quadrise
FUELS INTERNATIONAL PLC

MSAR® - a low cost substitute for heavy fuel oil
Power generation, Marine fuels, Refinery refuelling

2013 AGM Update

Confidential







www.quadrisefuels.com

15. 11 . 2013

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"A stronger foundation has been built over the past year …the company well placed to transition to the early commercial phase in 2014.

Once this has been accomplished…the pace of growth thereafter in both existing and new programs could be very rapid"

Ian Williams
Executive Chairman
Annual Report and Financial Statements 2013

"A stronger foundation built over the past year"

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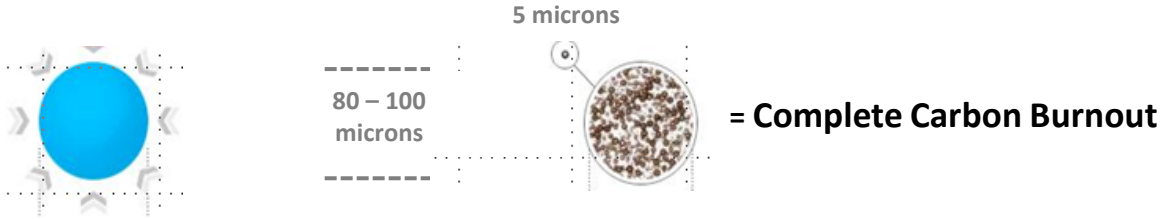
Highlights

- Q4 seaborne "proof of concept" assessment of **Marine MSAR®**
- New agreements with **AkzoNobel**
- Major Refinery & Power complex designated by **Aramco**
- **Ecopetrol** Regional Joint Venture feasibility programme
- Successful formulation with **Global Oil Major** residue stream

Market cap increased from £ 33 to £ 85 million in 2012

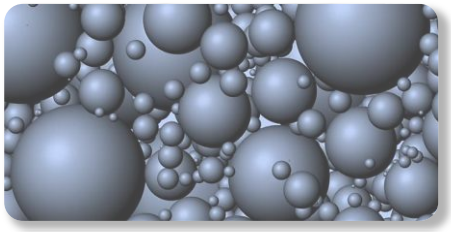
2013 range to date: £ 80 to £ 212 million

MSAR – a game changing emulsion fuel…



A stable **'Oil-in-Water'** emulsion system:

- Tiny droplets of extra-heavy hydrocarbon
- Dispersed in water
- Using proprietary additives



Key benefits:

✓ Viscosity reduced using water in place of valuable light oil

✓ Stable lower cost substitute for heavy fuel oil

✓ Offers enhanced combustion & emissions

Tremendous value added, at low cost…

Price spreads sustained – projected to continue

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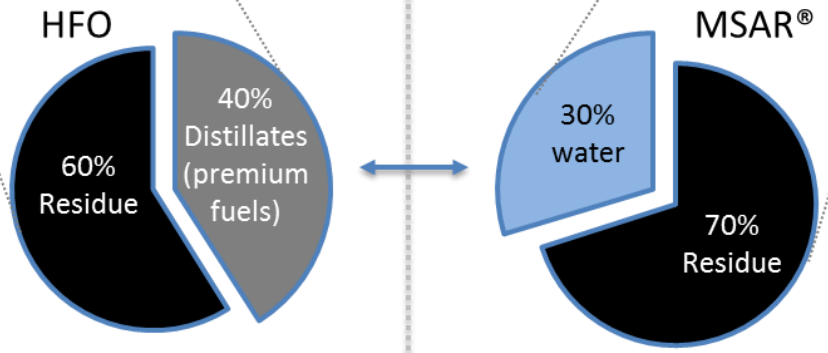
In a refinery producing HFO…

…typically just 50% of the crude processed is sold as premium-value transportation fuels…

In a refinery producing MSAR®…

…some 70% of the crude processed is sold as premium-value transportation fuels…





…as HFO requires ~40% premium fuels to make residue flow

…as MSAR® uses ~30% water instead of premium fuels to make residue flow

A 200,000 bbl/d refinery gains up to $ 100 million/annum (shared between Refinery, Consumers & Quadrise)

This value is shared…



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AkzoNobel benefits from chemicals sales

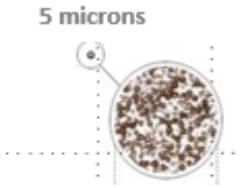
Quadrise is the "Integrator"

- Establish market for MSAR®
- Install equipment at refinery
- Provide licence & experts
- Arrange support/supply of MSAR® to consumers

Three potential modes of operation…

Mode	Description	Implications
Licence	Refinery owns the processing plant & equipment	• Appropriate for current phase of development • No capex & minimal working capital • Margin based on supplies & services
Toll Processing	Quadrise owns a ring-fenced plant within refinery complex	• Hydrocarbons owned by the refinery • Processing fee means higher margin
Merchant Plant	As per Toll but Quadrise purchases the input residue & sells MSAR® to the end-user	• Optimum margin • Substantial working capital requirement • Balance sheet implications • 12 – 24 months before trade finance available

Important environmental advantages



= Complete Carbon Burnout

MSAR® droplet

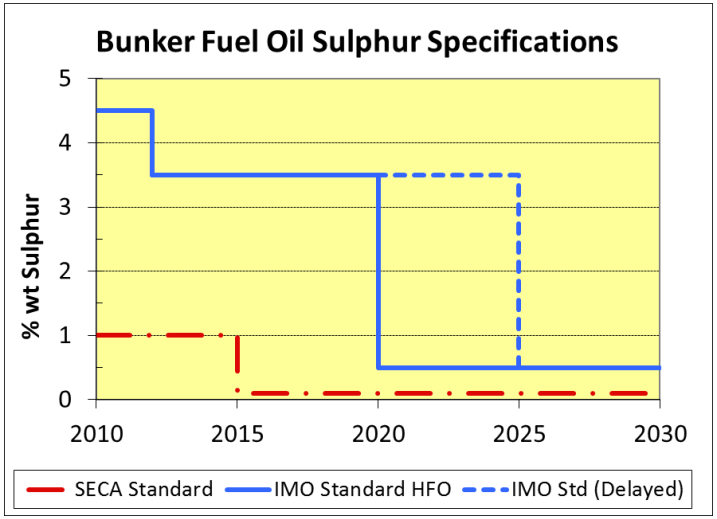
1. Energy Savings

✓ MSAR® stored & transported at lower (ambient) temperatures

2. Lower NOx & Particulates (Black Carbon)

✓ Lower combustion temp = 20% lower NOx emissions

✓ Complete burnout = lower particulate emissions



3. Affordable Compliance

✓ Marine sulphur limits will reduce (MARPOL)

✓ MSAR® investment much smaller with lower CO_2 impact

✓ Distillate fuels demand likely to drive up price

✓ Compliance (e.g. scrubbing) can be subsidised and accelerated

Active Projects: Marine MSAR® with Mærsk

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The Market:

- 200 mtpa market – fully accessible
- Increasing emission standards
- Intense freight competition
- Fuel = 75% of operating cost

ORLEN Lietuva

MAN

WÄRTSILÄ CORPORATION

Lloyd's Register

Quadrise / Mærsk:

- Cost & emission opportunity
- First seaborne trial guided development
- MSAR®2 run on Wärtsilä latest land unit – excellent results
- Seaborne MSAR®2 "Proof Of Concept" programme approved
- Leading to LONO certifications & early commercial operations

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2012 2013 2014 →

Done	Done	Done	Done	Pending	
Complete Soroe Mærsk trial	MSAR®2 testing	Approve agreements	Install MMU & manufacture MSAR®2 fuel	MSAR®2 on Mærsk vessels	Upon success, commercial "LONO" approvals & supply

Saudi Arabia: Refinery upgrade with Saudi Aramco

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The Market:



- Highest global energy consumption per capita
- $ 20 billion distillate fuel imports per annum
- Power generation uses 30 mtpa crude oil & fuel oil
- National imperative to reduce crude oil consumption

Quadrise / Rafid / Saudi Aramco

- Much effort on briefing stakeholders & raising profile
- Aramco vision: Replace crude oil use with HFO / MSAR®
- Integrated large refinery / power complex designated
- Potentially a much larger opportunity

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2012 2013 2014 →

Conclude partner agreement with Rafid	Get senior support in Aramco	"Educate" JV refinery, & Power Companies	Conclude project scope & QIL terms	On site pilot with a progressive switch to MSAR®
Done	Done	In progress	In progress	

Central & South America

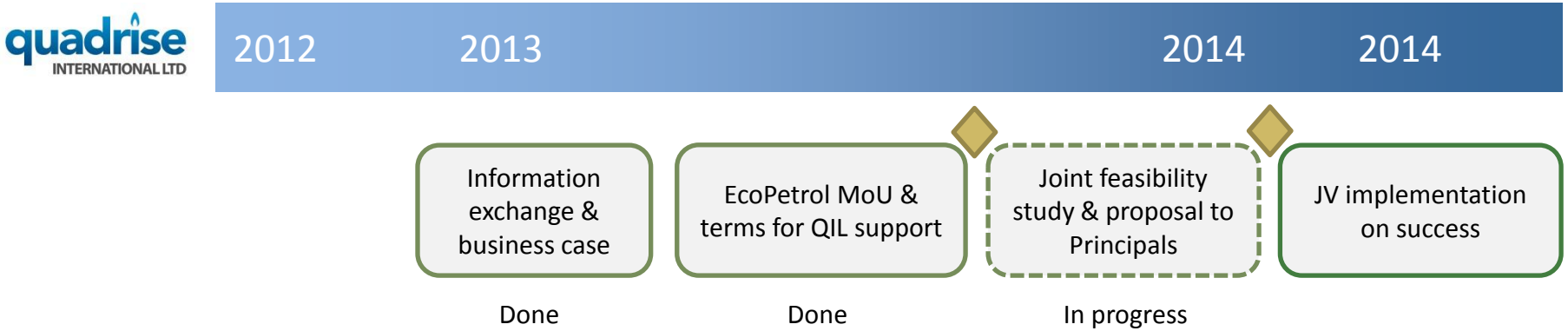


Regional Market:

- Large scale imports of diesel & exports of fuel oil
- Scope for significant value-add to regional refineries
- Power & marine fuel substitution

Quadrise

- PEMEX “parked”
- Nexidea & Ecopetrol agreements
- Business case presentation to senior mgt
- Prospective Joint Venture
- Next milestone – site visit & detailed joint report



Other active projects (Asia & Oil Majors)

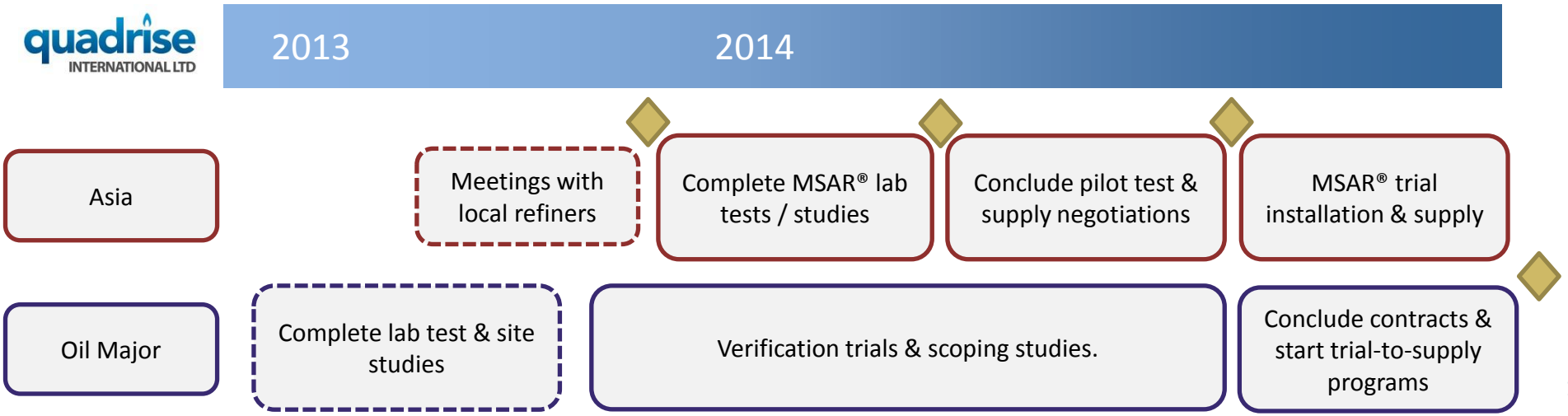
Asia : YTL PowerSeraya refuelling (Singapore)



- Former Orimulsion® consumer - 1.8 mtpa
- MOU renewed – keen to proceed

Global Oil Major

- Multi-site opportunity
- Senior management attention
- Both marine & power options for MSAR®
- Lab test on European residue completed
- Next steps awaiting marine “proof of concept”



AkzoNobel relationship

- The AkzoNobel relationship remains central to the Group
- Alliance Agreement to be superseded by two new principal contracts; Joint Development Agreement & Exclusive Commercial Agreement

Summary:

- AkzoNobel will provide technical expertise to support the JDA
- AkzoNobel to supply additives under the Exclusive Commercial Agreement
- Quadrise "owns" the customer (refinery & end-user) and OEM relationships

Key changes:

- ✓ No Akzo royalty payments
- ✓ Shared ownership of jointly developed IP
- ✓ Quadrise:
  - Supply OEM equipment & AkzoNobel tech services
  - Sole licensor of MSAR® Technology
  - Own R&D capability to complement joint development

Emerging features for the Group

- Planned work programme versus resources & structure
- Resource constraints on extending the business mode
- Plant & process opportunities to improve economics
- Security of Intellectual Property – patent applications
- Independent R&D capabilities



"…the pace of growth could be very rapid"

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- Industry gamechanger with sound fundamentals
- Huge international market
- Partnering with major world class industry players
- Uniquely experienced management team
- Technically verified & commercial potential demonstrated
- Limited competition

A stronger foundation:

- ✓ Maersk vessel seaborne assessment before year-end
- ✓ AkzoNobel alliance – new agreements secured
- ✓ Designated Aramco refinery linked to integrated power utility
- ✓ Ecopetrol programme ongoing
- ✓ Global oil major opportunities

POWER SERAYA a YTL Company

ecopetrol

nexidea

AkzoNobel

Well placed to transition to early commercial phase in 2014