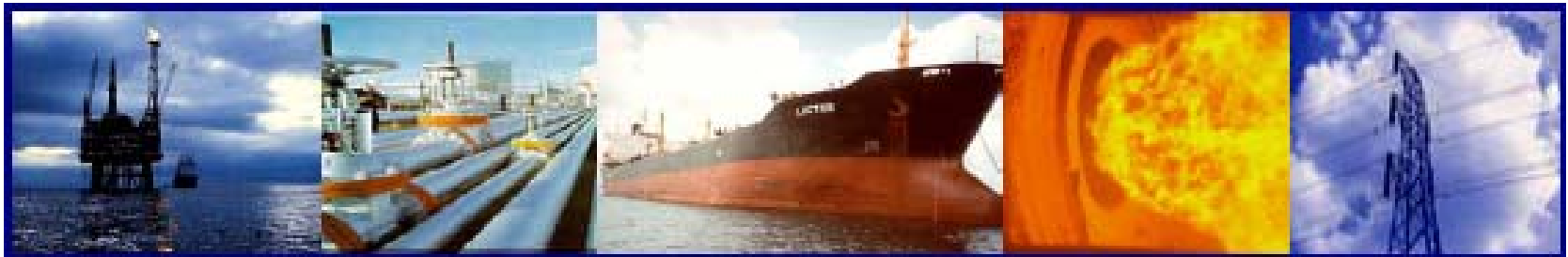




Quadrise Fuels International plc

Commercialising New Technology The Issues, Risks and Opportunities



**ECRI Sponsors Meeting
London, 11th June 2009**

**Bill Howe
CEO – Quadrise Fuels International plc**

Quadrise Fuels International plc



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Quadrise Fuels International plc



Quadrisse Background and Development, Markets and Applications



Quadrisse History

- 1990s** BP/PDVSA develop Orimulsion, an emulsion fuel developed to monetize Orinoco bitumen. BP subsequently withdraw.
- 1990s** Former BP staff envisage 2nd generation low cost O-I-W emulsion fuel as an alternative to Orimulsion and form Quadrisse Limited
- 2000** IEG/Masefield and Quadrisse Limited agree commercialisation programme for new O-I-W EF
- 2004 -** AkzoNobel Alliance Agreement and Quadrisse Canada formed in collaboration with QL/IEG
- 2006 -** QFI listed on AIM, raising £12.5m and acquire Quadrisse Limited.
- 2008 -** Successful Lithuanian Demonstration
- 2009 -** QFI seeking additional funding to accelerate market and technical development activities

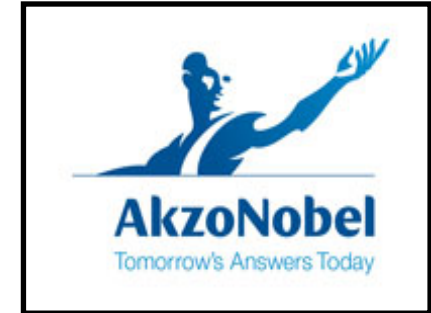




Quadrise: Key resources

Alliance Agreement* with AkzoNobel:

- Cutting edge emulsification know-how
- Comprehensive pre-project support
- Specialist chemicals & equipment supply
- Commercial credibility



Total Project Capability: QFI expertise covers the full value chain

- Team includes 7 ex-Orimulsion® people
- Expert refining capability
- Global shipping experience
- Trade financing expertise
- Power applications engineering expertise
- Environmental expertise

AkzoNobel-QFI Alliance
Total capability
Mutual interdependence
Complementary skills

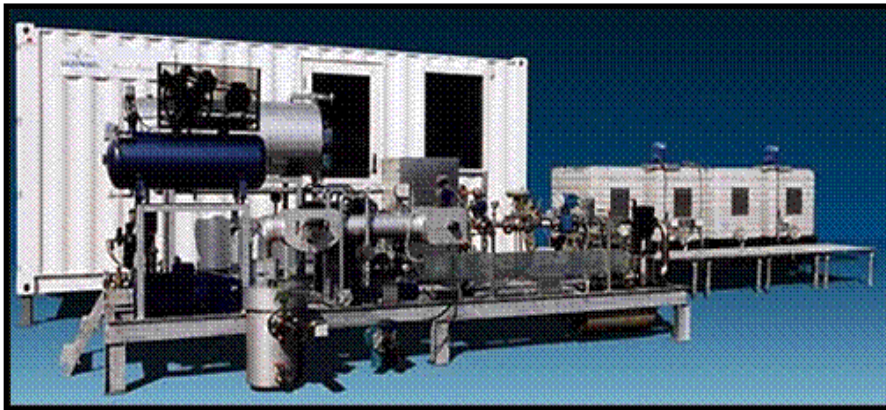
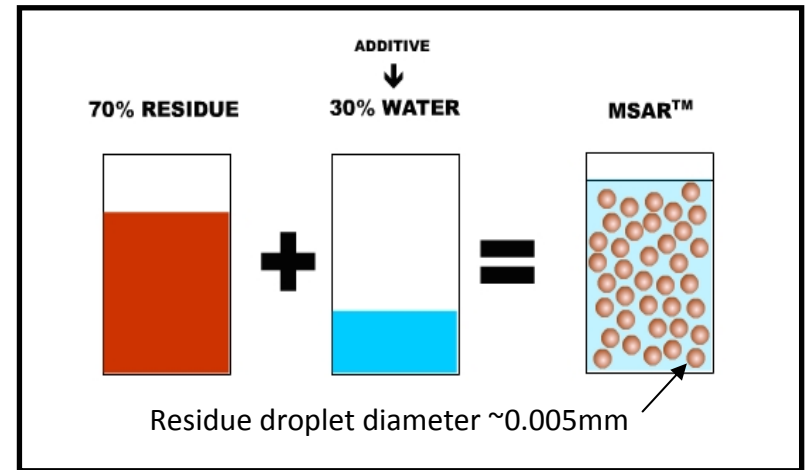
* Exclusivity provisions worldwide outside NAFTA, Japan & China

Multiphase Superfine Atomized

Residue:

Tiny particles of heavy hydrocarbon dispersed in water with environmentally positive fuel characteristics:

- Inherently low-NO_x
- Optimum combustion



M SAR® Manufacturing Unit (MMU)

- Low capex installation
- Short lead time (<12 months)
- Modular equipment (small footprint)
- 40 tons/hour module services 100 MWe
- > 100 in operation

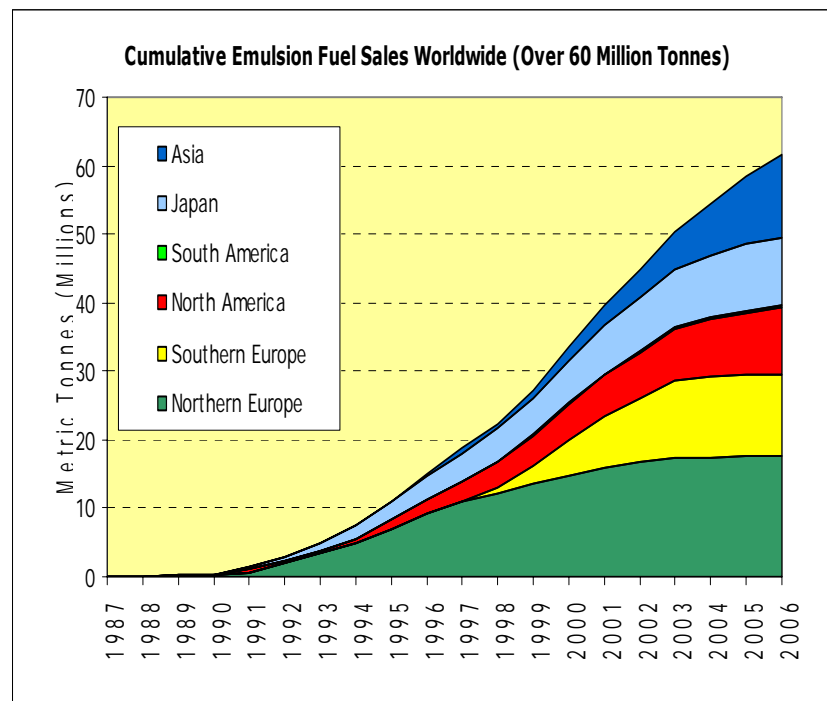
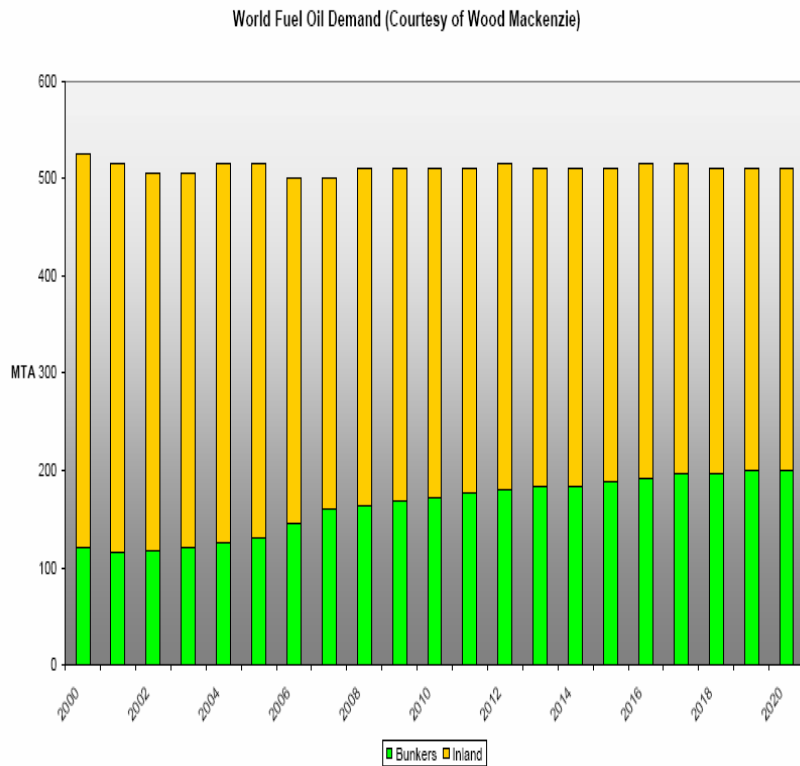


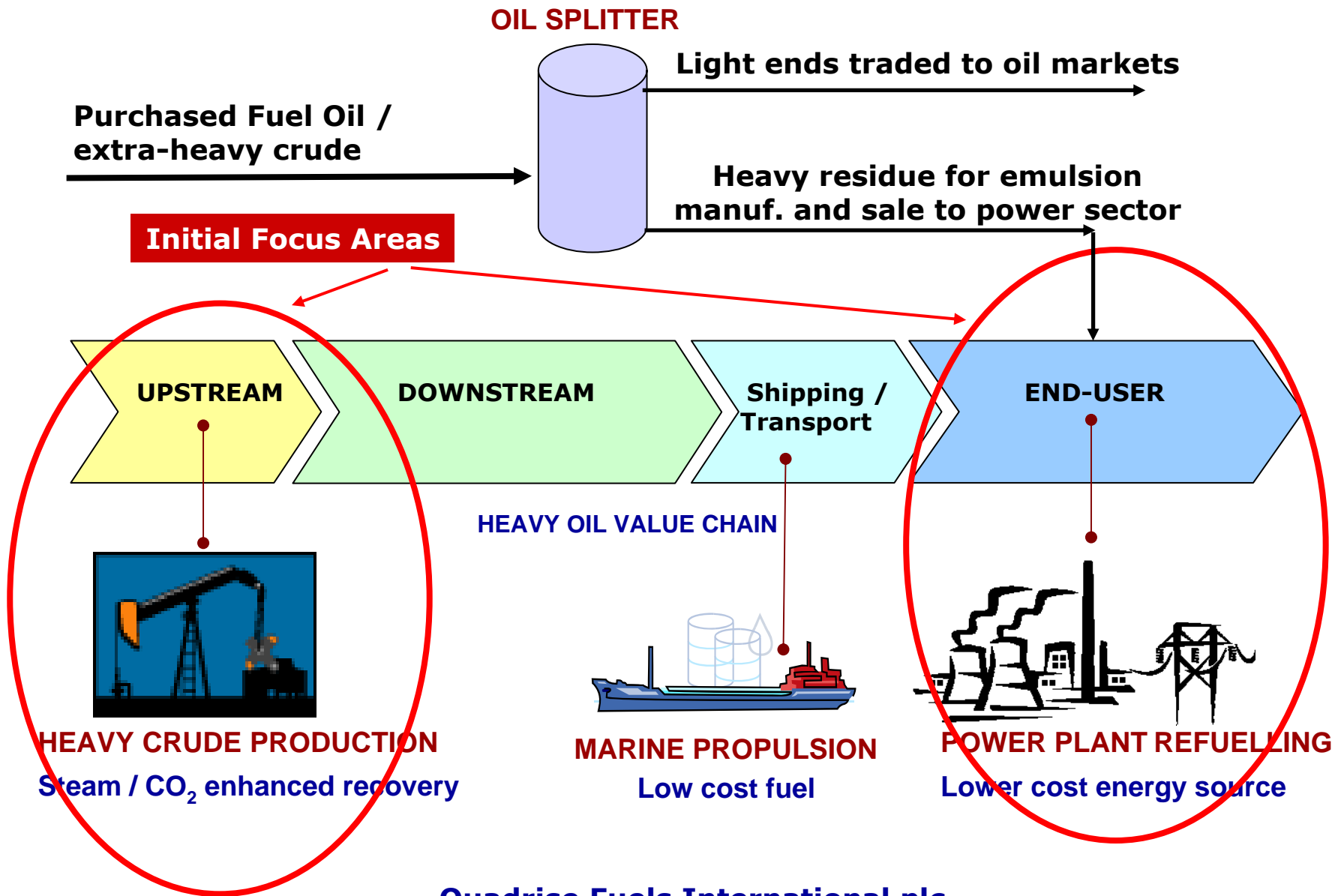
Materiality - World HFO and O-I-W EF Markets

**Equivalent to > \$100 billion p.a.
@ \$50/bbl oil**

**Over 60 million tonnes Orimulsion
sales to end 2006
Sales risen to > \$1 billion p.a. @
\$50/bbl oil at end 2006**

World Fuel Oil Markets







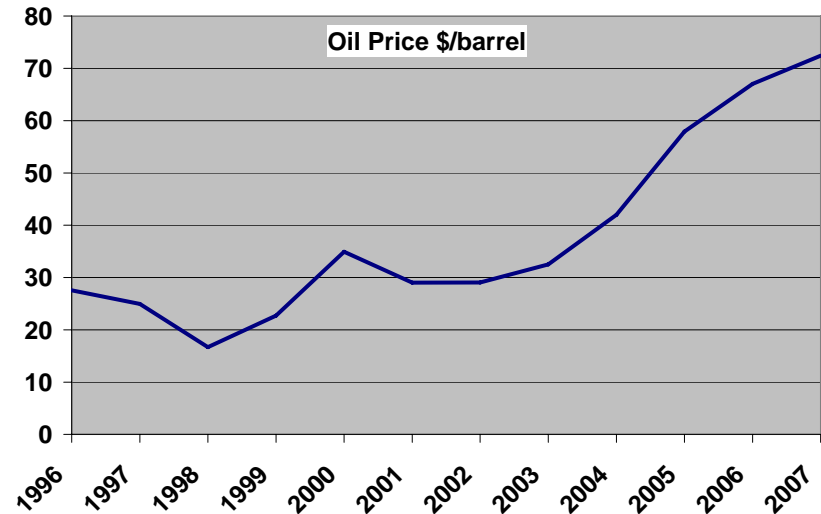
Quadrise Road to Commercialisation post AIM listing



2006 analysis revealed strategic flaws

Early set-backs

- Power Market had Changed
 - Rising oil prices had compromised oil-fired power
 - Inter-fuels competition
 - GHG issues further promoted switch to gas
- Canadian heavy oil projects progressively delayed by economics, environmental and legislative factors
- Oil Splitter uneconomic
 - Capital costs under-estimated by factor > 5



Areas of early misjudgement

One year lost due to need to re-strategise market focus



Reformulated Business Strategy

- Revised the target power markets after further analysis
- Revised feedstock sourcing to directly target refinery residues
- Initiated new phased development strategy – in part based on the withdrawal by PDVSA of Orimulsion from the market end 2006

PHASE 1 – EARLY CASH FLOW

Establish refinery based MSAR[®] production facilities and supply former power plant consumers of Orimulsion[®]

Focus on core prospects, proven applications



Project implementation outsourced to qualified contractors, conserving valuable internal resources for :

- Project management
- Business development of core prospects

Mutual Benefit of Phase 1 Alignment

Urals \$50m pa
Arab H \$200m pa
Maya \$350m pa

Based on \$50/bbl
200 000 bpd

PHASE 2 – LEVERAGE TECHNOLOGY

Highly prospective oil-power markets
(Saudi Arabia, Kuwait and Mexico)

PHASE 3 – LEVERAGE EARLY PHASE ASSETS

Merchant supply to diesel power and marine markets from early Phase hubs



**The MSAR® value proposition,
sourcing of feedstock and benefits
to oil refiners**

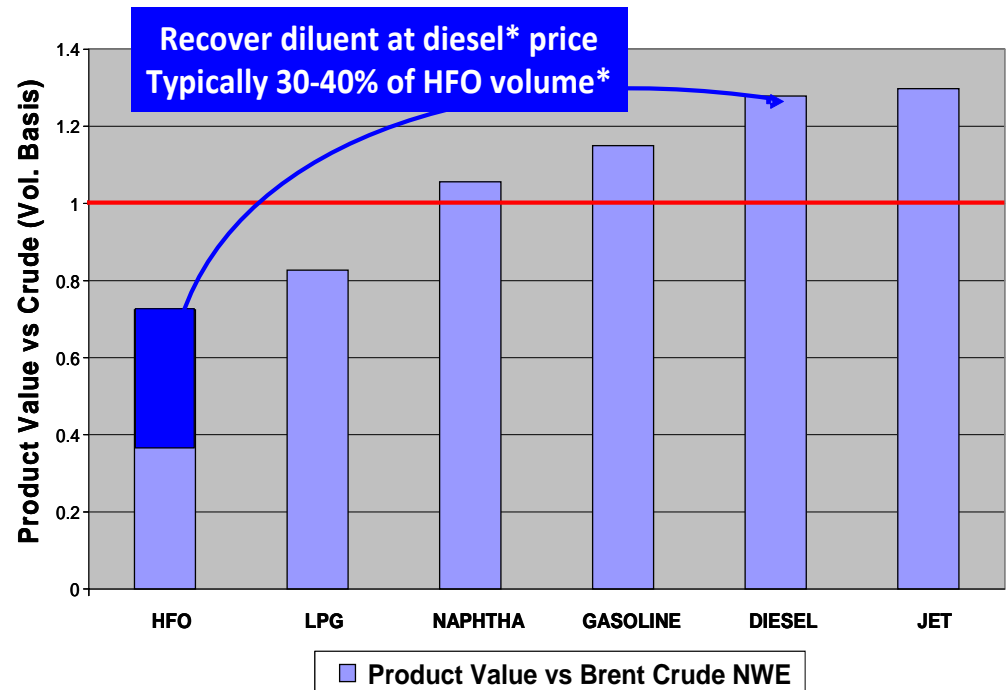


The fundamental value proposition

HFO production is a loss maker and consumes profitable distillates

As crudes get heavier, diluent consumption increases compounding the problem

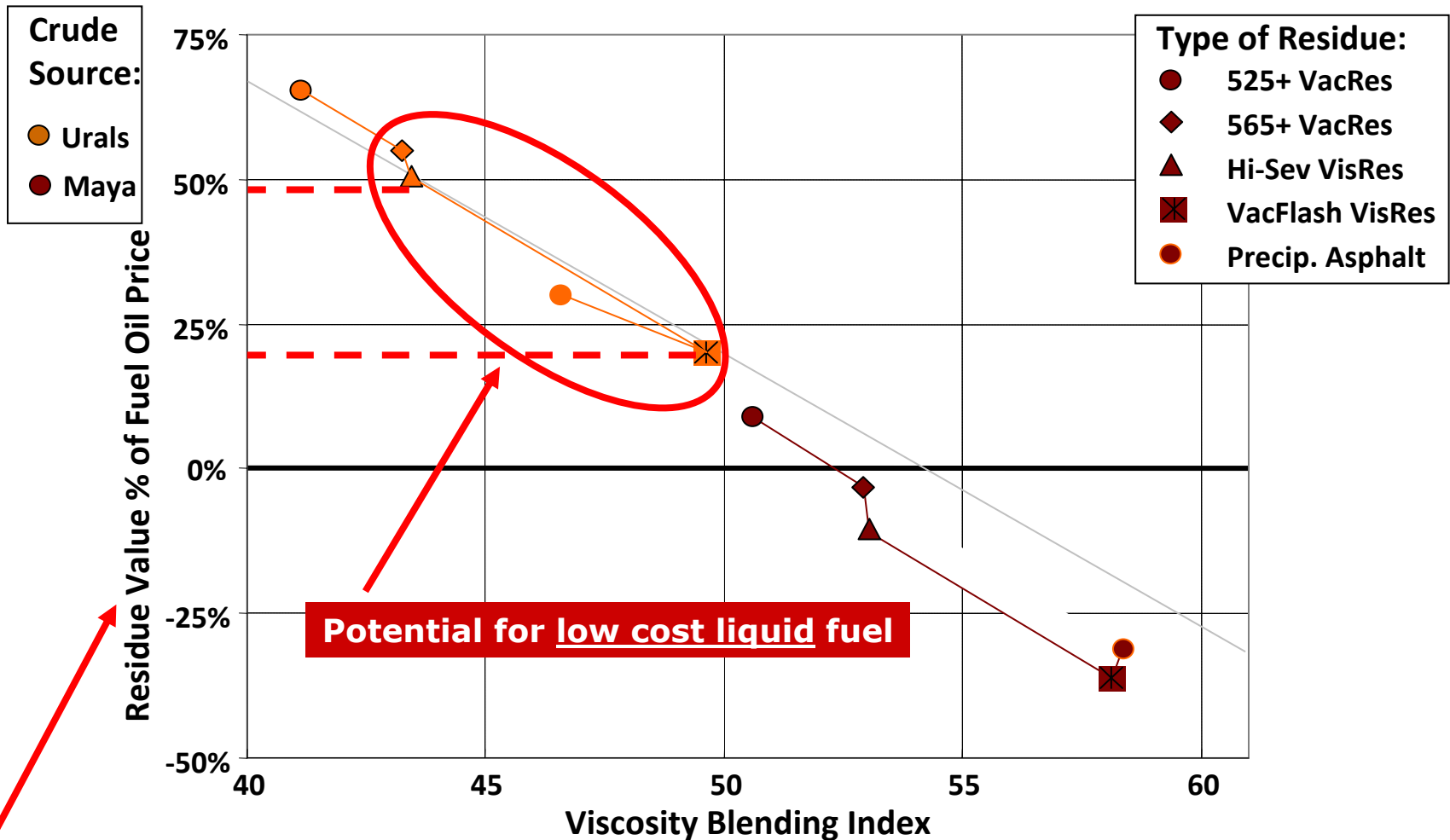
Quadrise technology uses water as the diluent for viscosity control – avoiding the value give-away



* data is refinery specific



The netback value of refinery residue

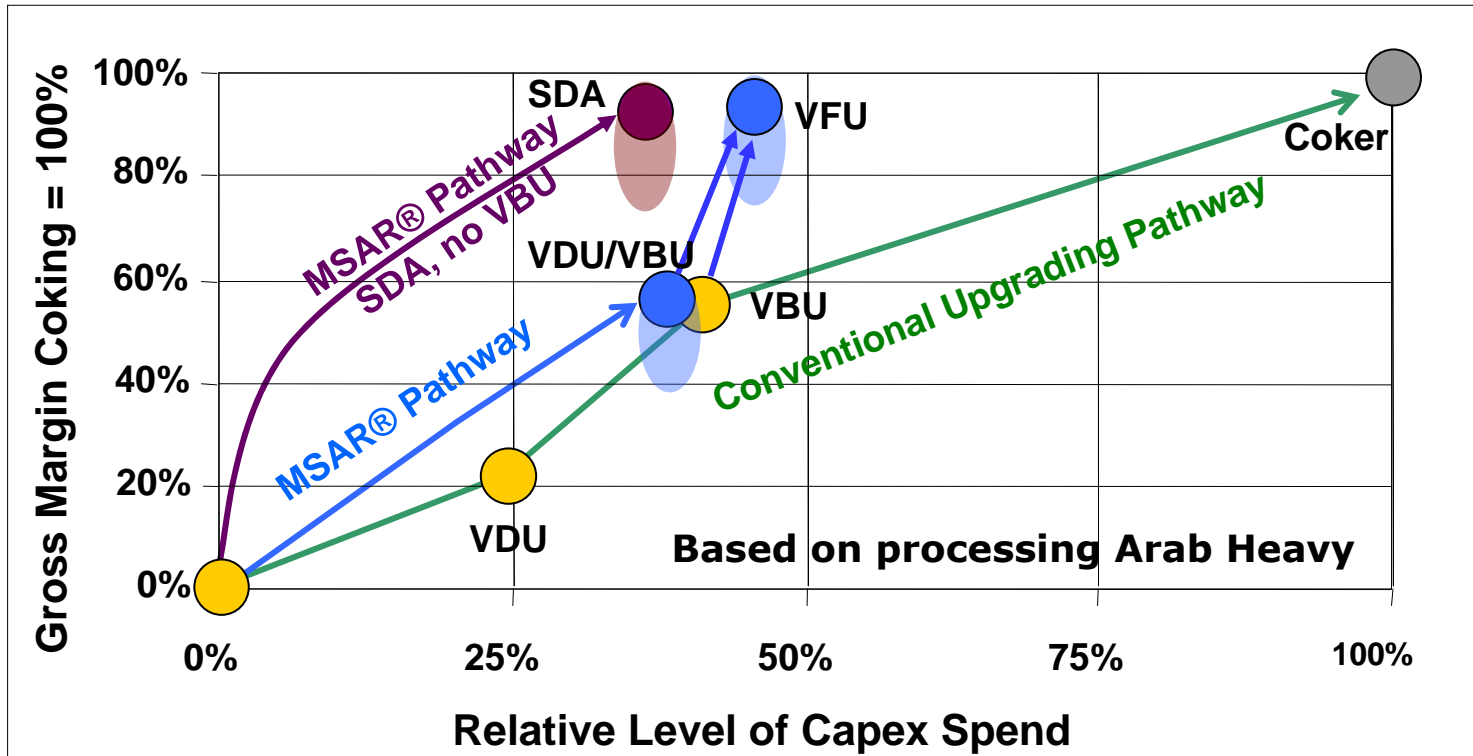


Back-calculated from HFO and cutter values (price and composition)

Based on average prices from Jan 2004 to end May 2008 for 0.2%S gasoil (less 5%) as cutter (BI=10) and 3.5%S Fuel Oil (BI=33) when fuel oil price averaged 48% of the cutter price (less 5%). Sulphur correction based on 1% change in S content = 3% of the HSFO price



Margin gain versus Capital Expenditure



Making MSAR® enables near coker margins for less capex



Lithuanian Commercial Development

- ❑ **1st commercial installation of MSAR® technology in a refinery**
- ❑ **Refuelling 600MWe power plant meeting EU emission standards and with 10yrs Orimulsion operating experience**
- ❑ **MSAR® to compete on economic terms with Russian natural gas**
- ❑ **Strong political impetus to resolve Russian energy security of supply issue**
- ❑ **Additional driver from 1500MWe Ignalina nuclear unit shut down end 2009**



MAZEIKIŲ NAFTA

AB Lietuvos Elektrinė



Demonstration - Contractual Framework



- 1. Refinery operator
- 2. Residue Supply Agreement (RSA)
- 3. Services Agreement (SA - utilities, lab, logistics, facilities)
- 4. Freight Contract (COA)



- 1. MSAR operator (with Akzo)
- 2. RSA and SA (Buyer)
- 3. MSAR Supply Agreement (MSA)
- 4. MSAR license and supply agreements (Akzo)
- 5. EPC of Demo plant - QFI



- 1. Power station operator
- 2. MSA (Buyer)

'Premium for residue'

'Viable Business'
Recovered all costs inc. trial EPC

'Discount to Gas'

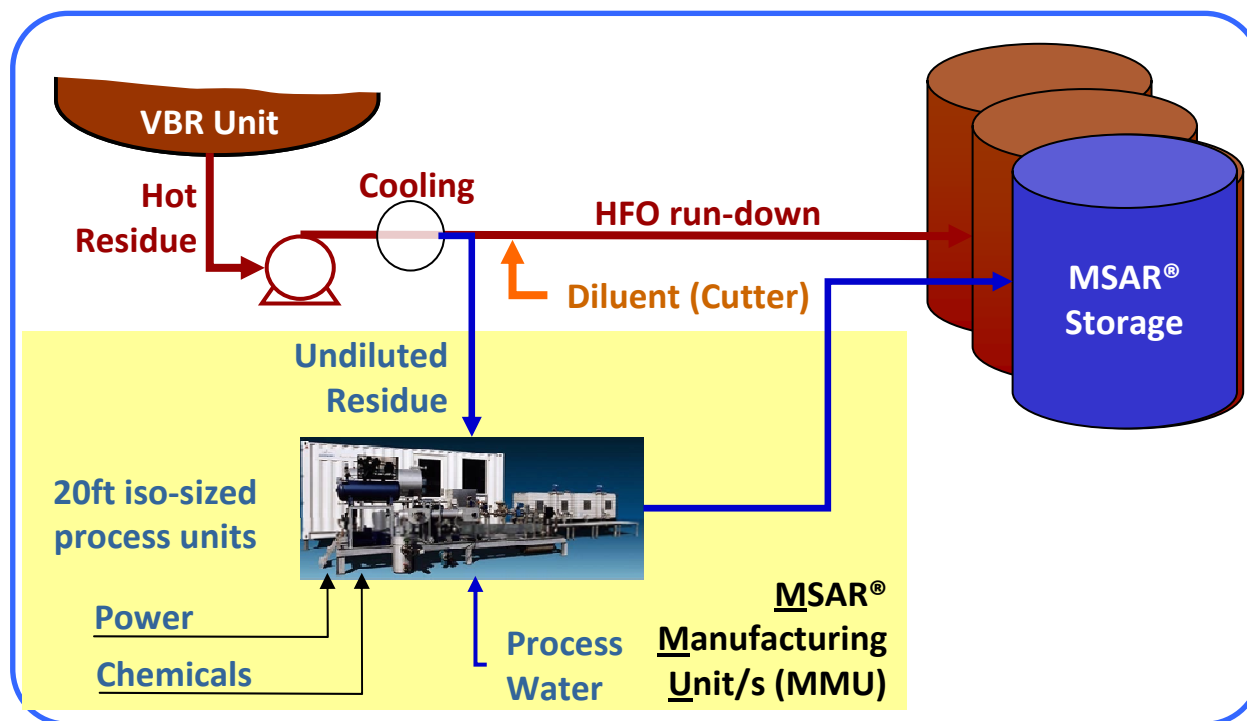


Pre-Demonstration Activities

Quadrisse was at full risk for the efficacy of the process, the product quality and the product integrity

- Preceded by full quantitative risk analysis for QFI board approval of project
- Main risk identified as inventory and emulsion stability
- Preceded by extensive lab-scale emulsion stability tests
- Involved extensive pre-production field emulsion stability tests
- Extensive and heavily policed QA/QC regime throughout trial
- Negotiation of self-funding contract model

Hot residue is slip-streamed from a point in the residue run-down system after maximum process heat has been recovered but before cutter added or viscosity has exceeded 300cSt.





Lithuania – Mazeikiu Nafta Operations



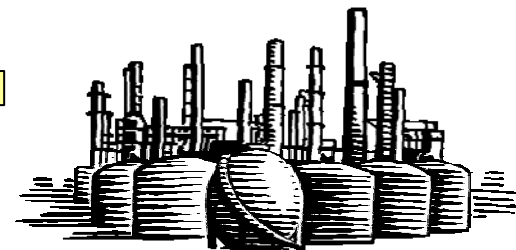
- ❑ Temporary storage for MSAR® chemicals, visbreaker residue and MSAR® product in leased 25m³ ISOTANKS
- ❑ 20t/h MSAR® Manufacturing Unit leased from Akzo Nobel
- ❑ MSAR® rail car loading using refinery HFO facilities



50 HFO/MSAR® Railcars ~2,700m³



Circa 300 km

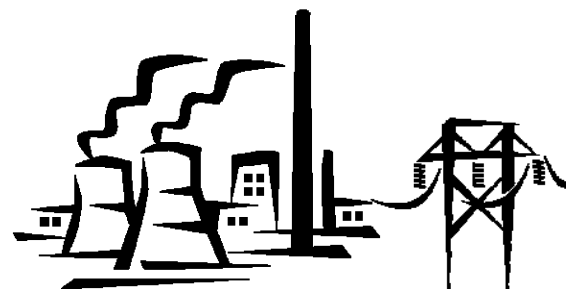
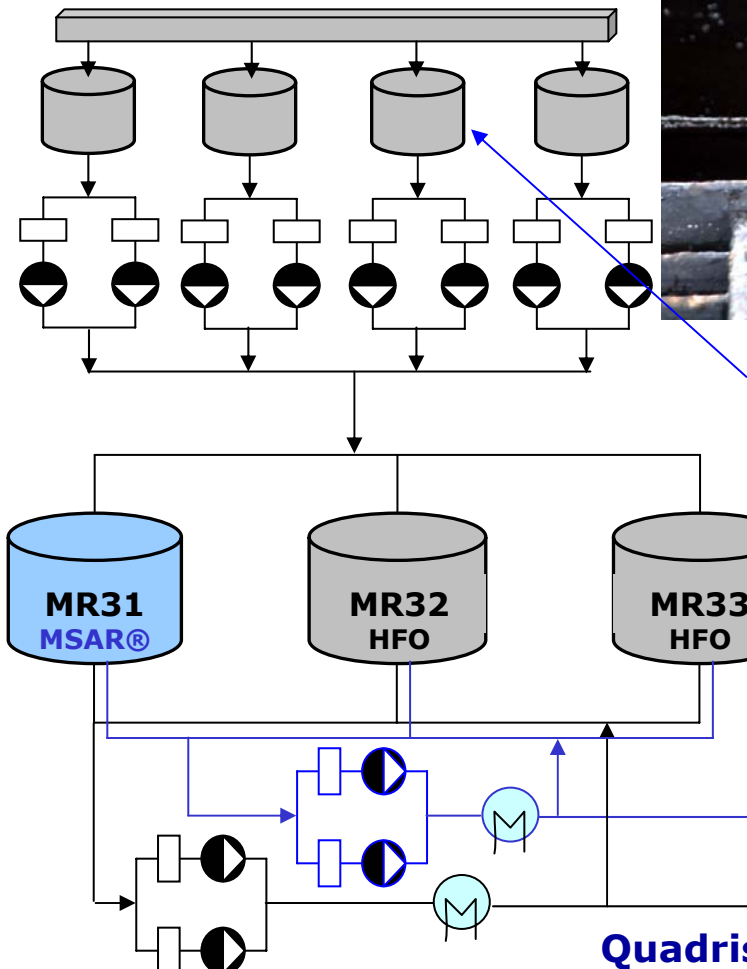


AB Mazeikiu Nafta

Supply chain originally designed for HFO, minor conversions made for Orimulsion – all proven to be suitable for MSAR®

4 x 600m³ MSAR® / HFO Receipt Tanks

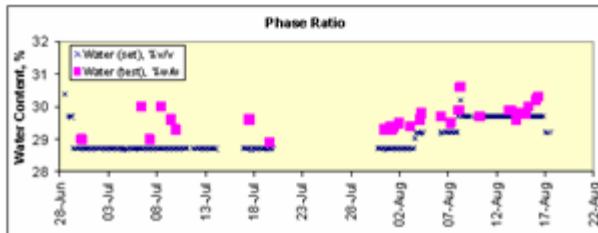
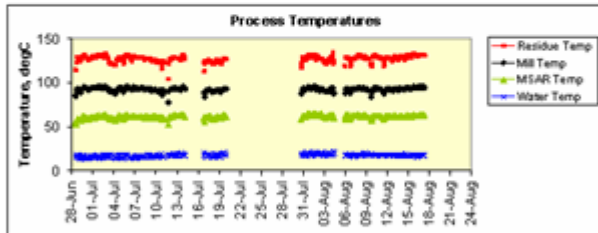
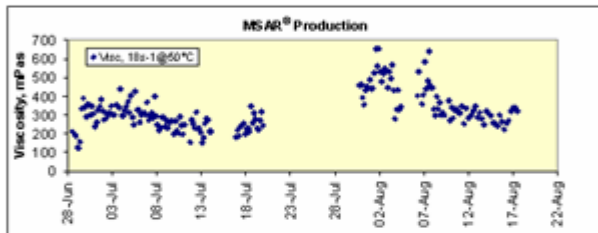
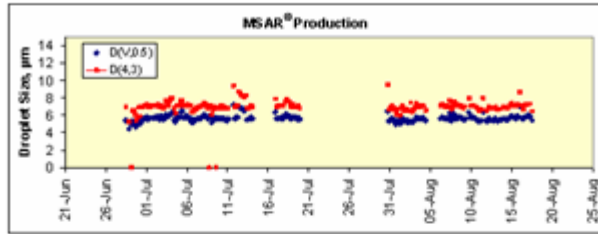
3 x 28,000m³ MSAR® / HFO Storage Tanks



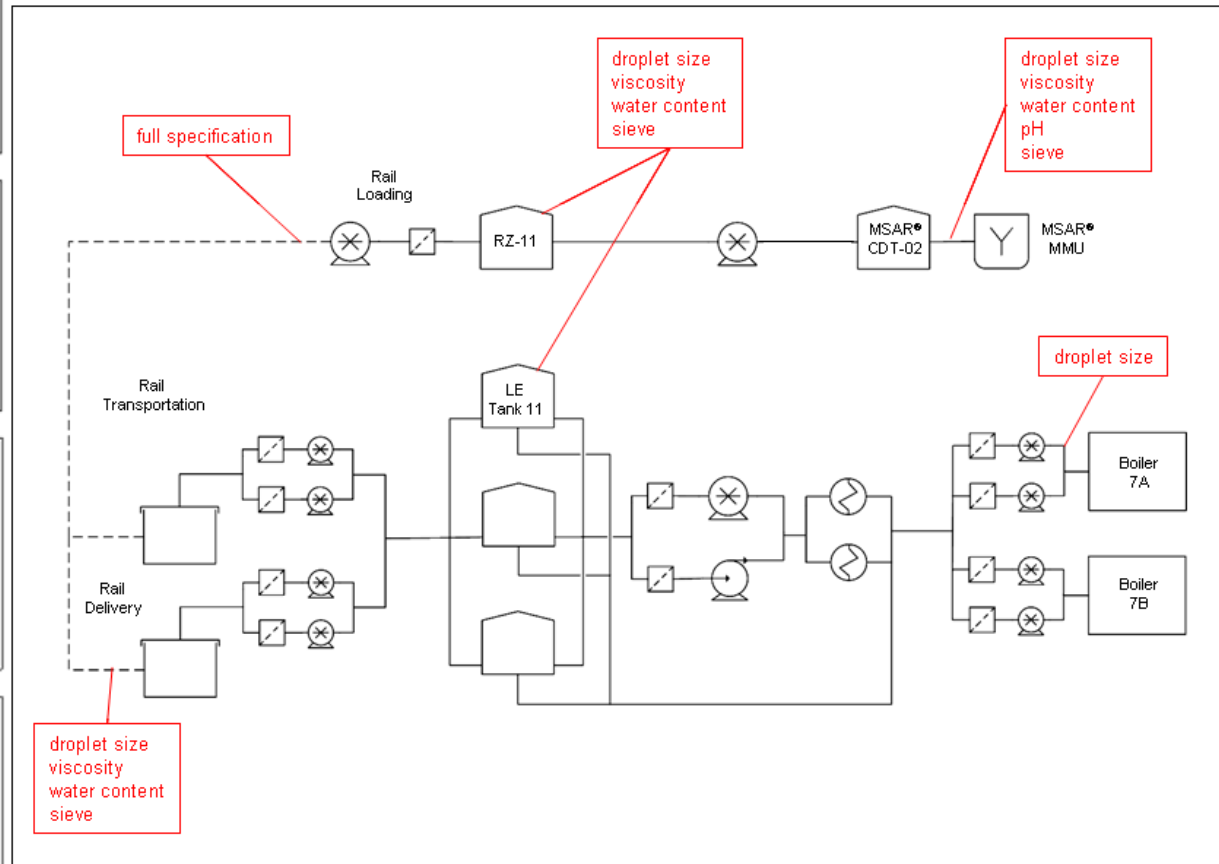
AB Lietuvos Elektrine

MSAR[®] Production Summary

17-Aug-08



Heavily policed QA/QC + entire Quadrisse technical team on site 24/7 shifts for the duration + up-front field scale stability tests





RISK ISSUES



Quadrise - risk issues

- HIGH EXPERTISE - small team of motivated professionals – supported by AkzoNobel
- CENTRALISED OPERATIONS – contract globally, but operate from a single centre. Therefore a simple exercise to institutionalise risk management into the companies operations and approval processes; and easy to assemble the full available expertise
- NOT A SUB-SET – This technology is Quadrises' entire business. Zero commercial progress is not an option
- TIME CONSTRAINED – a cash and resource limitation. Again zero commercial progress is not an option
- BACK EXPERTISE - Quadrise may on occasion have to back its skills and expertise and bet the farm. Some risks, at current stage of commercial recognition cannot be covered by monetary provision



Risk Areas - Commercial

- Inventory (arising from technical issues)*
- Time-line to success/revenue*

Inventory Risk*

60 000 ton Panamax
US\$12 million+

- Oil and other energy price movements
- Oil price spreads
- Exchange rates and inflation
- Country/client/JV partner risk
- Take or pay
- Spills/environmental
- Project risk, contractor and vendor performance
- Contract terms and guarantees

Mitigate with traders tools – (LCs, hedging, insurance), contract terms, liability limit, shared risk, license model, prequalification analysis, intensive oversight

***limited risk mitigation possible – potentially terminal for QFI**

Business Risks

Key staff retention
Akzo support



Risk Areas - Technical

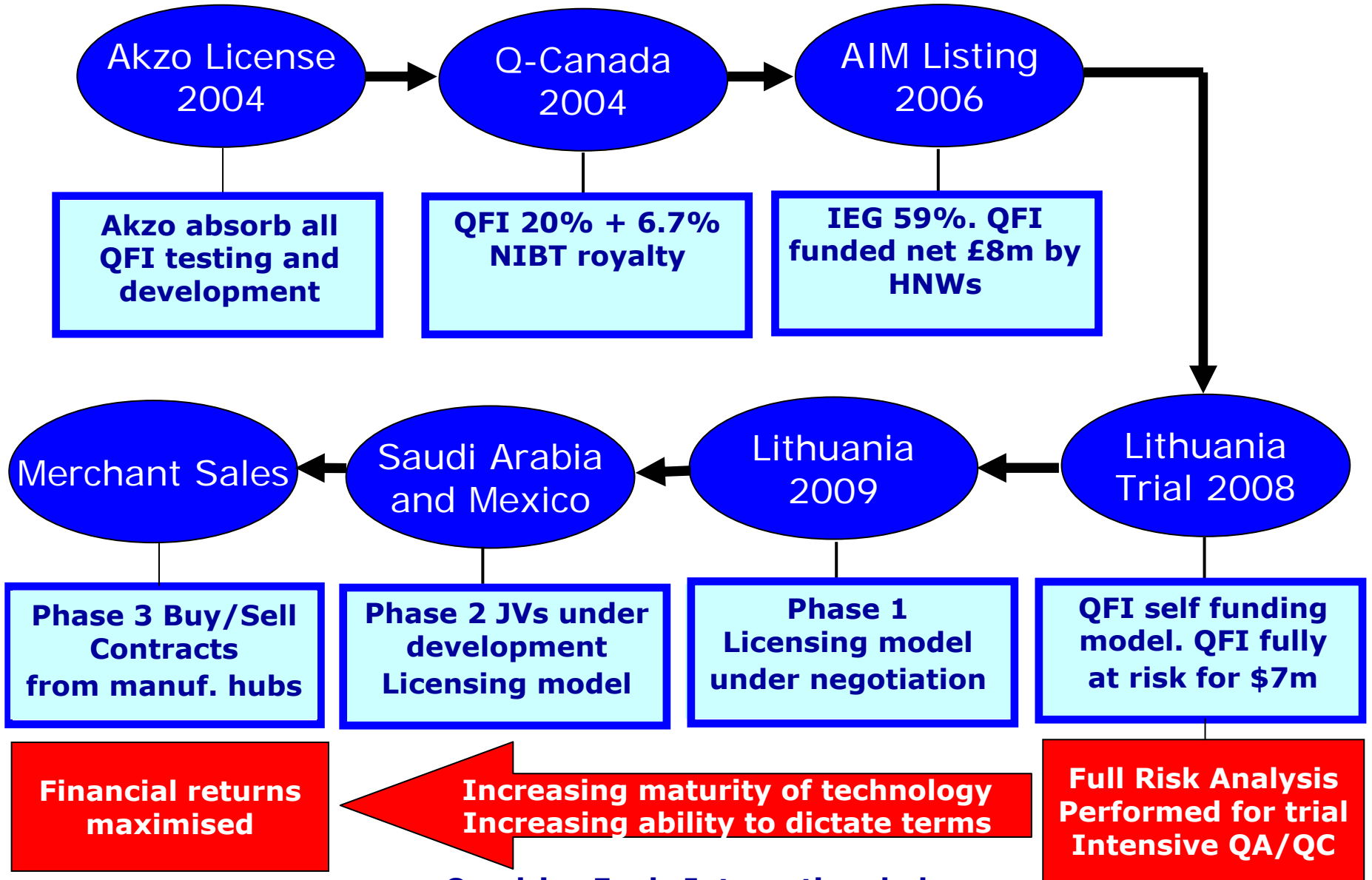
- Residue density/emulsion stability
- Contamination/emulsion stability
- Agglomeration/emulsion stability
- Combustion issues
- Environmental issues
- Refinery operations/emulsion stability

Mitigated by prior emulsion fuel experience of QFI staff, AkzoNobel expertise, heavily policed QA/QC, pre-testing, customized design, in-built remediation facilities, co-operatively framed contracts, accumulated cash reserves for uninsurable risks

Most technical risks can be mitigated through rigorous pre-testing; access to prior Orimulsion experience; or through intensively policed QA/QC procedures. Also walk before you run!



Quadrise Risk and Cost Mitigation



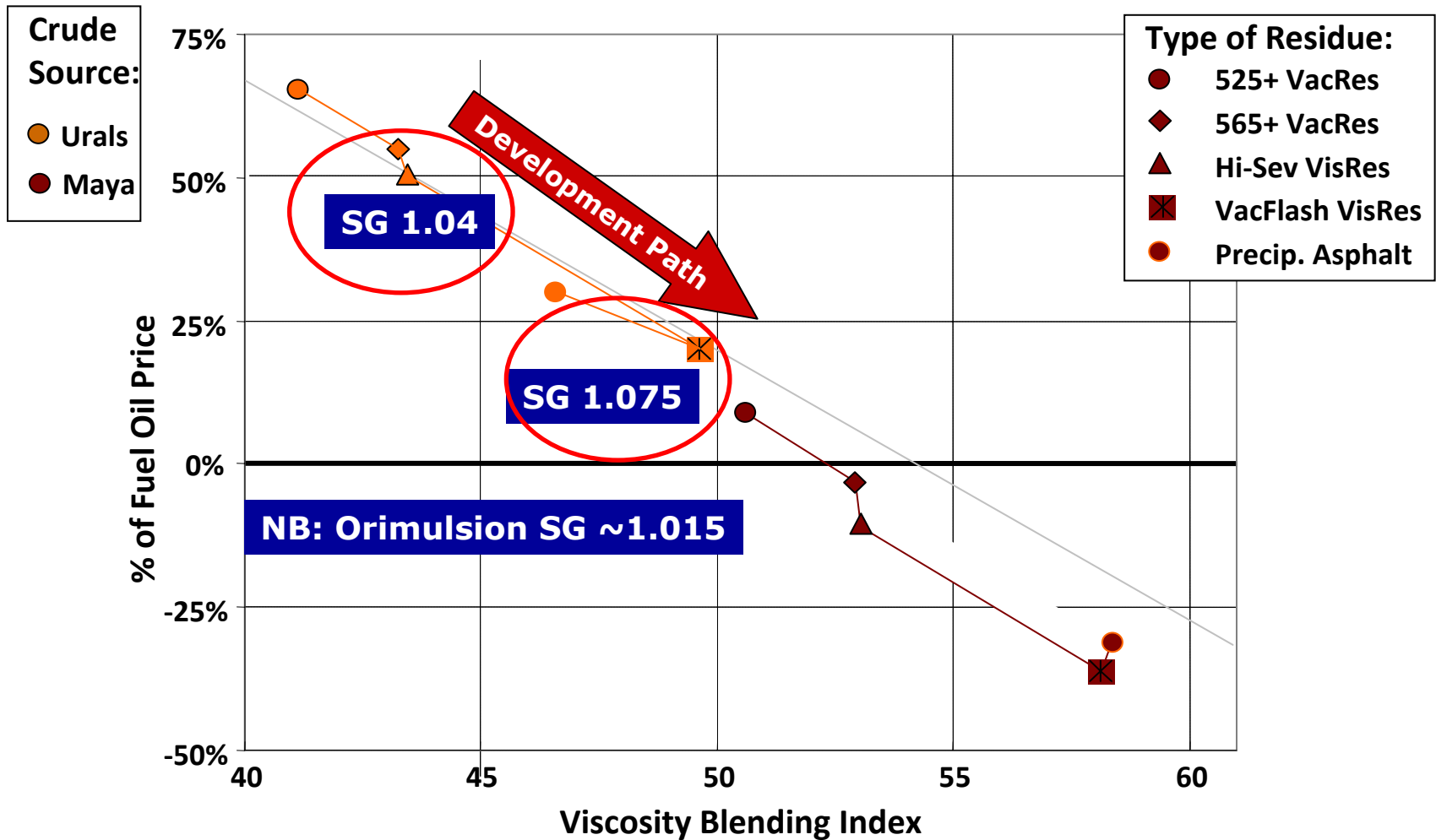


Future MSAR® Opportunities for Technical Developments adding to value

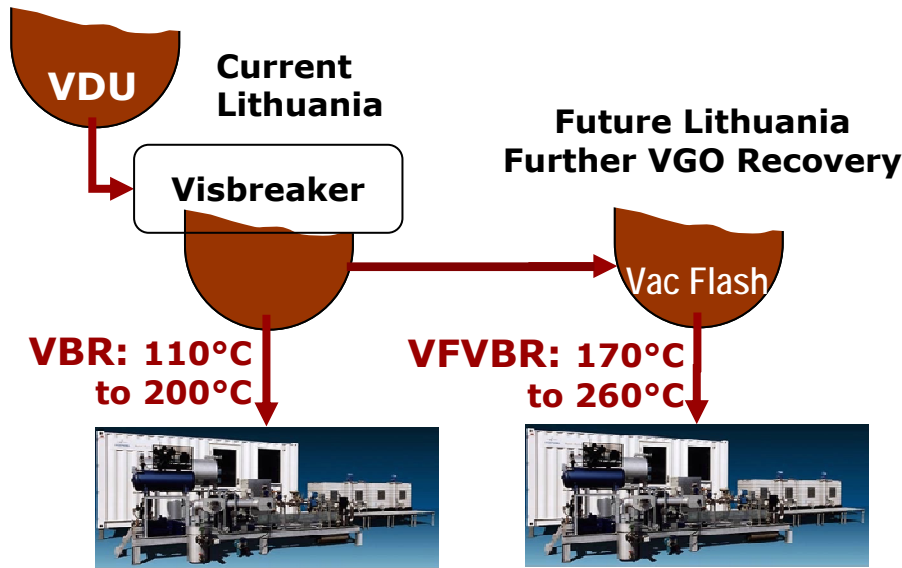
Refining



Value and characteristics of refinery residue



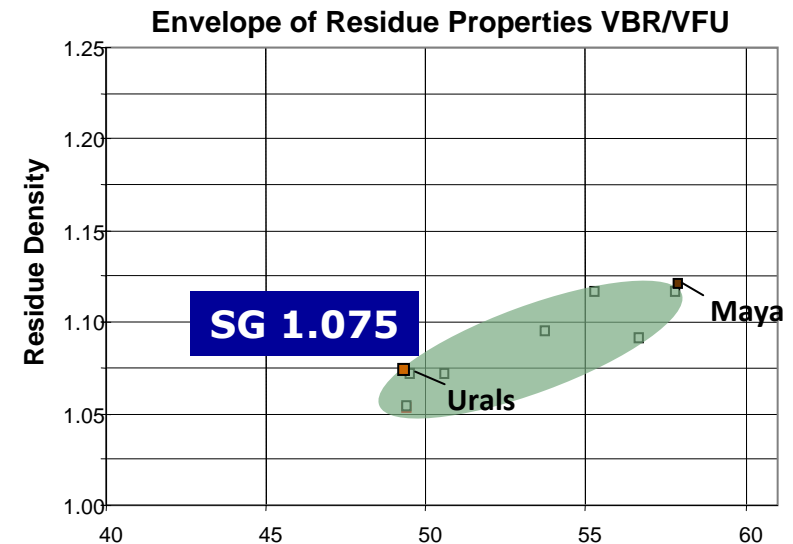
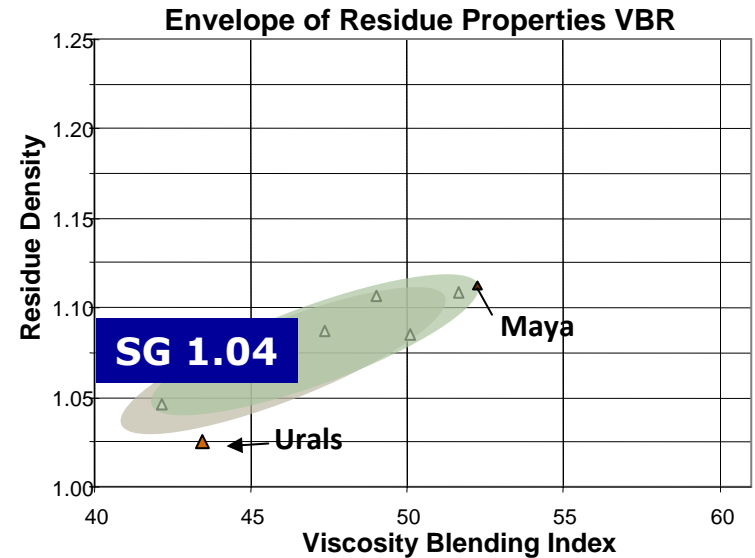
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Operational enhancement: Increased cracking severity potential

The stability of the residue is no longer constrained by the requirement to make stable fuel oil.

Enhancement potential: unstable residue (p -value < 1.0) may make good MSAR®



Envelope relates to the following crude oils: Urals, Arab Light & Heavy, Kuwait, Boscan, Canadian Bitumen, Maya



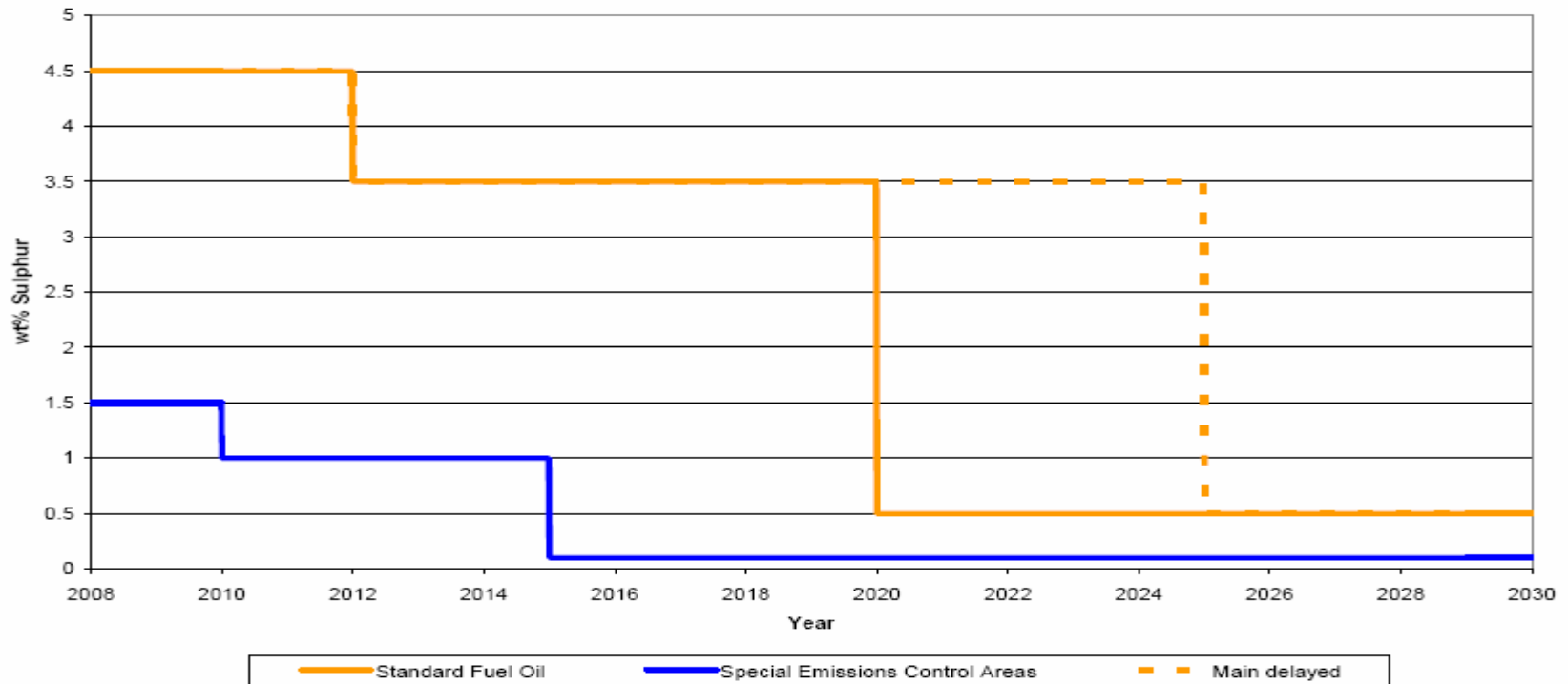
**Future MSAR® Opportunities
for
Technical Developments
adding to value**

Bunker Fuel

Future specs envisage ever decreasing sulphur:

Proposed IMO Targets

Proposed Bunker Specifications





Bunker Fuel

A potential solution to the sulphur issue is on board SO₂ sea-water scrubbing, funded in-part or fully by cheaper fuel.

Huge market: >150 million tpa HFO

Ancillary benefits:

- Capex avoidance on residue hydro-processing at refineries
- Lower cost bunker fuel (cheaper than current HFO and avoiding huge hike to price levels for distillates)
- Reduced CO₂ emissions at refineries (principally avoided hydrogen production)



Quadrise conclusions – technology development

- It takes longer than initial estimates
- Market knowledge and sound strategy essential; flex development to market priorities
- Expert technical capability an essential
- Focus on real opportunities where clients/partners contribute to costs
- Establish fully co-operative development with clients – overcome hurdles together on an aligned interest basis
- Keep going forward by pro-actively managing the risk; and walk before you run
- Use other peoples money, including the tax man – R&D credits particularly useful to SMEs

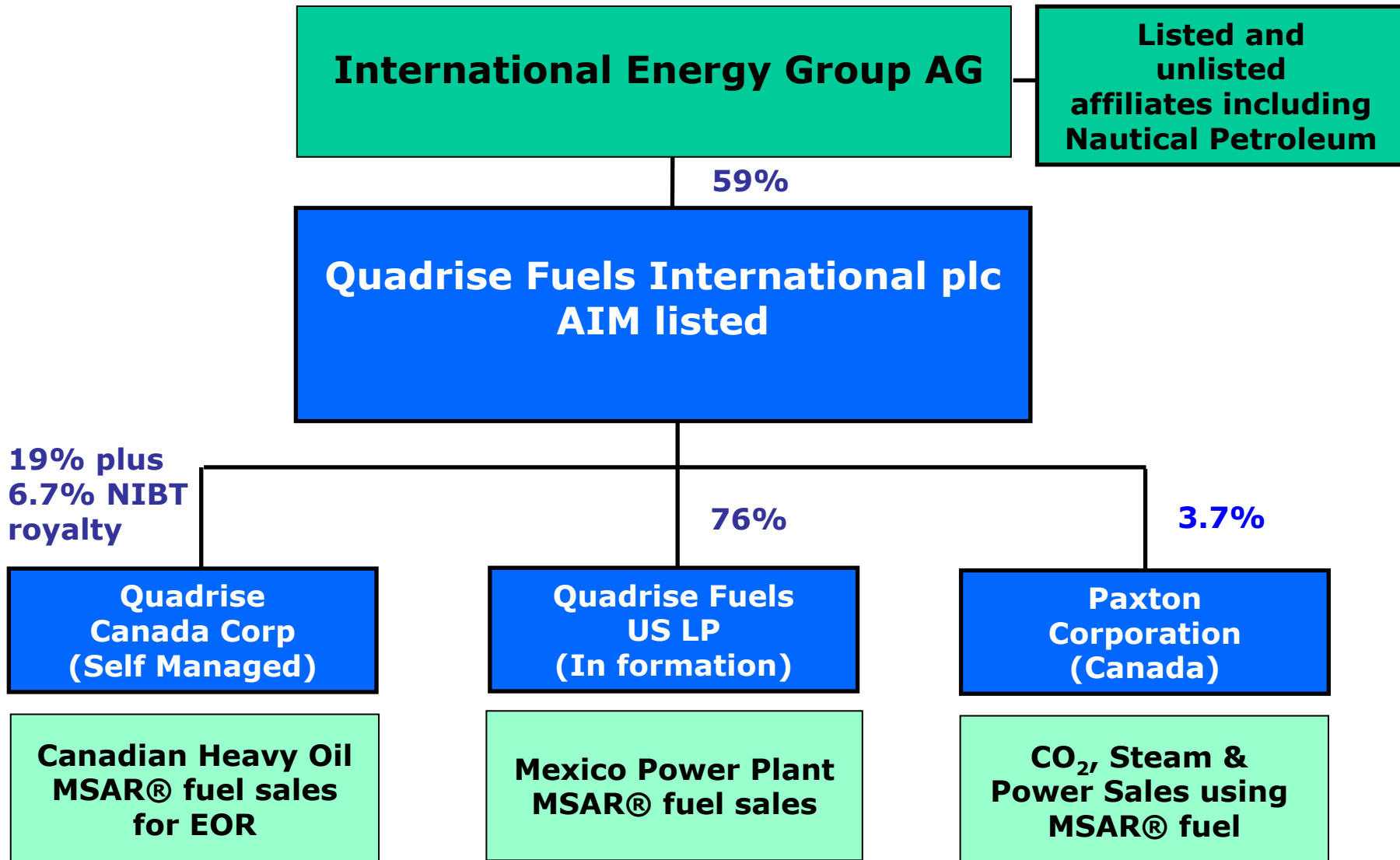
Thank You



Appendices



Quadrise Group Structure



Quadrise Fuels International plc



QFI Board and Management Structure

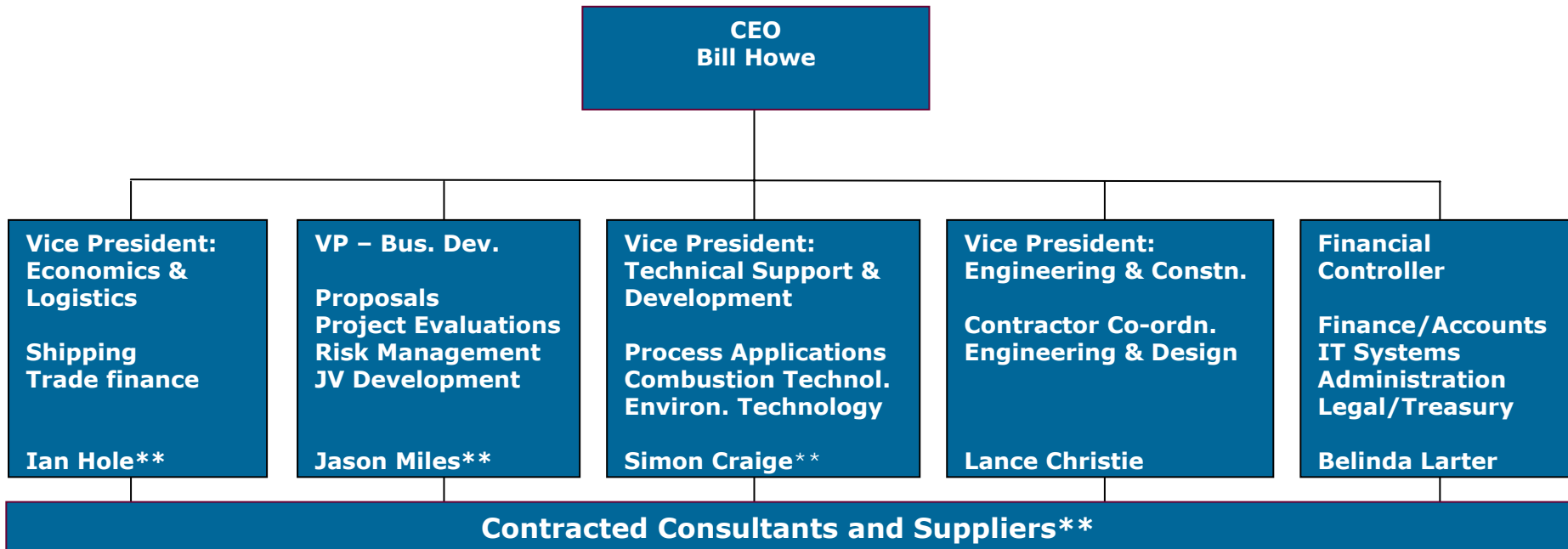
Board of Directors

EXECUTIVE

Chairman	Ian Williams
Chief Executive Officer	Bill Howe
Financial Director	Hemant Thanawala
Director – Bus. Dev.	Jason Miles

NON-EXECUTIVE

Ian Duckels & Laurie Mutch



**** former BP/PDVSA Employees actively associated with Orimulsion (7 total)**

Quadrisse Fuels International plc



- **Ian Williams - Chairman** joined the Masefield Group in 1999 with responsibility for the development and management of business ventures. In this capacity, he led the strategy to secure the portfolio of assets and related business interests that culminated in the formation of IEG. Prior to joining Masefield, Ian spent over 27 years with the Royal Dutch/Shell Group in various capacities including as Managing Director and Deputy Chairman of Shell South Africa, Vice President (Downstream) of Shell Philippines and most recently as Head of Strategy & Consulting (Downstream) at Shell International Petroleum Company in London.



- **G W (Bill) Howe – CEO** began his career as a process engineer in the hydrocarbon processing industry and joined Foster Wheeler in 1975. At Foster Wheeler, Bill was closely associated with the oil, gas, refining and power sectors, and held a number of senior executive positions including MD of its South African affiliate, as a main board member of Foster Wheeler Energy Ltd (UK), Senior VP of Foster Wheeler Power Systems Europe and as a member of the international Sales and Technology committees of Foster Wheeler International Corporation. Bill joined Bateman Project Holdings Limited in 1999 as Executive Director responsible world-wide for the company's oil, gas, energy and water engineering businesses. Bill has a BSc Hons in Chemical Engineering from the University of Birmingham, UK and joined QFI in 2006.



- **Hemant Thanawala - FD** is a Chartered Accountant with over 25 years professional and commercial experience. He joined Masefield in 2001 having previously served for 3 years as CFO of Premier Telesports Group which was involved in the entertainment sector in parts of Eastern Europe and the FSU. In this position, he played a key role in two private placings and the listing of the group on the Vienna Stock Exchange. Prior to that, Hemant served as the finance director of Rostel Group, a multi-national manufacturer & distributor of blue-chip branded consumer products, for 8 years. Before joining Rostel Group, Hemant was involved in professional practice in the UK, qualifying with KMG Thomson McLintock (now KPMG).



- **Jason Miles Business Development Director** started his career as a process engineer for British Petroleum (BP) in London. In 1992 he was seconded to the joint venture with Petroleos De Venezuela SA that established the market for Orimulsion®. He has over 10 years of specialist technical, environmental and commercial product knowledge in the use and competitiveness of emulsion fuel for power generation. Prior to QFI in 2006 he was a Senior Oil Consultant for OpenLink for two years. Jason has a BEng Hons in Chemical Engineering from Loughborough University, an Executive MBA with distinction from Cass Business School (City of London) and is a chartered chemical engineer (MChemE).



- **Dr Simon Craige, VP Technology**, joined Masefield mid 2005, following a 3 year term as Managing Director of DOG A/S , a major Danish oil re-refining company. Simon holds a BSc in Applied Chemistry and a PhD in Bitumen Technology He has expert specialised knowledge of emulsion science combined with commercial application experience and a substantial understanding of power generation technology and related engineering . Earlier in his career, Simon was part of the BP Research Centre team involved in the development of the specialised technology supporting the Orimulsion venture with PDVSA in the late 1980's. He then transferred to the Bitor joint venture where he held various positions working extensively in Europe in the co-ordination of major commercial developments associated with the conversion of thermal power stations to oil emulsion fuels.



- **Ian Hole VP Economics and Logistics** has worked in the energy industry for over 25 years including more than 10 years in the field of emulsified fuels. Following roles with BP in Corporate Planning and BP Gas, Ian worked as a product trader before joining BP International's New Product Development Unit where he worked on the establishment of marketing company, BP Bitor, (a joint venture with Petroleos De Venezuela SA, PDVSA) to market Orimulsion. He then worked for the joint venture and subsequently transferred to PDVSA and became a Director of Bitor Europe with responsibility for commercial development. After leaving PDVSA in 2000 he joined former BP colleagues as a director of Quadrise Ltd. Ian transferred to the Masefield group in March 2005 specifically to develop the QPS initiative. Ian has an MA in economics from Cambridge University.



- **Lance Christie, Vice President Engineering and Manufacture** is a graduate chemical engineer with over 20 years process design, detail engineering and project management experience for the Foster Wheeler group in the oil, gas, LNG, petrochemical, refining and power industries. Involved in numerous large scale international projects in Africa, Europe, Middle East and Australasia. Held a series of senior management positions including Technical Manager and Process Manager of two Foster Wheeler affiliate companies.



- **Dr Alan Stockwell** jointly founded Quadrise Ltd with Peter Dodd in the early 90's. Prior to that, he worked for BP Research & Development for over 15 years, the majority of which was devoted to leading the emulsion technology team which led to the development of Orimulsion. Dr Stockwell also served as a key member of the team that developed Transoil, a product used for the transportation of Wolf Lake bitumen in emulsion form. Since joining Quadrise Ltd, he has played a key role in the development of MSAR. Dr Stockwell has a BSc in Chemistry and a PhD in Physical Chemistry.



- **Peter Dodd** jointly founded Quadrise Ltd with Dr Alan Stockwell in the early 90's. Prior to that, he spent over 25 years with BP in various senior executive roles in the chemicals, LPG and new energies divisions. He was managing director of BP Bitor Ltd, the company that developed and marketed Orimulsion as a major new power station fuel.



- **Tony Kallis** is a chemical engineer with over 34 years experience in the oil and energy field. He has spent 30 years with the Royal Dutch/Shell Group, during which time he progressed from refinery technology and optimisation activities, to supply and distribution functions and finally to marketing and senior general management. Mr Kallis has held various senior management and board positions within Shell Group companies, including that of chairman of several subsidiary and joint venture boards in Southern Africa. From 1997 to 1999 Mr Kallis worked as a Global Leadership Consultant within the Shell group, leading substantial programmes globally. Recent roles at Shell included commercial business responsibility for Southern Africa, as well as membership of global teams responsible for formulating strategy for downstream oil business sectors. Tony was Commercial Director of QFI between 2006 and February 2008, returning to Cape Town for personal reasons, but continuing as an active QFI team member on a consulting basis.



- **Laurie Mutch, Non-executive Director**

Laurie Mutch is a management consultant providing advice on governance, strategic planning, business development and change management to multi-national organisations. He has 25 years' experience in the energy industry with the Royal Dutch/Shell Group where he sat on the Board of Shell International Gas & Power, as Executive Director for business development in the Eastern Hemisphere, leading the commercial appraisal and development of all Shell's gas and power projects in the Middle East, South Asia, China, Philippines and the Russian Far East. From 1994 to 1996, he was the Finance Director in Shell International Gas, and Principal Executive to the International Energy Agency's Coal Industry Advisory Board (CIAB), a forum of coal industry leaders and a main source of advice for coal policy matters to the International Energy Agency in Paris. Prior roles include senior management positions in Shell's Coal and Chemical Divisions. During his last two years of service he was Group Chief Information Officer and on the Microsoft and Dell Enterprise Advisory Boards Mr Mutch holds a BSc in Mathematics & Physics and an MSc in Astrophysics.



- **Dr Ian Duckels** joined Quadrise Ltd in 1998 after a career span of 28 years in the oil, chemicals and mining industries working for Shell and BP. In the early 90's, as the first Chairman of the management board, Dr Duckels managed BP's newly formed Nerefco refinery in Rotterdam. He has a BSc in Chemistry, a PhD in Chemical Physics, a BSc in Mathematics & Astrophysics and is an associate of the Chartered Institute of Management Accountants.