

INSIGHTS INTO THE USE OF LIFECYCLE ANALYSIS FOR FINISHED LUBRICANTS

AGENDA

- WHO WE ARE
- INDUSTRIAL MEGA TRENDS
 - PRODUCT DEVELOPMENT DRIVERS
 - INTEGRATED APPROACH TO METAL WORKING FLUID MANAGEMENT
- CASE STUDY

IT'S MORE THAN JUST OIL. IT'S LIQUID ENGINEERING.



With a background in applied science, Chan started to work for Castrol in 1995 as a sales engineer.

In 2005, Chan became regional indirect channel manager, in charge of distributor in Singapore, Malaysia and Philippines. In 2016, he decided to leave regional role and join Global Account Management team as International Application Engineer, supporting global customer within Asia Pacific.



Chan Lam Fatt

International Application Engineer,
Castrol Industrial

AND GLOBAL INDUSTRY MEGA TRENDS



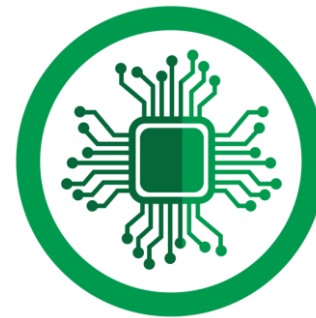
SUSTAINABILITY



ENVIRONMENT &
LEGISLATIVE



MANUFACTURING
TECHNOLOGY
ADVANCES



INDUSTRIAL
4.0

IT'S MORE THAN JUST OIL. IT'S LIQUID ENGINEERING.



THE RESPONSE IS IN PREMIUM PRODUCTS AND SOLUTION FOCUS

MEGA TRENDS



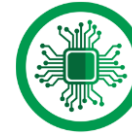
SUSTAINABILITY



ENVIRONMENT
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MANUFACTURING
TECHNOLOGY
ADVANCES



FACTORY 4.0
DIGITISATION

TECHNOLOGICAL DRIVERS



CUSTOMERS BEHAVIOUR
& NEEDS



REACH, GHS, BIOCIDAL
PRODUCT DIRECTIVE



MATERIAL &
PROCESSES



REAL TIME
MONITORING

TECHNOLOGY CHANGERS

Potential disruptors:

Machine tool coatings
Lubricant free machining
3D printing

Precision casting & forming: Lower rate of material removal

New materials: Composites and ceramics, machining

New material coatings for bearing: Reduction of micro pitting,
White Cracking Etch and contact fatigue in Automotive & Wind.

Digitisation and optimisation of customers processes:

Artificial intelligence
Machine learning
Adaptive robotics

LIFECYCLE ANALYSIS (LCA)

RAW MATERIALS

- Sustainability
- Durability
- Energy efficiency
- Regulation & legislation

MANUFACTURING

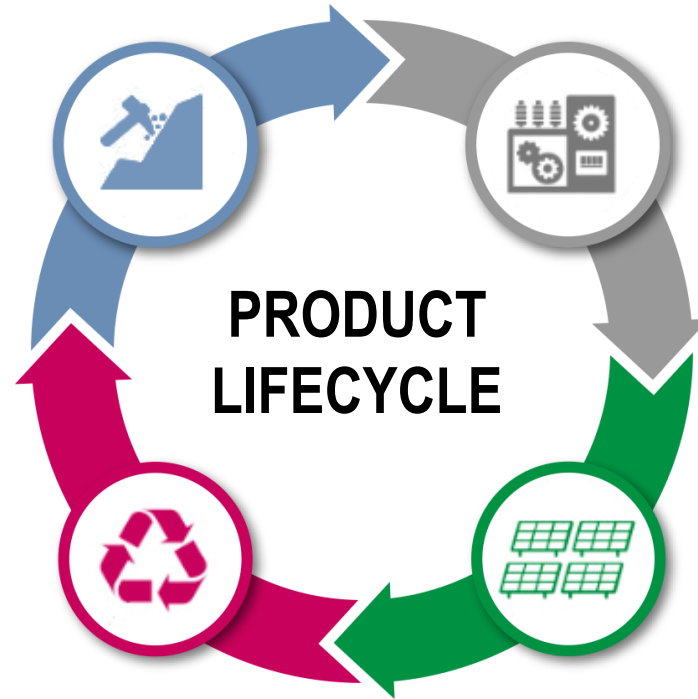
- Process efficiency
- Energy efficiency

PRODUCT USE

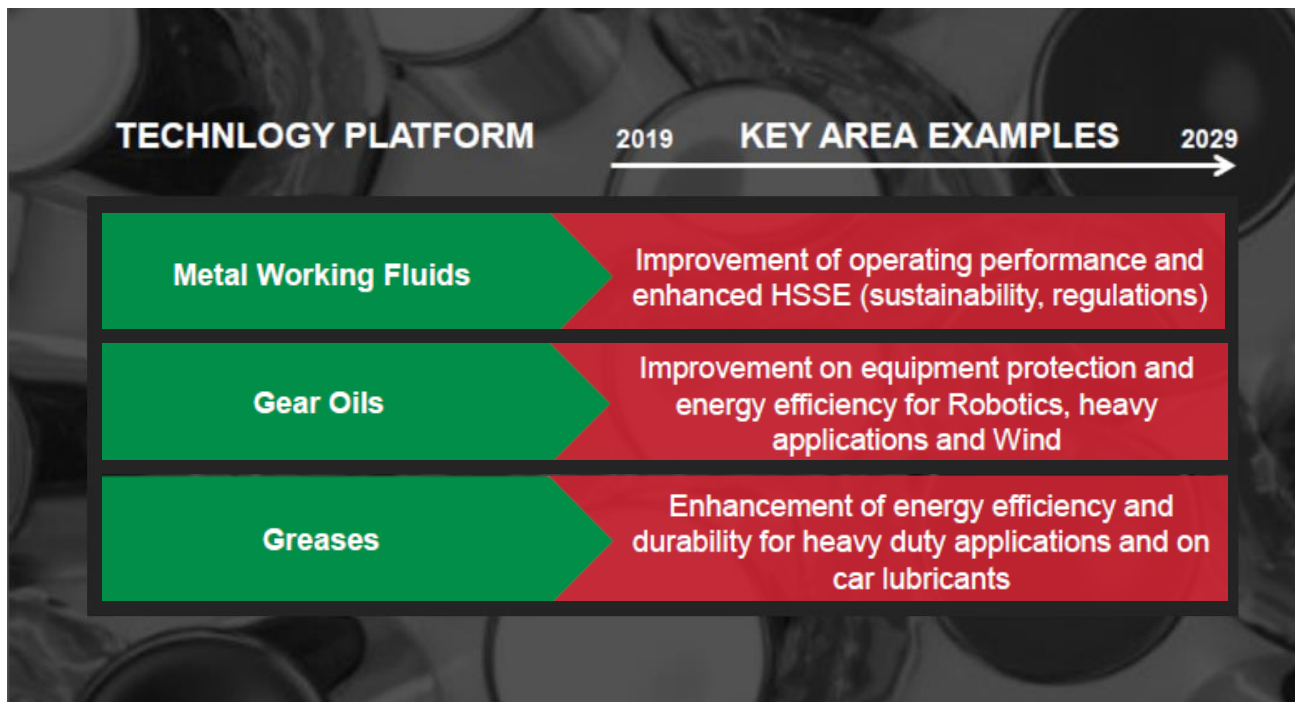
- Real time condition monitoring sensor & system

RECYCLING

- Coolant compatible cleaner
- Recovery & recycling equipment & system



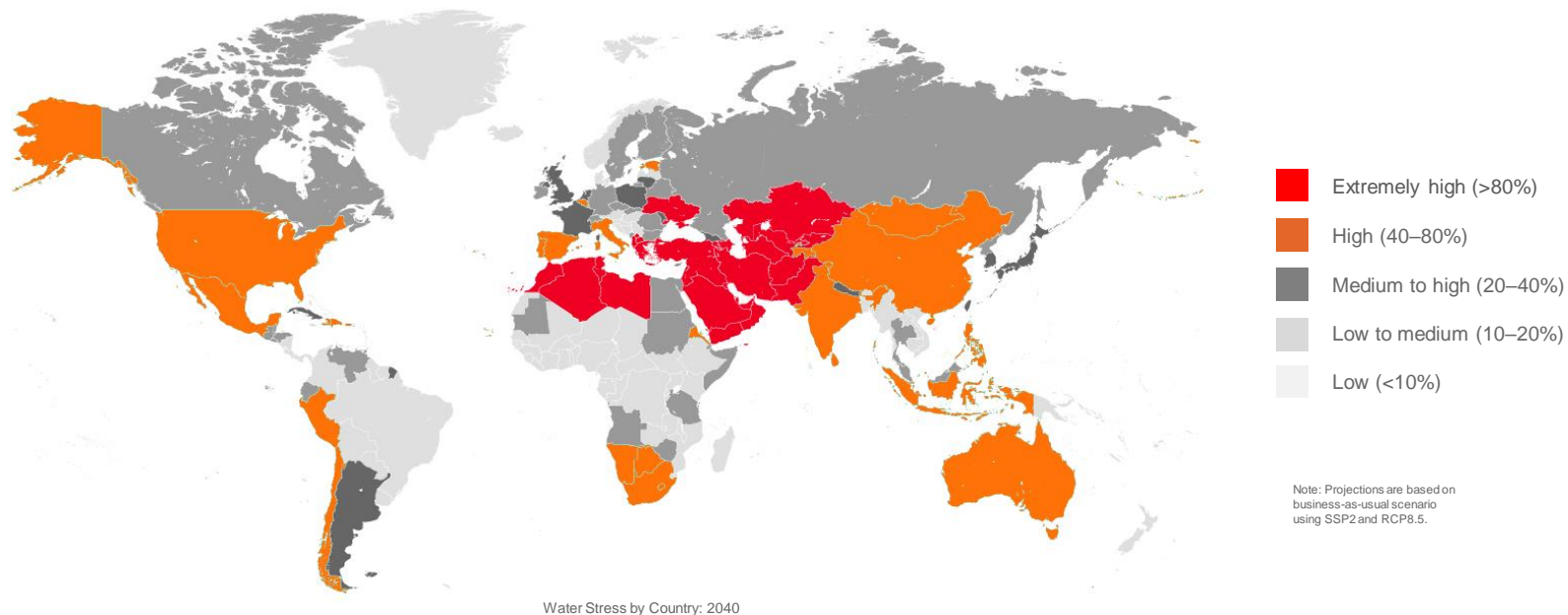
PREMIUM PRODUCTS



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ENVIRONMENTAL NEEDS (WATER STRESS)



AN INTEGRATED CLEANER & COOLANT SOLUTION



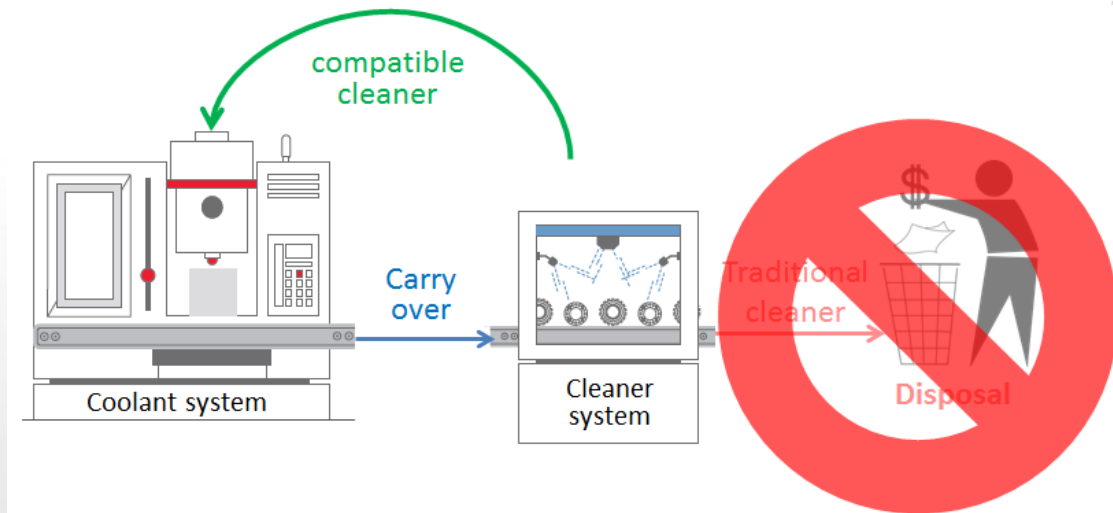
MANUFACTURING
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SUSTAINABILITY



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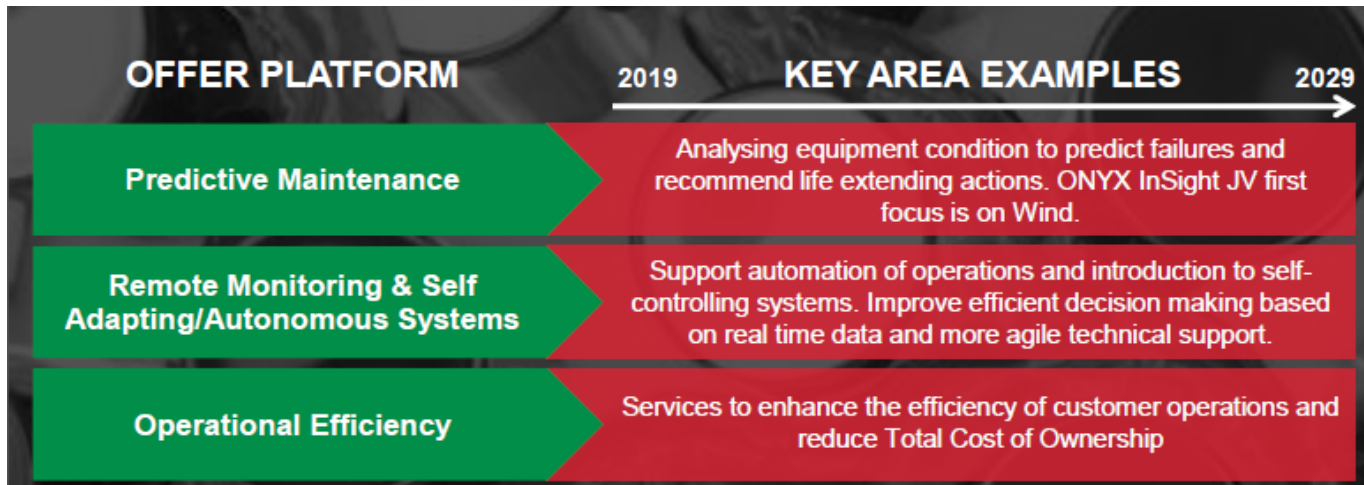
BIG DATA & INDUSTRIAL 4.0

Why

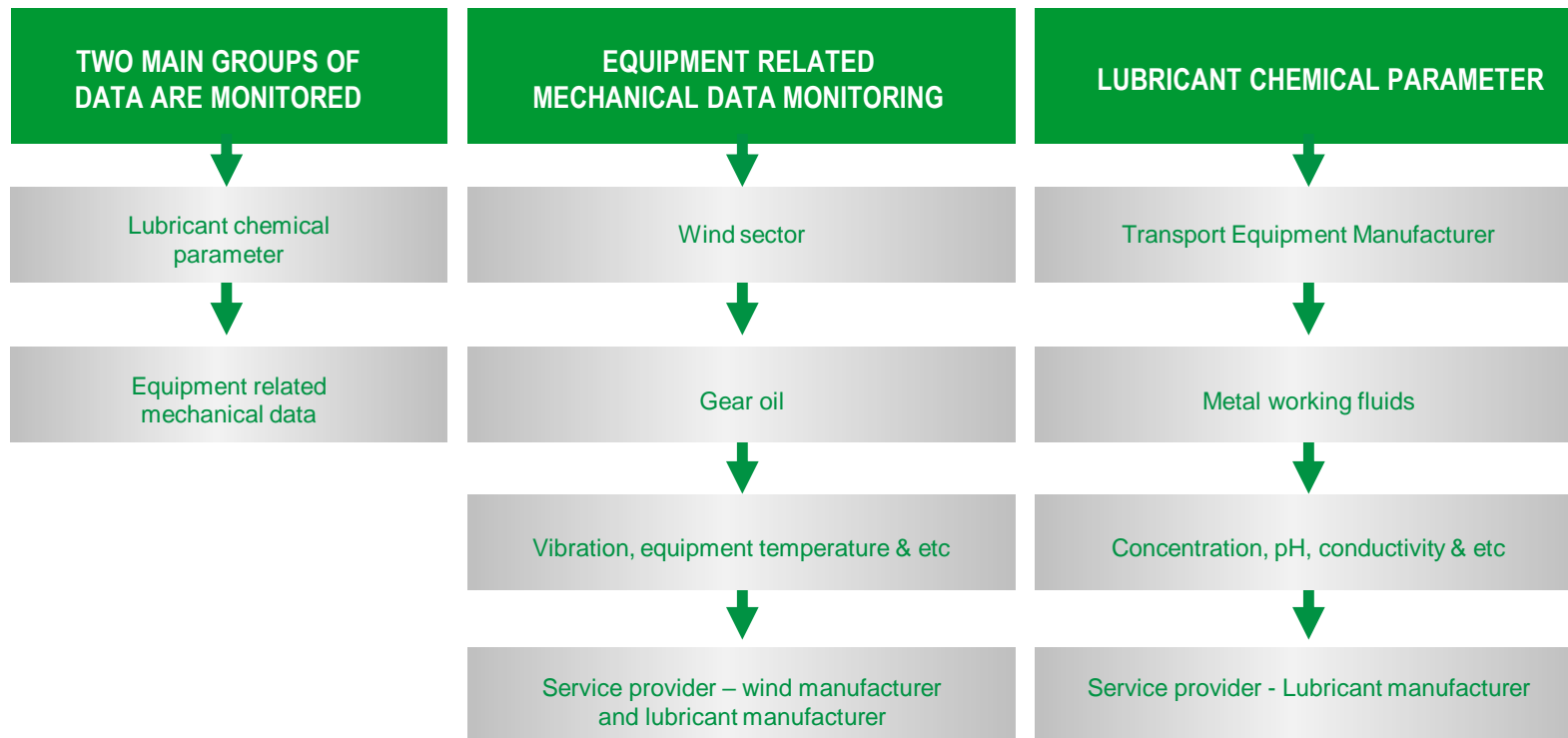
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PRODUCT USAGE SOLUTION

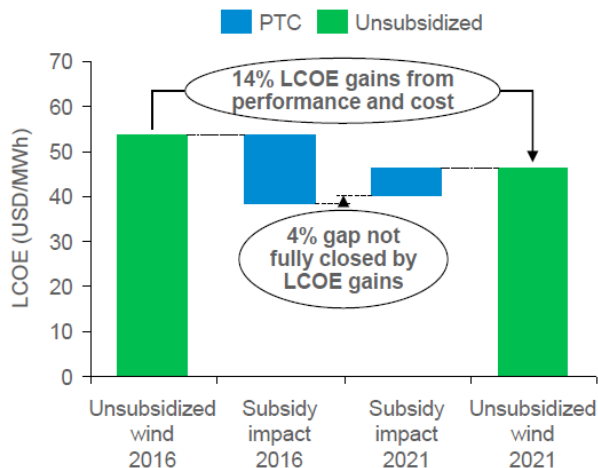


THE USAGE OF RTCM IN INDUSTRIAL SECTOR



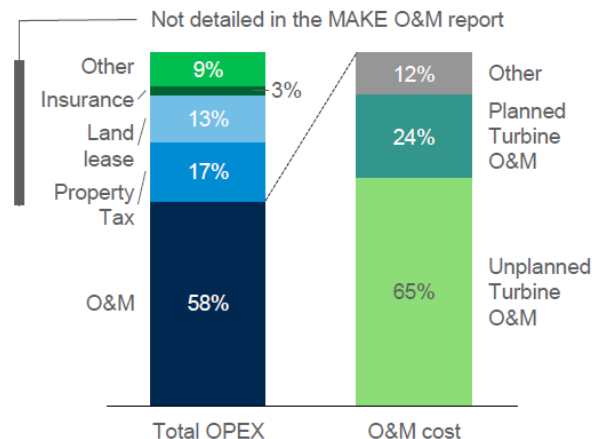
PREDICTIVE MAINTENANCE - WIND

US PTC phase-out will be difficult to overcome



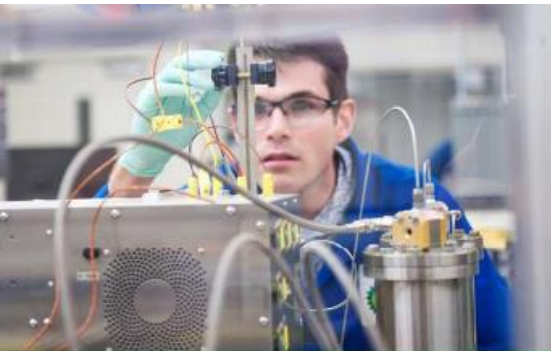
Note: LCOE of new construction, Nominal 2016 USD
 PTC applied for first 10 years of project. 2021 PTC is at 40% of original.
 Source: MAKE

Typical cost distribution for wind OPEX



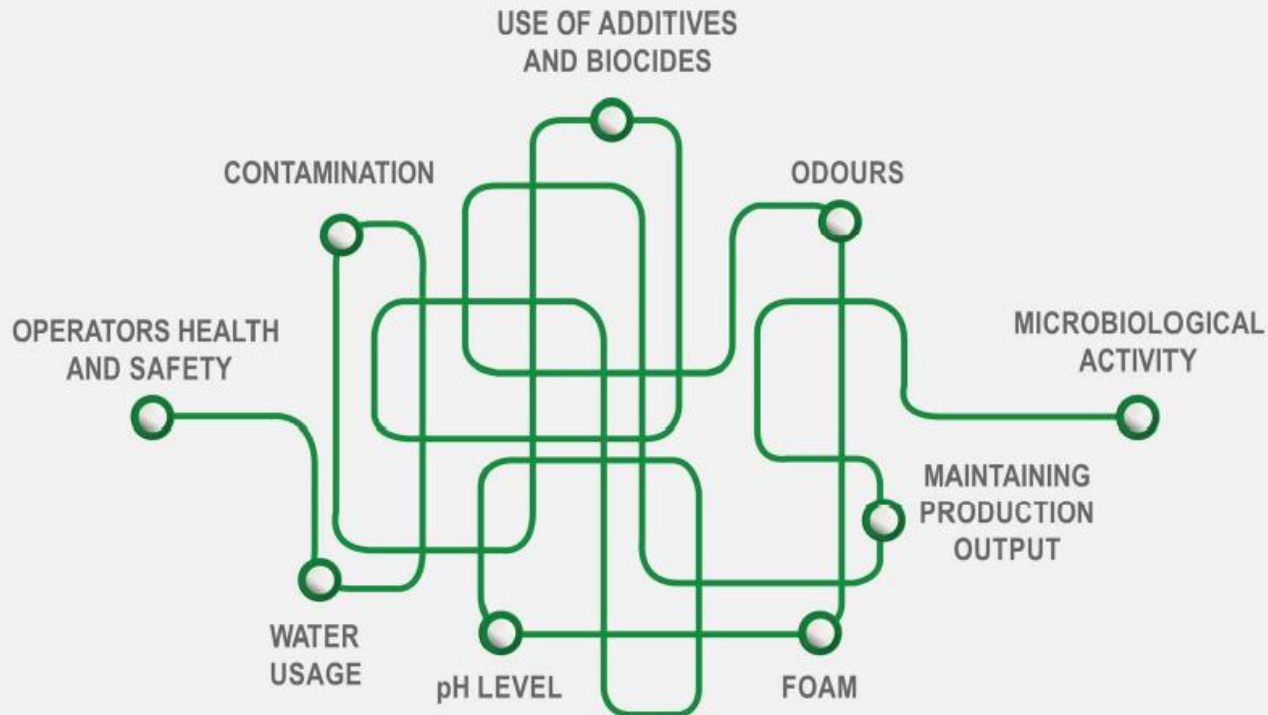
Note: Average values representative of US OPEX distribution
 Other OPEX includes legal services, consultants, fees
 Source: MAKE

MEATL WORKING FLUID PREDICTIVE MAINTENANCE



THE COMPLEXITY OF MANUAL MWF MANAGEMENT LEADS TO INCREASED DEMAND THROUGH MANUAL TESTING, INTERVENTIONS AND RESOURCE WASTE.

WHICH ALL DISTRACT MANUFACTURERS LIKE YOU FROM YOUR CORE BUSINESS.



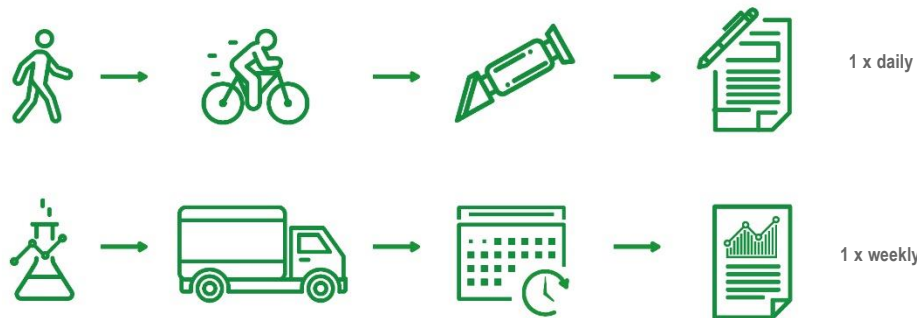
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THE BENEFITS OF REAL TIME CONDITION MONITORING

BEFORE



AFTER



EXTRA BENEFITS

Reduced
HSSE risk



Minimised
biocides



Increased process
stability



Reduction of
product usage



Reduced
tool wear



Increased
fluid life



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CASE STUDY

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AN INTEGRATED APPROACH TO METAL WORKING FLUID MANAGEMENT

THE SMARTER WAY TO TAKE CONTROL

TIER ONE AUTOMOTIVE ENGINE PLANT – SPAIN
Aluminium Parts (Cylinder head & Cylinder block)



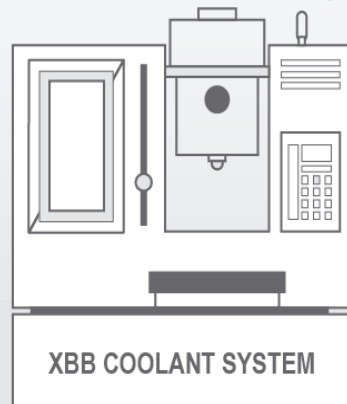
SAVING

€190.000

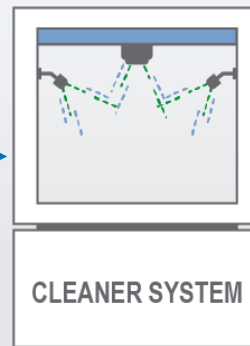
Coolant usage

Tool life

Rejection



CARRY
OVER



SAVING

1 million litres water

1 million litres waste



Cleaner Recycling



REAL TIME CONDITION MONITORING SYSTEM

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