MSAR® - a clean solution to a global problem

2020 ANNUAL GENERAL MEETING - BUSINESS UPDATE

Quadrise Fuels International plc

INVESTOR MEET COMPANY

27 November 2020



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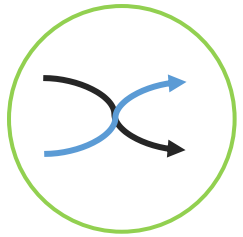
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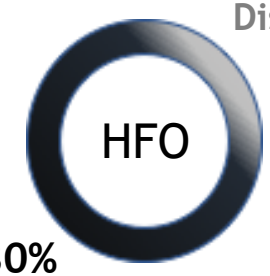
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Heavy Fuels & Crude Oils

A Global Problem







Oversupply

- Producers and refineries make too much heavy oil
- Recent 2020 IMO regulations reduces demand

Uneconomic

- Heavy fuel oil sells at a discount to crude oil[1]
- Diluents are used for blending (to lower viscosity)

Polluting

- Consumes energy to handle & use
- Hard to burn, with harmful emissions

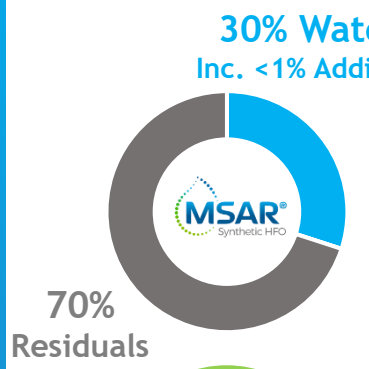
US$135 billion of heavy fuel oil (HFO) is sold annually[2]

1. OPEC Annual Statistical Bulletin 2020

2. BP Statistical Review of World Energy 2020

MSAR® technology eliminates the need for oil diluents

A Unique Solution



✓ Reducing HFO oversupply by ~30% using water



✓ Saving refinery distillates, providing cheaper energy



✓ Cleaner to use and burns like a gas

… through the innovative use of proven emulsion systems and surface chemistry, building on over a decade of commercial experience (Orimulsion®), with new sustainable solutions …



Global Opportunities

We access the global market cost-effectively directly & through carefully selected partners

MSAR® APPLICATIONS

REFINING

UTILITIES

INDUSTRY

MARINE

UPSTREAM



US$135 billion of heavy fuel oil (HFO) is sold annually*

* BP Statistical Review of World Energy 2020

Global Opportunities

Key QFI Projects



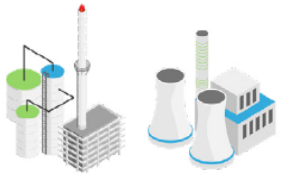
INDUSTRY

International Chemicals & Mining Group, Morocco



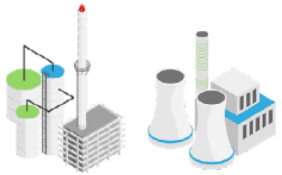
UPSTREAM

Greenfield Energy LLC (Valkor-Tomco), Utah USA



REFINING UTILITIES

National Oil Company & Utility, Ecuador



REFINING UTILITIES

National Oil Company & Utility, Kingdom of Saudi Arabia



MARINE

Major ShipCo's, Global Marine Fuel



Sustainable Solutions, Global Applications

Business Update

MOROCCO

Industrial

International Chemicals & Mining Group

- A fuel oil replacement opportunity (~1-2 MMUs)
- Multiple sites and industrial applications in Morocco
- Agreement signed 28 Nov 2019 (pilot trial & studies)
- Phase 1 pilot trial planned Q1’20 delayed (Covid-19)
- Phase 2 study work was started to maintain schedule
- The pilot trial was completed in October over 3 days, as soon as site access was granted – against an original schedule of 2 weeks
- Joint decision was reached with the client to bring forward a ~60mt commercial scale “industrial trial” at a new site, which was originally planned after Phase 2
- This will materially de-risk the Phase 2 work





Business Update

MOROCCO

Industrial

International Chemicals & Mining Group

Next steps:

- Finalise amendments to existing agreement
- Preparations for trial site and new MSAR® equipment
- Preparing fuel manufacture and logistics for Q1’21 supply

Plan for 2021:

- Q1’21 Industrial trial & Phase 2 studies completed
- Q2’21 Commercial trials completed
- H2’21 MSAR® fuel supply agreement
- Potential commercial testing of green MSAR®



Business Update

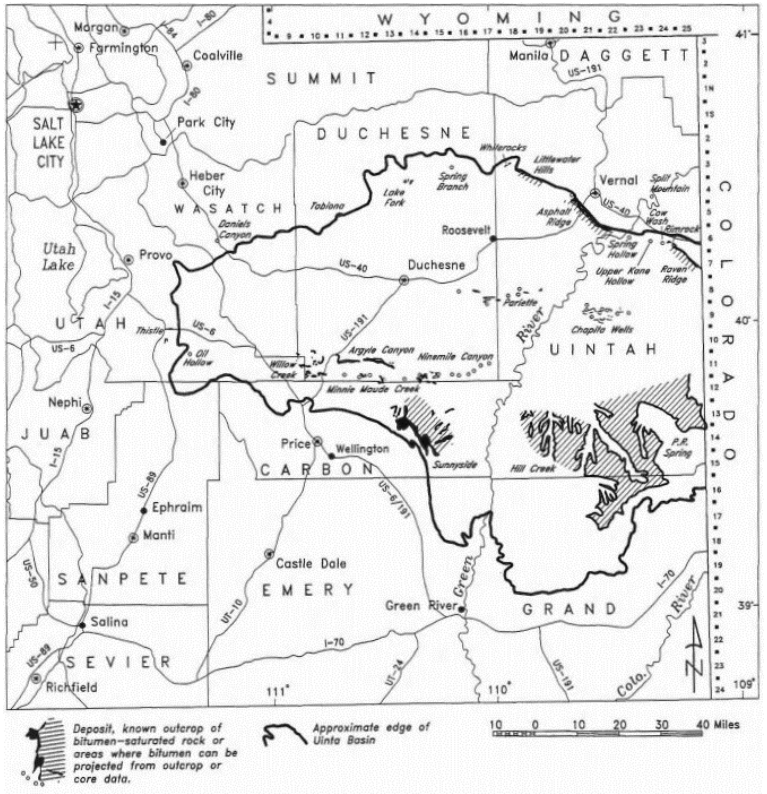
UTAH, USA

Upstream

Greenfield Energy LLC (Tomco/Valkor)

- Heavy oil upstream application with potential to produce 0.5%S compliant MSAR® from asphalt
- MOU with Valkor - Feb 2020
- Agreement with Greenfield Energy LLC - Aug 2020
  - Greenfield (JV between Valkor & TomCo Energy plc)
  - Greenfield operate the Petroteq Oil Sands Plant ("POSP") and have signed a multi-site license agreement for Petroteq's oil sands technology
- POSP due to start up shortly
- Commissioning of POSP expected to take 2 weeks





Source: www.tomcoenergy.com

Business Update

UTAH, USA

Upstream

Greenfield Energy LLC (Tomco/Valkor)

Next steps:

- MSAR® trial equipment is prepared and ready to ship (awaiting Greenfield instruction)
- Confirmatory testing at QRF – still awaiting asphalt samples from POSP (eta Dec '20/Jan '21)

Plan for 2021:

- Q1 '21: Completion of QRF testing & report
- Q1 '21: Commercial MSAR® demonstration at Petroteq Oil Sands Plant, Utah
- Q2 '21: Commercial MSAR® site license agreement
- H2 '21: Supply MSAR® facilities under license (10,000bpd asphalt = ~15,000bpd MSAR®)



Source: petroteq.energy

Business Update

ECUADOR

National Oil Companies & Utilities

Ecuador (with Freepoint Commodities)

- Refinery refueling & national utilities application, future exports with Freepoint and upstream potential
- Meetings held at HQ and refinery in Q1’20
- MSAR® proposal issued for refinery & utility in Q2’20
- Presentation to Upstream SPE Ecuador in Q3’20
- Agency agreement signed with Pacific Green Technologies Inc (flue gas scrubbers for marine & land)
- Project currently on hold pending outcome of proposed tender for refinery operation and planned re-organisation of the energy sector
- Briefings submitted to Government Energy Secretary



Business Update

AMERICAS

National Oil Companies & Utilities

Americas – Other activities

- Bi-lingual White Paper & website updates completed, formal launch is planned for next week
- Redliner: Mexico multi-site refinery study pending, briefings submitted to NOC downstream director
- Agency agreement signed with Energy & Petroleum Consultants, for Central/South America & Caribbean
- Discussions ongoing with other potential stakeholders in the region



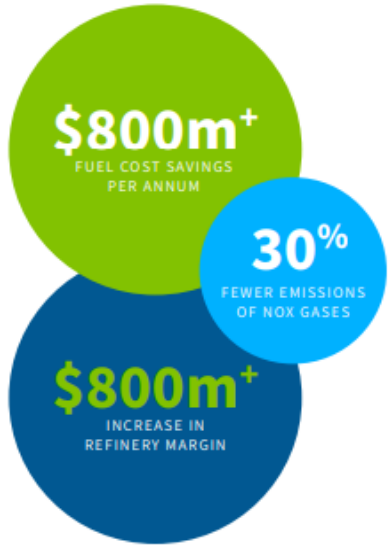
Business Update

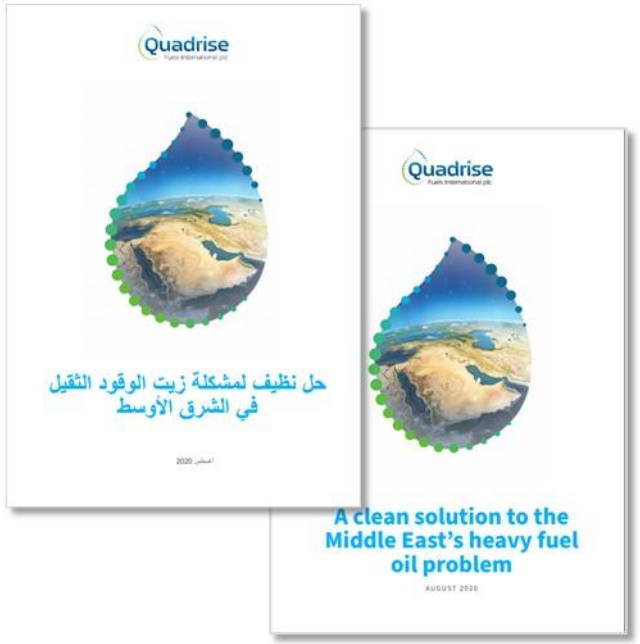
SAUDI ARABIA

National Oil Company, Utilities & Industrials

Saudi Arabia (with Al Khafrah Holdings Group)

- Working with new partner, Al-Khafrah, since mid-2019
- 400MWe MSAR® KSA boiler trial under discussion with utility and NOC, original technical due diligence completed in 2018
- New bi-lingual White Paper and website updates to Arabic highlight our enhanced focus on the region
- Recent briefings to cement companies & financial stakeholders
- Briefings also made to NOC re plans for MSAR® and green MSAR®









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Business Update

MARINE

Global Marine Fuel

- Focusing on major fleet owners, who use electronic engines & scrubbers and are users of high sulphur fuel
- Discussions held with two major fleet owners & operators under Joint Development Agreements;
  - One in the containers sector
  - One in the bulker sector
- Detailed exchanges of technical information provided on MSAR® fuel, systems and experience during 2020
- Introductory talks held on green MSAR® initiative









Business Update

MARINE

Global Marine Fuel

Next steps:

- Q4’20 sign off JDA with at least one owner
- Q1’21 prepare for new LONO trial of Marine MSAR® on MAN ME, and potentially Wärtsilä / WinGD Flex vessel/s
- Procure equipment for fuel production and vessel/s fuel booster systems
- Q2’21 prepare vessel/s and Marine MSAR® fuel supply
- H2’21 carry out LONO trial on selected vessel/s
- Potential commercial testing of green MSAR®









Global Opportunities

PROJECTS SUMMARY

...Q4'20	Q1'21	Q2'21	Q3'21	Q4'21...

International Chemicals & Mining Group, Morocco



Trial Prep → Industrial trial & Phase 2 studies → Commercial trials → MSAR® fuel supply agreement

Greenfield Energy LLC (Valkor-Tomco), Utah USA



POSP Start Up → QRF Report & Commercial Demo in Utah → Commercial MSAR® license agreement → Supply MSAR® facilities under license

Major ShipCo's, Global Marine Fuel



Sign JDA → Trial(s) Prep; MAN ME (Wärtsilä/WinGD) → Prepare vessel/s & MSAR® supply → LONO trial(s)

National Oil Company & Utility, Ecuador



Project On Hold

Latin American Bus Dev Continues

National Oil Company & Utility, Kingdom of Saudi Arabia



Promote boiler trial; NOC & Utility
Cement Market Bus Dev

Sustainable Fuels: Green MSAR® Initiative

- A 2020 ESG RDI initiative to enhance the sustainability of MSAR®
- Testing of bio-fuels and residuals as MSAR® components at QRF
- Sustainable components displace residual oil and water
- The result is lower CO_2 and SO_2 per unit energy!
- Target is >20% CO_2 reduction vs fuel oil, to match LNG savings
- QFI have reached out to biofuel stakeholders for collaboration
- A potential game-changer for future MSAR® applications



INTERNATIONAL MARITIME ORGANIZATION

What does the initial IMO GHG strategy say?

Not yet approved, but envisages reductions in carbon intensity (vs 2008) by international shipping:

- *At least 40% by 2030*
- *Target 70% by 2050*
- *At least 50% reduction in total annual GHG emissions by 2050*





Business Update

New IP & Sustainable Solutions

Sustainable Fuels: Green MSAR® Initiative



Next steps:

- Positive progress in QRF tests so far, 20-30% CO_2 reduction achievable
- Joint patent application to be submitted with Nouryon early December 2020
- Formal product launch planned for early December 2020
- Collaboration agreements with biofuel stakeholders under discussion
- Preliminary diesel combustion and engine tests are scheduled for Q1’21
- Potential commercial testing under discussion with existing clients



Quadrise Fuels International plc

Fully funded through to mid Q2 2021

Careful cash management during the period:

- Cash runway extended from Dec 2020 to mid Q2’21 due to:
  - Reduced financial commitments, including serving notice on London office lease
  - Minimal travel and associated expenses due to Covid-19 restrictions
  - Reducing staff costs and commitments, including use of the Government furlough scheme and reducing headcount by four people (2 NEDs, 2 staff)
  - Close monitoring of all Company expenses, with cash costs consistently below budget throughout 2020
  - Fixed operating costs are <£0.25m/month, excluding any project costs
- Funded to progress business development and current trials to mid Q2’21

Quadrise Strategy

Solving a global problem now

- By producing stable oil-in-water emulsions
- Using proven modular, low-capex technology
- Industry leading team, IP & global partners



Enabling a cleaner energy transition

- MSAR® technology makes oil burn like gas
- Reduces costs for consumers and producers
- Reduces NOx and CO_2, eliminates black soot



With a global pipeline of opportunities

- Broad pipeline of projects and opportunities
- Using carefully selected partners & stakeholders
- Fully funded to mid-Q2'21, next year looks exciting!

MSAR® - a clean solution to a global problem

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