# Quadrise

## Pathway to marine revenues and scale-up

**Quadrise has made a significant step towards commercialisation, through which its innovative emulsion fuel technology will contribute to the decarbonisation of the marine sector. The company announced that it has signed a Collaboration and Operational Trial Agreement (the project agreement) with MSC Shipmanagement and Cargill, paving the way for the highly anticipated vessel trials on board the MSC Leandra. The market recognised the significance of this agreement, with Quadrise's stock price rallying by approximately 50% on the day of the announcement.**

### Outcomes of the agreement

As part of the agreement, Quadrise will provide the equipment, additives and technical expertise of its technology and marine fuel application. MSC will provide the trial vessel, necessary flag state approvals for marine fuel application and professional monitoring services, while Cargill will provide the required feedstocks, transportation of fuels and operational local permitting logistical support. Quadrise's bioMSAR and MSAR fuels will be produced at the MAC$^2$ facility in Antwerp, Belgium, using feedstocks supplied by Cargill and then sold by Cargill to MSC for the trial. All parties will work towards completing 4,000 hours of bioMSAR testing onboard the MSC Leandra to work towards a Letter of No Objection (LONO) from engine manufacturer Wärtsilä. This will allow Quadrise to use its emulsion technology on all Wärtsilä engines of the same specification without the need for further trials.

### Initial next steps

Next steps include the installation of Quadrise's equipment at the MAC$^2$ facility, which has already received the required operating permits for the installation. This is expected to be completed in Q125, allowing the trial to commence by the end of Q125. Bilateral agreements, including a toll manufacturing agreement between Cargill and Quadrise in respect of fuel manufacture, are expected by management to shortly follow the signing of the project agreement. After a successful trial, MSC, Cargill and Quadrise will negotiate/enter into a definitive long-term commercial agreement.

### Outlook: Decarbonisation and commercialisation

This strategic collaboration could represent a pivotal inflection point for Quadrise, positioning it to accelerate its transformative decarbonisation strategy within the marine transportation sector, while simultaneously establishing a scalable revenue model leveraging its proprietary alternative energy technologies.

**Historical performance**

| Year end | Revenue (£m) | EBITDA (£m) | PBT* (£m) | EPS* (p) | DPS (p) | P/E (x) |
|---|---|---|---|---|---|---|
| 06/23 | 0.00 | (3.0) | (3.1) | (0.21) | 0.00 | N/A |
| 06/24 | 0.00 | (2.6) | (2.8) | (0.16) | 0.00 | N/A |

Source: Company accounts. Note: *PBT and EPS are normalised, excluding amortisation of acquired intangibles, exceptional items and share-based payments.

**Alternative energy**

**9 December 2024**

| | |
|---|---|
| **Price** | **4.25p** |
| **Market cap** | **£65m** |

**Share price graph**




**Share details**

| | |
|---|---|
| Code | QED |
| Listing | AIM |
| Shares in issue (pre-placing and open offer) | 1,541m |
| Net cash at end-June 2024 | £3.0m |

**Business description**

Quadrise provides energy transition technologies that harness emulsion chemistry and expertise to create lower-cost, lower-carbon and lower-emission fuel solutions for energy-intensive industries, as they move from conventional fuels, on their decarbonisation journey.

**Bull**

- bioMSAR produces better $CO_2$ and NOx emissions reductions and cost savings than existing biofuels.
- Adoption of MSAR improves economics of downstream and upstream operations, while providing lower-cost fuel for consumers.
- Adoption of Quadrise's technology reduces costs after operations and emissions in marine bunker, industrial and power markets.

**Bear**

- Economics of adoption dependent on oil and competing biofuel product spreads.
- Ability to progress trials adversely affected by many factors outside Quadrise's control.
- Size of company limits number of projects that can be progressed at any one time.

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# Marine trials positive for operational progress

## Background

Quadrise is an innovator and global supplier of emulsion technology that produces a synthetic, enhanced fuel oil called MSAR and a new biofuel called bioMSAR. The technology provides lower-cost and cleaner energy solutions for the marine, power and industrial sectors to accelerate the transition to a lower-carbon future. In this note we focus on Quadrise's immediate opportunity within the marine sector after signing the project agreement with MSC and Cargill.

## Opportunity within MSC and beyond

The project agreement with MSC and Cargill represents a significant strategic opportunity for Quadrise. MSC is the world's largest container shipping company, with a total of 876 vessels in its fleet today. 273 of those have two-stroke engines with electronic fuel injection and are therefore good candidates for the adoption of Quadrise's technology and fuels.

Having already secured an interim LONO for MSAR from Wärtsilä for the 2S Flex 96 engine, Quadrise is confident in the success of the bioMSAR LONO trial, as bioMSAR has similar fuel properties to MSAR and the same trial vessel is being used as in the original MSAR LONO trial. Quadrise expects these LONOs to be applicable to a wider range of Flex engine models.

The following table provides and illustrates a high-level scenario analysis based on data from the company on the size of the opportunity for Quadrise, initially with MSC and Wärtsilä Flex engines, then to other marine sector clients with Wärtsilä Flex engines and finally including all vessels with potentially compatible engines.

**Exhibit 1: Potential commercial opportunity with MSC**

| | Number of vessels | Estimated fuel quantity '000s Mt/year* | Number of MMUs |
|---|---|---|---|
| MSC vessels with Wärtsilä Flex engines | 23 | 345 | 2 |
| All vessels with Wärtsilä Flex engines (including MSC) | 441 | 6,615 | 27 |
| Total addressable market | 12,000 | 96,000 | 384 |

Source: Quadrise, Edison Investment Research. Note: *Fuel oil equivalent.

The total addressable market for Quadrise's innovative fuel technology comprises vessels over 10,000 gross tons with specific engine requirements that would require minimal vessel modifications. This equates to approximately 12,000 vessels, representing roughly 11% of the global fleet by vessel count and approximately 40% of global installed diesel engine power capacity (in MW). In order to target vessels with engines other than the Wärtsilä Flex engines covered by the forthcoming LONO, additional LONO trials may be required.

## Prospective financial implications

Each Multifuel Manufacturing Unit (MMU) operating at full capacity can generate sales of up to 250k Mt/year fuel oil equivalent of MSAR and/or bioMSAR interchangeably. Assuming Quadrise acts solely as a technology licensor, each MMU could generate up to $16m in revenue and $2.4m in EBITDA.

With commercial sales underway following a successful LONO trial, Quadrise would seek to scale up the roll-out of its technology as rapidly as possible. The Quadrise team is active in seeking scale-up partners including delivery partners with operational capabilities, channel partners to access shipowners and licensing partners to scale up supply of fuels, to allow the company to maximise its potential as quickly as possible.

## Regulatory changes within the marine sector

The introduction of marine legislation by the European Union (EU) and International Maritime Organization (IMO), aimed at reducing greenhouse gas (GHG) emissions, underscores Quadrise's significant strategic opportunity in providing cleaner and more cost-effective MSAR and bioMSAR fuels to decarbonise the shipping industry.

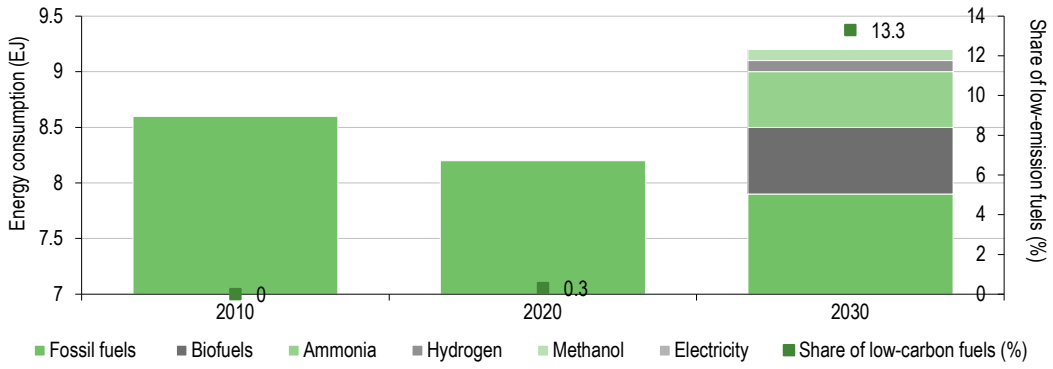
The EU emissions trading system (ETS) addresses take-to-wake $CO_2$ emissions. ETS provides a progressive decarbonisation pathway for a 70% reduction in EU emissions by 2025, and a comprehensive 100% reduction by 2026.

The FuelEU Maritime initiative targets a 2% GHG reduction versus 2020 baseline levels by 2025, escalating to a 6% GHG reduction by 2030. Concurrently, the IMO and International Convention for the Prevention of Pollution from Ships (MARPOL) are imposing a 0.1% sulphur limit in the Mediterranean by 2025, as well as implementing global GHG standards and carbon pricing mechanisms by 2027. The introduction of a ban on heavy fuel oil in the Arctic by 2029, coupled with a targeted 20–30% GHG emissions reduction against a 2008 baseline, are also key indicators to reduce industry emissions and highlight the need for Quadrise's low-emission fuel technology. These regulatory developments validate the importance that Quadrise's innovative low-emission fuel technology could play in decarbonising the shipping and marine industry, especially given that Quadrise's technology can be implemented with minimal adoption time and at low cost compared to other carbon-reduction technologies.

Supporting these regulatory trends, a comprehensive report by the International Energy Agency (IEA) highlights the required percentage share of low-emission fuels within the shipping industry by 2030 under its Net Zero Scenario (see Exhibit 2). The study reveals that the shipping industry faces a substantial challenge in meeting decarbonisation targets without immediate and decisive action. Specifically, while low-emission fuels made up less than 1% of shipping industry fuel consumption in 2020, the IEA's Net Zero Scenario mandates an increase to more than 13% by 2030.

This context further emphasises the strategic significance of the project agreement between Quadrise, MSC and Cargill. Quadrise is therefore well positioned not only to offer a more economical and environmentally sustainable fuel solution but also to do so when maritime decarbonisation has become the sector's principal strategic objective.

**Exhibit 2: Energy consumption in international shipping by fuel in the Net Zero Scenario, 2010–30**




Source: International Energy Agency, Edison Investment Research

## Comparative advantages over alternative fuel options

Amid escalating regulatory mandates targeting maritime carbon emissions, vessel conversions to next-generation alternative fuels such as hydrogen, ammonia or methanol present significant

operational and financial challenges. These conversions require prolonged vessel decommissioning and substantial multi-million-dollar engine retrofitting investments. Such comprehensive refits not only impose considerable capital expenditure on maritime operators but also generate substantial opportunity costs through revenue interruption, potentially causing systemic disruption across the global shipping ecosystem.

Quadrise's innovative MSAR and bioMSAR fuels offer a compelling alternative, enabling shipping companies to materially reduce GHG emissions while circumventing expensive and operationally disruptive vessel upgrades. The proprietary technology requires a relatively low-cost fuel booster unit installation, which can be seamlessly implemented during standard vessel operations, thereby minimising commercial interruptions. Specifically, bioMSAR demonstrates an immediate 25% GHG reduction potential, with promising future improvements, while MSAR presents a 5–10% GHG emissions reduction pathway at minimal incremental cost, simultaneously extending the economic utility of existing maritime assets. Quadrise's water-based emulsion fuels also burn efficiently at lower temperatures, reducing black soot from engine exhausts and harmful NOx emissions by up to 45%.

Quadrise's fuels offer cheaper, cleaner and more efficient alternatives to conventional fuels and biofuels. Per unit of energy, MSAR and bioMSAR are 10% cheaper compared to heavy fuel oil and similar marine biofuels, respectively. Quadrise's innovative technology allows for conversion of the lowest-value fraction of the oil barrel into a high-quality product by emulsifying it with water, avoiding the need for expensive distillates. This reduces fuel and refinery production costs by 10–20% per unit of energy.

MSAR and bioMSAR are compatible with existing fuel infrastructure and require only minimal modifications to vessels prior to usage, thereby offering an attractive solution to the marine market as it adapts to growing decarbonisation pressures. Quadrise's fully net zero fuel, bioMSAR Zero, is currently in development and will further position the company at the forefront of decarbonising energy-intensive industries such as the marine, power and industrial sectors.

**Exhibit 3: Financial Summary**

| £000s | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|
| Year end 30-June | IFRS | IFRS | IFRS | IFRS | IFRS |
| **INCOME STATEMENT** | | | | | |
| Revenue | 0 | 17 | 75 | 0 | 0 |
| EBITDA | (3,006) | (2,752) | (2,671) | (2,953) | (2,592) |
| Operating Profit (before amort. and except.) | (3,178) | (2,887) | (2,791) | (3,072) | (2,797) |
| Amortisation of acquired intangibles | 0 | 0 | 0 | 0 | 0 |
| Exceptionals | (1,199) | (1,266) | (13) | (6) | (35) |
| Share-based payments | (474) | (303) | 44 | (178) | (260) |
| Reported operating profit | (4,851) | (4,456) | (2,760) | (3,256) | (3,092) |
| Net Interest | (139) | 46 | (2) | 8 | 23 |
| Profit Before Tax (norm) | (3,317) | (2,841) | (2,793) | (3,064) | (2,774) |
| Profit Before Tax (reported) | (4,990) | (4,410) | (2,762) | (3,248) | (3,069) |
| Reported tax | 147 | 150 | 164 | 154 | 209 |
| Profit After Tax (norm) | (3,170) | (2,691) | (2,629) | (2,910) | (2,565) |
| Profit After Tax (reported) | (4,843) | (4,260) | (2,598) | (3,094) | (2,860) |
| Minority interests | 0 | 0 | 0 | 0 | 0 |
| Discontinued operations | 0 | 0 | 0 | 0 | 0 |
| Net income (normalised) | (3,170) | (2,691) | (2,629) | (2,910) | (2,565) |
| Net income (reported) | (4,843) | (4,260) | (2,598) | (3,094) | (2,860) |
| Average Number of Shares Outstanding (m) | 982.8 | 1,175.4 | 1,406.9 | 1,406.9 | 1,601.0 |
| EPS - normalised (p) | (0.32) | (0.23) | (0.19) | (0.21) | (0.16) |
| EPS - diluted normalised (c) | (0.32) | (0.23) | (0.19) | (0.21) | (0.16) |
| EPS - basic reported (c) | (0.49) | (0.36) | (0.18) | (0.22) | (0.18) |
| Dividend per share (p) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **BALANCE SHEET** | | | | | |
| Fixed Assets | 3,506 | 3,384 | 3,322 | 3,298 | 3,471 |
| Intangible Assets | 2,924 | 2,924 | 2,924 | 2,924 | 2,924 |
| Tangible Assets | 582 | 460 | 398 | 374 | 388 |
| Investments & other | 0 | 0 | 0 | 0 | 159 |
| Current Assets | 2,766 | 7,279 | 4,703 | 1,724 | 3,257 |
| Stocks | 61 | 61 | 0 | 174 | 0 |
| Debtors | 213 | 117 | 103 | 89 | 118 |
| Cash & cash equivalents | 2,380 | 7,006 | 4,423 | 1,342 | 3,048 |
| Other | 112 | 95 | 177 | 119 | 91 |
| Current Liabilities | (2,243) | (276) | (262) | (175) | (397) |
| Creditors | (198) | (276) | (262) | (175) | (239) |
| Tax and social security | 0 | 0 | 0 | 0 | 0 |
| Short term borrowings | 0 | 0 | 0 | 0 | 0 |
| Convertible securities | (2,045) | 0 | 0 | 0 | (158) |
| Long Term Liabilities | 0 | 0 | 0 | 0 | (43) |
| Long term borrowings | 0 | 0 | 0 | 0 | 0 |
| Other long term liabilities | 0 | 0 | 0 | 0 | (43) |
| Net Assets | 4,029 | 10,387 | 7,763 | 4,847 | 6,288 |
| Minority interests | 0 | 0 | 0 | 0 | 0 |
| Shareholders' equity | 4,029 | 10,387 | 7,763 | 4,847 | 6,288 |
| **CASH FLOW** | | | | | |
| Op Cash Flow before WC and tax | (3,072) | (2,752) | (2,671) | (2,953) | (2,592) |
| Working capital | (140) | 191 | (21) | (189) | 237 |
| Exceptional & other | 65 | 7 | 5 | (10) | (11) |
| Tax | 147 | 150 | 164 | 154 | 209 |
| Net operating cash flow | (3,000) | (2,404) | (2,523) | (2,998) | (2,157) |
| Capex | (24) | (29) | (58) | (95) | (98) |
| Acquisitions/disposals | 0 | 0 | 0 | 0 | 0 |
| Net interest | 1 | 46 | (2) | 8 | 32 |
| Equity financing | 2,343 | 6,513 | 0 | 0 | 4,037 |
| Dividends | 0 | 0 | 0 | 0 | 0 |
| Other | 0 | 0 | 0 | 4 | (108) |
| Net Cash Flow | (680) | 4,126 | (2,583) | (3,081) | 1,706 |
| Opening net debt/(cash) | (1,060) | (2,380) | (7,006) | (4,423) | (1,342) |
| FX | 0 | 0 | 0 | 0 | 0 |
| Other non-cash movements | 2,000 | 500 | 0 | 0 | 0 |
| Closing net debt/(cash) | (2,380) | (7,006) | (4,423) | (1,342) | (3,048) |

Source: Quadrise accounts, Edison Investment Research

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