further costs have been saved by making use of the UK Government's furlough scheme and a number of staff and non-payroll cost reductions have been implemented, whilst retaining appropriate skills and resources to be able to continue to sell products and to support new and existing customers and partners.

As a result, revenues in the first half of 2020 were focused on the continuing sales of consumables, spare parts, service and support of existing customers and partners, totalling £72k (H1 2019: £328k, Full Year 2019 £872k). Conditions remained similar during 2H 2020, although a growing pipeline of opportunities were generated, particularly in markets which have become increasingly less affected by the Pandemic. While sales come from a broad spread of international regions, the Group's largest customer represented 54.5% of total revenue in H1 2020 (H1 2019: 60.4%) and its second largest at 13.1% (2019: 16.4%). Total comprehensive losses for the first half, however, amounted to £1.480m (1H 2019: loss £1.589m, Full Year 2019: loss £2.781), with cash used in operations of £1.321m (1H 2019: £1.248m, Full Year 2019 £2.842m). In the light of this and considering the Group's available cash & cash equivalents at end-June 2020 were £1.534m, on [29 July 2020](#) a going concern issue was recognised with the Board announcing it had decided:

- (i) To undertake a Strategic Review and had appointed BDO LLP as its financial adviser for the Strategic Review and formal sale process including for the purposes of Rule 3 of the Takeover Code; and
- (ii) To reduce costs further, whilst retaining appropriate skills and resources to be able to conduct the Strategic Review process effectively, continue to sell products and to support new and existing customers and partners.

As at 31 December 2020, the Group's cash & cash equivalents had reduced to approximately £398k (with nil structural debt). As of 30 June 2020, Microsaic held retained losses of £24.3m.

New Board sees potential to increase higher value-added recurring revenue streams

Following completion of the proposed Transaction, the new Board of Directors intends to explore options that may contribute to lower development costs and introduce potential to increase higher value recurring revenue streams including:

- Collaboration and co-operation for the establishment of a global commercialisation footprint, along with joint development partnerships based on further advances to Microsaic's existing products and technology;
- Investigation of greater use of maintenance contracts which are treated as operating expenditure for clients;
- Development and in-licencing of advanced data aggregation and AI analysis with potential to enable the offering of new, premium services which may increase revenue per client and gross margin; and
- Extending sales, marketing and distribution agreements on a shared revenue basis with existing clients and external partners in the life sciences and environmental services sectors.

This reflects not only confidence in the long-term global sales opportunity offered by Microsaic's unique protected product portfolio, but also opportunity for its modernisation as well as expectation of high value utilisation of mass spectrometry around the globe for viral detection and drug bioprocessing, amongst other things, will have been heightened substantially by the Pandemic. In this respect, the new Board considers the Group's natural next step beyond the simply selling of 'kit', includes many service-based opportunities across life/environmental science, with a network of distribution channel partners providing global reach while also forming part of a supply chain that contributes to solving large societal problems and needs. Highly targeted product development is expected to support the technology's competitive position in key markets while enhancing gross margins.

A [2018 report](#) by Fortune Business Insights forecast the global MS market to exhibit 7.8% CAGR from 2019 to 2026, creating a market valued at over US\$10.0 billion by 2026, powered by rising R&D in molecular therapeutics with North America continuing to dominate sales. This is expected to have expanded substantially further as a result of the Pandemic. Prominent players in the existing sector include [Shimadzu Corporation](#), [Agilent Technology](#), [Waters](#), [Thermo Fisher Scientific](#), [AB Sciex](#) and [PerkinElmer](#), whose offerings include the hybrid mass spectrometer (ranging [Tandem Quadrupole](#), [Quadrupole TOF](#), [FTMS](#)) and single mass spectrometer (ranging [Single Quadrupole](#), [Single TOF](#), [Ion Trap](#)).

Based on end-users, market segments include pharmaceuticals/biopharmaceuticals companies, research and government institutes, hospitals and diagnostic centres within environmental testing, food and chemicals industries. Microsaic's current offering is centred on the Single Quadrupole, of which TDA consultants in a upstream biologics report estimated provided it with a then addressable market valued at US\$800m (Source: Microsaic January 2021 Investor Presentation). Microsaic has already been expanding its numbers of OEM partner and sales channels in order to capture its available opportunity; starting with 1 OEM Partner in 2017, by end-2020, this had risen to an international mix of 4 OEM Partners and 8 Distributors which servicing customers in North America, Europe, China, SE Asia and Japan.

Microsaic's technological advantage in mass spectrometry

Mass spectrometry is an analytical technique that is used to measure the mass-to-charge ratio of ions. The results are typically presented as a mass spectrum, which is a plot of intensity as a function of the mass-to-charge ratio. MS is used in many different fields and is applied to pure samples as well as complex mixtures. Their spectra are used to determine the elemental or isotopic signature of a sample, the masses of particles and of molecules, and to elucidate the chemical identity or structure of molecules and other chemical compounds. Specific applications of mass spectrometry include drug testing and discovery, viral/pathogen/protein identification, food contamination detection, pesticide residue analysis, isotope ratio determination and carbon dating.

Mass Spectrometry tackling the challenges of viral outbreaks, including COVID-19

High volume, active use of MS is particularly relevant with respect to the future of virus detection, including COVID-19. As corona virus disease is a rapidly growing public health crisis across the world, knowledge of meaningful diagnostic tests and treatment for SARS-COV-2 continues to evolve rapidly. The disease can be diagnosed using [RT-PCR](#), but inadequate access to reagents, equipment, and a nonspecific target has been responsible for slowing disease detection and management. Precision medicine/individualised patient care,

require suitable diagnostics approaches to tackling the challenging aspects of viral outbreaks where many tests are needed with a rapid and deployable approach.

MS-based technologies such as proteomics, glycomics, lipidomics, and metabolomics have been applied in disease outbreaks for identification of infectious agents such as virus and bacteria and the molecular phenomena associated with pathogenesis. Matrix-assisted laser desorption ionization time-of-flight mass spectrometry, for example is widely used in clinical diagnostics in the United States and Europe for bacterial pathogen identification. More recently, [paper spray ionization mass spectrometry](#) ('PSI-MS') has emerged as a technology with the capability to directly identify known pathogens from the clinical specimens along with potential to identify genetic evidence of undiscovered pathogens. Miniaturised and point-of-need MS, such as those offered by Microsaic moreover, offers greater flexibility with a relatively fast, highly sensitive, potentially portable on-location means of analysis.

Significantly in this respect, on [30 September 2020](#), [Avacta Group plc](#) (AIM: AVCT), the developer of innovative cancer therapies and diagnostics based on its proprietary [Affimer®](#) and [pre|CISION™](#) platforms, announced that a bead-assisted mass spectrometry ('BAMS') assay to detect the SARS-CoV-2 virus has been launched as a research kit by its partner [Adeptrix](#) (Beverly, MA, USA) and that the assay has been presented by [Bruker Scientific](#) (Billerica, MA, USA) in an [application note](#). Using Affimer reagents specific to the SARS-CoV-2 virus to capture the virus spike protein from the sample, rapid detection can be completed using existing mass spectrometry instruments available not only in hospitals and laboratories, but now significantly also on-location and at point of need. Establishing that up to one thousand samples per day might be analysed by a single technician using BAMS, this suggests an attractive high throughput, low-cost mass spectrometry technique for COVID-19 diagnosis and research.

Point-of-need mass spectrometry

Microsaic is the first company to offer to miniaturised MS for point-of-need use, making the facility available to a much wider range of possibly mobile, locations and a broader spread of users without loss of technical capabilities. Real-time, point-of-need MS enables faster decision-making during analysis workflow. Providing immediate insights from complex sample and reaction information, MiD® systems enable the user to achieve their desired product quality, optimise processes, and ensure faster process compliance. Utilising micro-engineering principles, its patented chip-based technology enables analytical detection and characterisation whether within a conventional laboratory setting, or an external bioprocessing facility. Simple to use and maintain, with no prior knowledge of MS required, the technology provides users and process operators with access to continuous data at all stages of their workflow.

Identifying and characterising the components of a chemical or biological process, MS detection enables users to make decisions to adjust, optimise and control their analysis in real-time, rather than losing days and money sending samples to a centralised facility. Microsaic technology provides processing and manufacturing agility, as well as overall laboratory and commercial manufacturing productivity. Its critical quality attributes, a particular concern for biologics, also offer diagnostics and research organisations (such as [pharmaceutical \(small molecule\)](#) and [biopharmaceutical \(large molecule\)](#)) additional convenience leading to time, resources and materials savings.

Microsaic's [MiD® Platform](#)

MiD® systems offer a one box solution for MS detection. Using miniaturised chip-based technology, Microsaic's patented MiD® products and integrated software provide immediate insights into biological or chemical samples and reactions, allowing the user to make quick decisions in real-time to optimise conditions and control processes more easily.

The base 4500 MiD® detector can be applied across small molecules, large molecules (including bioprocessing) and for liquid handling. It combines a vacuum system, electronics and computer technology in one unit. Not requiring a floor pump, it can be installed where other mass spectrometers cannot be simply deployed, while retaining the performance of a conventional mass spectrometer system. The addition of the Microsaic MiDas™ compact interface sampling module means the 4500 MiD® can be utilised in on-line, at-line and off-line applications.

Featuring Microsaic's three main patented chip-based technologies, the ionchip®, spraychip® and vac-chip™, the 4500 MiD® is reliable, robust, and user-friendly, with increased mass range, a completely tool-less front-end for enhanced control, an intuitive and robust user interface, and improved electronics. Having increased its the mass range to 1400 m/z ('mass divided by charge') a new range of applications were opened, including peptide analysis using Nano LC-MS, which is ideal for the detector's extremely efficient electrospray ionization ('ESI') source, and its strong propensity towards multiple charging, while also offering reduced solvent, nitrogen and power consumption to lower operating costs, thereby providing a greener solution for mass detection.

Microsaic – Mass Spectrometry Product Offering

PRODUCT OVERVIEW



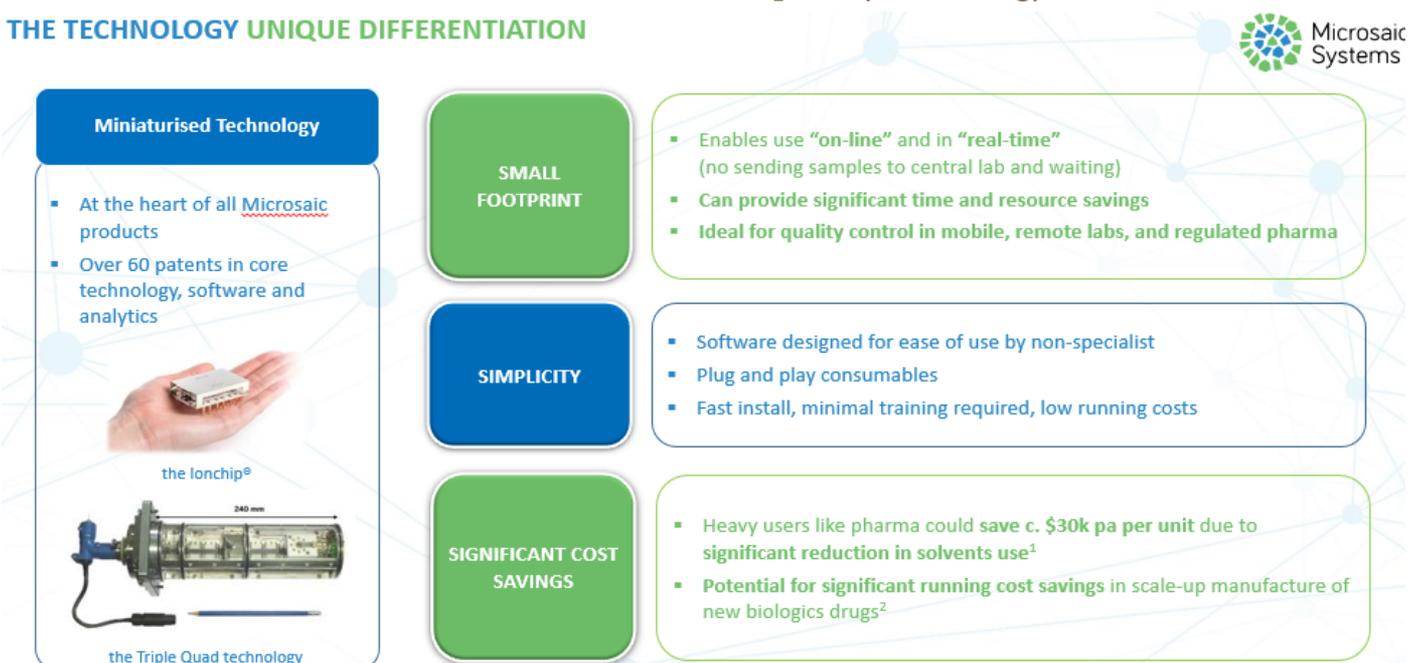
Source: Microsaic Systems 2021

4500 MiD[®] Key product benefits

- Small footprint enables deployment anywhere within laboratory or processing facilities
- Fully integrated and robust system, with no external vacuum pumps, and no external PC
- Easy to use, simply ‘plug and play’ consumables
- Integrated software designed for rapid set up and data analysis
- “Remote operating” software module for fast and effective third-party equipment integration
- Low operating cost, due to reduced power and N2 gas consumption
- Low maintenance costs with completely tool-less front-end

Microsaic – Differentiated Proprietary Technology

THE TECHNOLOGY UNIQUE DIFFERENTIATION



¹ Poster by GSK, shown at Pittcon, demonstrating nano-LC 2020

² Ongoing activity with CPI and MIT

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Source: Microsaic Systems 2021

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