This report provides an insight into current business activity in Maritime Autonomous Systems (MAS) in the UK. It has been compiled by the Society of Maritime Industries’ MASG Council.

The data for this report was collected in the form of an on-line questionnaire sent to senior managers of UK businesses in the maritime engineering sector.

Summary of Findings:

- 54 organisations responded to this survey, 13% of which reported MAS as responsible for more than 50% of their turnover.
- 37% of the organisations were manufacturers, 33% service providers and 20% integrators
- A basis calculation gives a turnover of £576m, an increase of 12.2% over 2016.
- 24% of respondents said that MAS accounted for more than 50% of their business
- 38% said that exports accounted for more than half their business.
- Surprisingly for a relatively new sector 79% of companies had been working in this field for more than 4 years.
- MAS companies were working in a wide range of applications with defence, oil/gas and maritime security being the top three.
- 70% of respondents employ less than 10 people on MAS activity
- More than 40% of respondents cited Europe as their main market which could have implications for future growth dependent on the BREXIT trade negotiations
- Lack of people with the appropriate skills, finance and the low oil price is impacting on the sector and holding back growth.
- Looking ahead to 2025, respondents predict substantial growth in the number of people employed on MAS.
Company Overview:

54 organisations had responded to the survey questionnaire and, surprisingly for such a new area of business, 21 respondents had been involved with maritime autonomous systems (MAS) for more than 5 years. In comparison to last year there has been an increase in companies new to the MAS sector.

Main Business Areas:

37% of response came from manufacturers (sensor, platform & sub system) which was closely followed by service providers at 33% and 20% from integrators. However, there were also contributions from academic institutions, agent/distributors (e.g. equipment supplier).
Turnover:

Respondents were asked to state their annual turnover in MAS activity and 2 respondents reported more than £50 million. Respondents were then invited to state this figure as a proportion of their organisation’s overall turnover and 13% derived more than half their sales from MAS, but overall it is still a small part of most organisation’s business. A crude estimation of the sector’s UK turnover suggested overall sales of £311m (£200M 2016). Taking a base of 100 the comparative figures are £513m (2016) versus £576m (2017), an increase of 12.2%. A reasonable growth rate for a new technology which has still to develop its full potential, reflected in the answers to the question on growth to 2025.
Export Sales:

11 respondents reported that all their sales were derived from overseas between 51 and 100%. However, 59% said that they had no or negligible overseas earnings which was probably more a reflection of the relative immaturity of the global market at this time.

![Pie chart showing export sales](chart)

**Figure 5: Export Sales**

Employment:

70% of respondents employ 10 people or less on MAS activity which is to be expected for a relatively new market sector, however, this is a 100% increase from last year. Moreover, 7 respondents claim to employ 50+ employees which is an increase from last year.

![Bar chart showing employment](chart)

**Figure 6: How many employees work in MAS**
MAS Applications:

There has been a substantive take up of MAS technology in defence and maritime security applications followed by a strong showing in oil and gas. Marine science research and environmental monitoring use was also significant. This year’s survey introduced the option of commercial shipping and 14 respondents indicated that this was a business area of importance to them.

![Figure 7: MAS Market Sectors](image)

**Market Activity:**

When asked to select the main application for their products and services the defence and oil/gas sectors accounted for 50% of responses. This is lower than 2016 by 10% meaning other market sectors are emerging as the technology develops.

![Figure 8: Main Market Sector](image)
Export markets:

More than 40% of responses cited Europe (excluding UK) as the main market destination which could have implications for future growth in this region depending on the eventual trading relationship the UK negotiates with the European Union but there was a significant number of respondents who claimed that they didn’t export outside the UK (50%). There was a fairly even spread across the other regions of the world with the USA/Canada and Asia-Pacific having a similar importance for respondents. Respondents were asked to give the main region in which they trade and somewhat unexpectedly the majority claimed that this was not applicable to them implying that exporting had decreased from last year. Europe was mentioned as the main region for exports with 24% but realistically there aren’t huge variations between the remaining regions.
Factors which have had an effect on Business growth:

A distillation of the comments made suggest a broad range of factors which the MAS sector believes are holding them back. In no particular order:

- Lack of government drive for UK based solutions is stalling UK companies especially when programmes are stopped during developments
- Potential regulatory barriers and the legal status of current MAS operations
- Recruitment of people with the right skills
- A public perception that autonomy might not be beneficial to society in the long term
- Public R&D funding does not meet the needs of this particular sector

A number of comments were made that the UK government could play its part by setting procurement rules for the acquisition of seabed data to be achieved using autonomous systems. There was also concern expressed that some other countries were moving faster on designating areas for commercial autonomous operations particularly in coastal shipping. In terms of R&D funding, whereas it was acknowledged that there was support for many of the technology developments in robotics and artificial intelligence, it was translating this into maritime applications which was being slowed down through limited resources, particularly amongst the SMEs which dominate this sector.

Have the following had a negative effect on your MAS business over the past 12 months?

*Figure 11: Negative effects on MAS Business*
MAS employment Growth:

A total of 29 respondents believe that by 2025 they will have 0-10 employees working on MAS projects implying that the MAS Sector is set to grow. Positively, 18 respondents think that it is likely that they will have 11-100 and 5 companies believe they will have 100+ which is an increase from last year. But more importantly by 2025, respondents cited factors out of their control which could impact on a given companies employment rates and their ability to employ new staff.
About this Survey

Maritime Autonomous Systems (MAS) cuts across many of the interests of members of the Society of Maritime Industries (SMI). MAS impinges on operations in marine science research, the offshore energy market, deep sea mining, delivering a seismic shift in maritime warfare and security operations, and in maritime transport, where autonomy has the potential to improve the integration and effectiveness of both cargo and passenger transport. Across all of these areas, the UK looks to take a leading position, driven by development of the required technology, evolving the regulatory environment and ensuring we sustain the cutting-edge skills and knowledge already present in our industrial and academic bases.

In 2016 SMI took the decision to create a new interest group to focus on the business of MAS and formed a MAS Group Council of member experts to guide future policy. One of the Council’s first actions was to commission a base line survey of UK companies in the MAS sector to provide an insight into current business activity and this survey is the second in the series.

The data for the 2017 report was collected in the form of a questionnaire emailed to senior managers of UK businesses currently active in the MAS sector.

The collection, processing and presentation of this data was performed by Katie Gascoyne and Ava Catton of SMI.

We appreciate the support of the Society for Underwater Technology (SUT) and Subsea UK in circulating this report to its members.

About

*The Society of Maritime Industries* is the voice of the UK’s maritime engineering and business sector promoting and supporting companies which build, refit and modernise commercial and naval vessels, and supply equipment and services for all types of ships and underwater vehicles, ports and terminals infrastructure, offshore oil & gas, maritime security and safety, marine science and technology, maritime autonomous systems and marine renewable energy.

*The MASG Council* sets the policy and guides the activities for the maritime autonomous systems market area within the Society of Maritime Industries, utilising the extensive expertise of its members.

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