

ANNUAL GENERAL MEETING



29 November 2019

2019 MSAR® BUSINESS OVERVIEW ◆



29 November 2019

THE IMPACT OF IMO 2020 0.5%S MARINE FUEL RULES

A LARGE REDUCTION IN MARINE DEMAND FOR HIGH SULPHUR FUELS IN 2020...

2018 FUEL OIL DEMAND*:

Bunker fuel demand

= 4.2 Million BPD...

- **3.1 M BPD HSFO**
- 0.2 M BPD LSFO
- 0.9 M BPD MGO

Other fuel oil demand**

= 3.8 Million BPD

2020 FUEL OIL DEMAND*:

Bunker fuel demand

= 4.3 Million BPD...

- **1.3 M BPD HSFO**
- 1.5 M BPD LSFO
- 1.5 M BPD MGO

Other fuel oil demand**

= 3.9 Million BPD

Notes: * - Data based on OPEC World Oil Report 2019 (1M BPD HSFO = 57M tpa) ** - Industrial/Power/Refining etc.

IMO = International Maritime Organisation. HSFO = High Sulphur Fuel Oil. LSFO = Low Sulphur Fuel Oil. MGO = Marine Gas Oil. BPD = Barrels Per Day.

THE IMPACT OF IMO 2020 0.5%S MARINE FUEL RULES

FOR QUADRISE, OPPORTUNITIES BUT ALSO CHALLENGES...

OPPORTUNITIES:

- ✓ Reduced demand for marine fuel oil and increased demand for distillates further improves MSAR[®] production economics.
- ✓ Reduced cost of HSFO (and MSAR[®]) improves energy competitiveness vs. other fuels (LNG).
- ✓ Improves benefits of scrubbers vs LS fuels.
- ✓ Increased pressure on environmental impact (reducing SO_x, NO_x and PM).
- ✓ For NOCs with only sour crude oils, MSAR[®] offers a fast economic fix to HSFO “overhang” vs refinery upgrading.

CHALLENGES:

- ✗ One of the largest oil demand shifts in history driven by global regulations.
- ✗ Hence - many players in the refining and marine sectors are late, scrambling to prepare - limits “airtime” for new ideas.
- ✗ Refineries will (where they can) source sweeter crudes to supply LSFO, or in some cases not run at full capacity, reducing HS residue availability near-term.
- ✗ Global drive for decarbonisation.
- ✗ No commercial MSAR[®] operation as yet.

MSAR® – ENERGY COST SAVINGS TO CONSUMERS



400MWe POWER PLANT BOILER consuming 600,000 tpa HFO:

MSAR® saving vs HFO

\$15m per year *

CAPEX <\$5m modifications.



VLCC TANKER consuming 16,000 tpa HFO:

MSAR® saving vs HFO

\$0.4m per year *

CAPEX <\$0.4m modifications.

* assuming \$25/mt HFO (10%) equivalent energy savings with MSAR®.

tpa = metric tons per annum. HFO = Heavy Fuel Oil.



Stored & transported at ambient temperatures

Less heating =
energy savings

✓ **Reduction in
utilities consumption**



**Lower combustion
temperatures**

Less heating =
more energy savings

✓ **20-30% less NO_x
gases emitted**



**Virtually complete
carbon burnout**

Minimal black soot

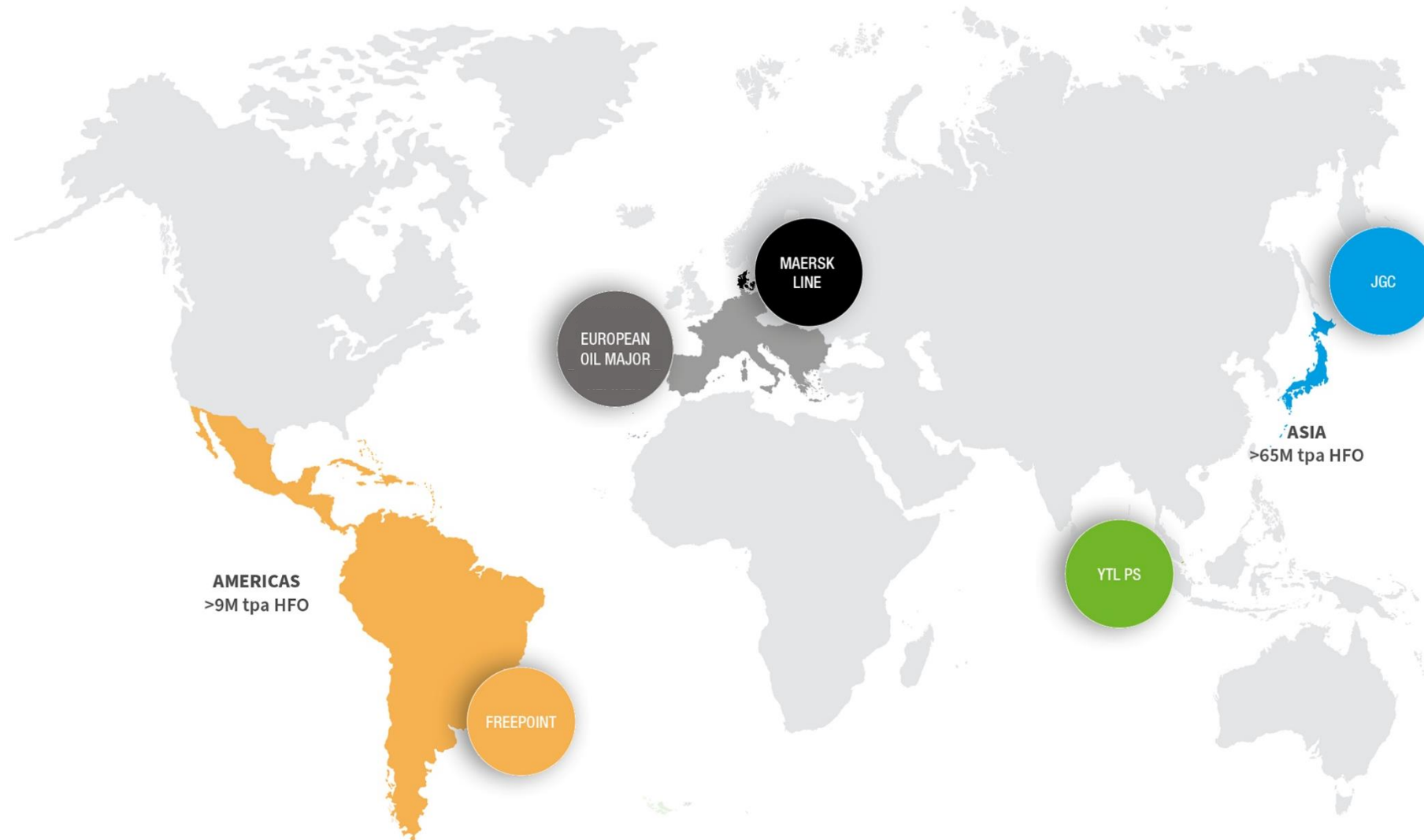
✓ **Reduction in global
warming potential**

✓ **Reduced waste
disposal costs**

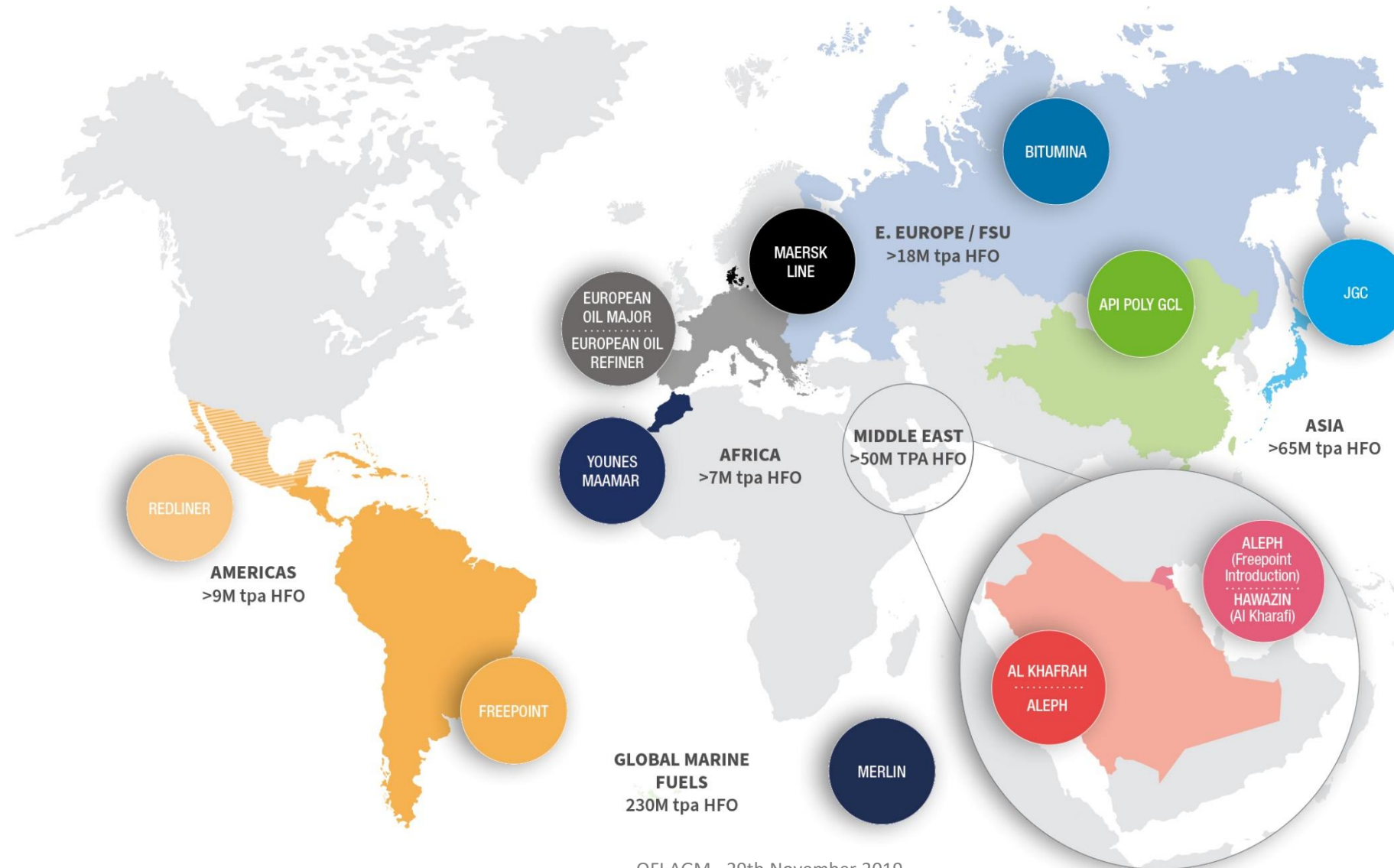
Lower cost MSAR[®] enables affordable compliance with regulations

NO_x = Nitrogen Oxides.

BUSINESS DEVELOPMENT PIPELINE – 2018 AGM



BUSINESS DEVELOPMENT PIPELINE – 2019 AGM



BUSINESS DEVELOPMENT PIPELINE - AMERICAS



FREEPOINT COMMODITIES



- Initial MoU in July 2018, leading to CMPDA in November 2018.
- Update: Various opportunities jointly investigated during 2019, the main focus being Americas and Russia supply to Europe/ME.
- Effected introduction to Aleph for opportunities in Middle East.
- Remains a valuable partner for future commercial opportunities.

REDLINER



- Agency agreement June 2019 – excellent access to refinery sector.
- Several meetings held in 2H 2019 – most recently November 2019.
- Significant opportunity to assist with improvements to constrained refinery output and distillate shortages.
- Political drivers and affordability will be critical to 2020 engagement.

EUROPEAN OIL MAJOR

- MoU and MSAR® test programme signed November 2018.
- Supply study completed, main focus now large customers (boilers + scrubbers).
- Issues with client's new refinery unit operations and associated fuel sampling.
- Remains an opportunity, pending large end user.

EUROPEAN OIL REFINER

- MoA with European refiner in August 2019.
- Initial client testing undertaken, visits to QRF and client site completed.
- Pending review of refinery refueling / blending economics to meet IMO2020.
- Potential opportunity to progress site pilot in 2020 under review.

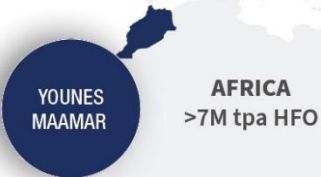
MAERSK LINE (MARINE FUELS)

- Royalty Agreement with ML still exists, discussions.
- Increasing number of vessels "scrubbed".
- QFI estimates HS MSAR® savings for 2020-21 are ~\$1m/year/10,000 TEU+ container vessel (over and above \$5m/year for HSFO vs LSFO).
- IMO2020 operational challenges in marine sector likely until end Q1'20.



GLOBAL MARINE
FUELS
230M tpa HFO

BUSINESS DEVELOPMENT PIPELINE - AFRICA



YOUNES MAAMAR (MOROCCO)

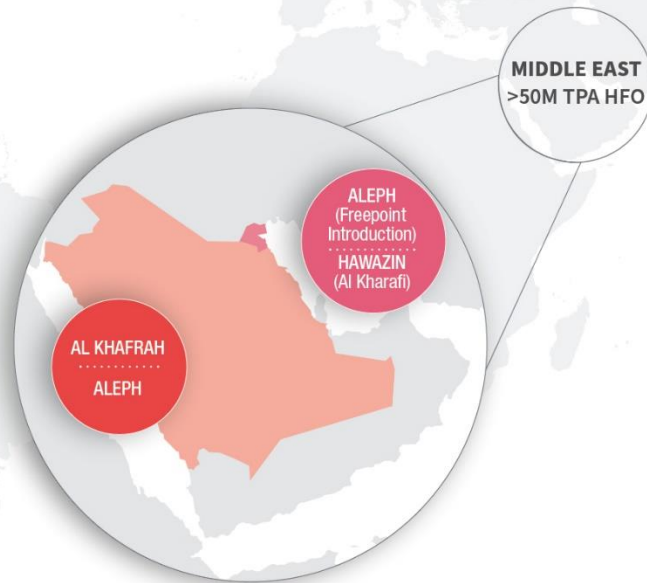
- Previously with AES and CEO of Morocco state electricity utility (ONEE).
- Representation agreement signed March 2019.
- Has proved to be effective in the target market, fine tuning targets and expediting client meetings in Morocco.
- Instrumental in effecting new agreement in Morocco.

INTERNATIONAL CHEMICALS AND MINING GROUP (MOROCCO)

- Agreement signed with client 28 November 2019.
- Pilot plant trial during 1H'2020, followed by feasibility studies for larger commercial trials as the necessary precursor to commercial supply.
- Material opportunity for fuel oil replacement in region if successful.

MISCELLANEOUS

- Opportunities for other powerplant supply and upstream applications under review in the region.



HAWAZIN, ALEPH (KUWAIT)

- Services agreement with Aleph Commodities February 2019.
- Agency agreement & MoU with Hawazin in May.
- Meetings during 2H'19 with refinery and petrochemical client teams demonstrated a new internal fuel opportunity for MSAR®, currently under joint investigation.

AL-KHAFAH, ALEPH (SAUDI ARABIA)

- New MOA with Al-Khafrah Holding Group in May 2019.
- Services agreement with Aleph Commodities in June.
- Several briefings with AKHG and KSA financial stakeholders.
- New strategy for 400MWe boiler trial using local MSAR® supply.
- AKHG Chairman leading latest meetings with key stakeholders.

MISCELLANEOUS

- Other opportunities in the region are being developed with a major power OEM, and other partners both existing and new.

BUSINESS DEVELOPMENT PIPELINE – RUSSIA & UPSTREAM



BITUMINA (RUSSIA/EASTERN EUROPE)



- MoU in March 2019.
- Provides access to residual streams from Russia & access to terminals.
- Refinery supply economics subject to (changing) Russian export tax.
- Needs a large consumer to commit to offtake during 2020.

MERLIN ENERGY RESOURCES (UPSTREAM)



- MoU August 2019 – heavy oil joint opportunity screening is ongoing.

BUSINESS DEVELOPMENT PIPELINE – ASIA

JGC (JAPAN)



- MoA since November 2017.
- Largest Japanese EPC contractor.
- Global EPC activities.
- Regular meetings in Japan.
- Update: Potential upgrading / fueling project in Japanese refinery under investigation.

API POLY-GCL (CHINA)

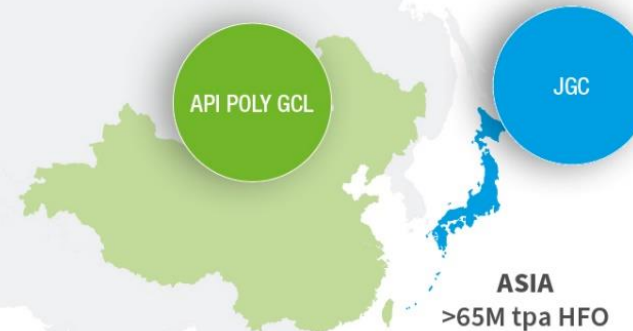


- MoU in May 2019.
- Chinese market study completed by API.
- Opportunities in power/ industrial sectors very limited due to gas & coal.
- Marine prospects under investigation - linked to scrubber deployment by COSCO etc in 2020.

YTL POWERSERAYA (SINGAPORE)



- Update: Supply studies concluded.
- Limited scope for thermal plant to compete with LNG CCGT.
- Joint agreement to allow current MoU to expire.



BUSINESS DEVELOPMENT PIPELINE - SUMMARY

- Material progress in broadening QFI's business development pipeline during 2019.
- New partners are incentivised to progress opportunities at pace and on commercial terms aligned with increased QFI shareholder value on success.
- Has provided QFI with significant global reach at no cash cost.
- The strategy is working, with new business opportunities in key sectors under review.
- Concerns over QFI future funding negatively impacted BD progress in Q3'19.
- With funding secured, focus is on expediting MSAR[®] trials that can lead to commercial operations at the earliest opportunity.
- IMO2020 is a great opportunity for QFI, though is also causing operational and commercial challenges in some key sectors related to the new fuel oil supply & demand model.

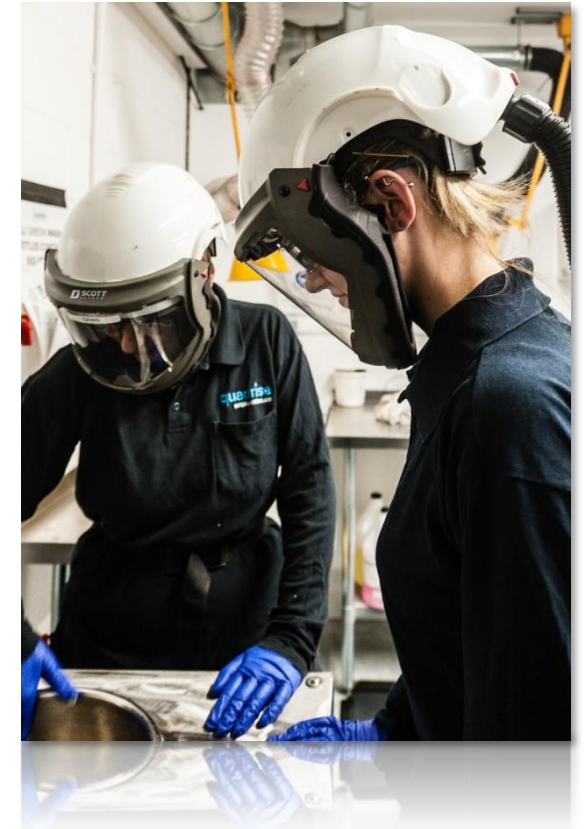
RESEARCH, DEVELOPMENT & INNOVATION (RDI)

Nouryon SURFACE CHEMISTRY

- New global 3-year exclusive agreement.
- Supply of goods (additives) and services.
- Joint protection of IP – two patents close to final grant at national phase.
- New opportunities for more active joint project development recently discussed to accelerate commercialisation.

IN-HOUSE ACTIVITIES

- Quadris is continually improving MSAR® technology and fuel performance at our UK RDI facility (QRF) strengthening our IP position and increasing barriers to entry.



Building on strong foundations made during 2019:

- Core MSAR® economics strengthened by IMO 2020 regulations – though it is also creating some bottlenecks and alternative options for clients.
- New agreement in Africa - pilot project for Morocco client now underway.
- New relationships in key markets in the Middle East and Americas have demonstrated progress towards trial agreements prior to commercial supply.
- Opportunities globally in various sectors are being developed in tandem.
- Business development activities are targeted to build on positive finances and market momentum, to deliver commercialisation plans in 2020.