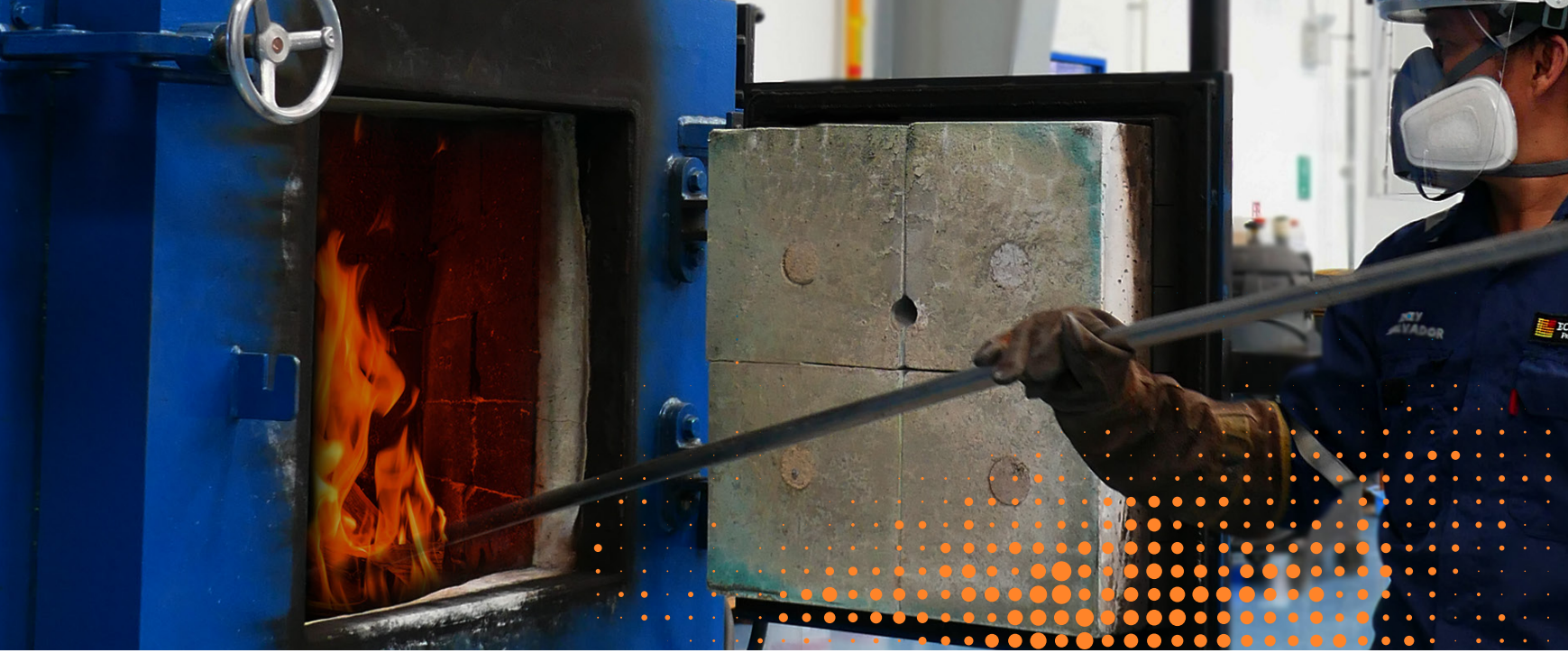
MASTERMELT
GROUP OF COMPANIES

CIRCULAR ECONOMY OF **CATALYST PROCESSING**



ABOUT US

The Mastermelt Group of companies is one of the largest recyclers and processors of precious metals in the world.

1985 MASTERMELT LTD
FORMED LONDON, UK

1997 ACQUIRED PRESMAN (BULLION) LTD
LONDON, UK

2000 MASTERMELT REFINING SERVICES LTD
FORMED BUXTON, UK

2006 MASTERMELT AMERICA LLC
FORMED SWEETWATER, TENNESSEE, USA

2015 ECO-MASTERMELT PTE LTD
FORMED TUAS, SINGAPORE

2015 MASTERMELT THAILAND CO LTD
FORMED BANGKOK, THAILAND

2019 MASTERMELT LTD GMBH
FORMED FRANKFURT,

2022 MASTERMELT TECH CENTER
FORMED STEVENAGE, UK

QUALITY

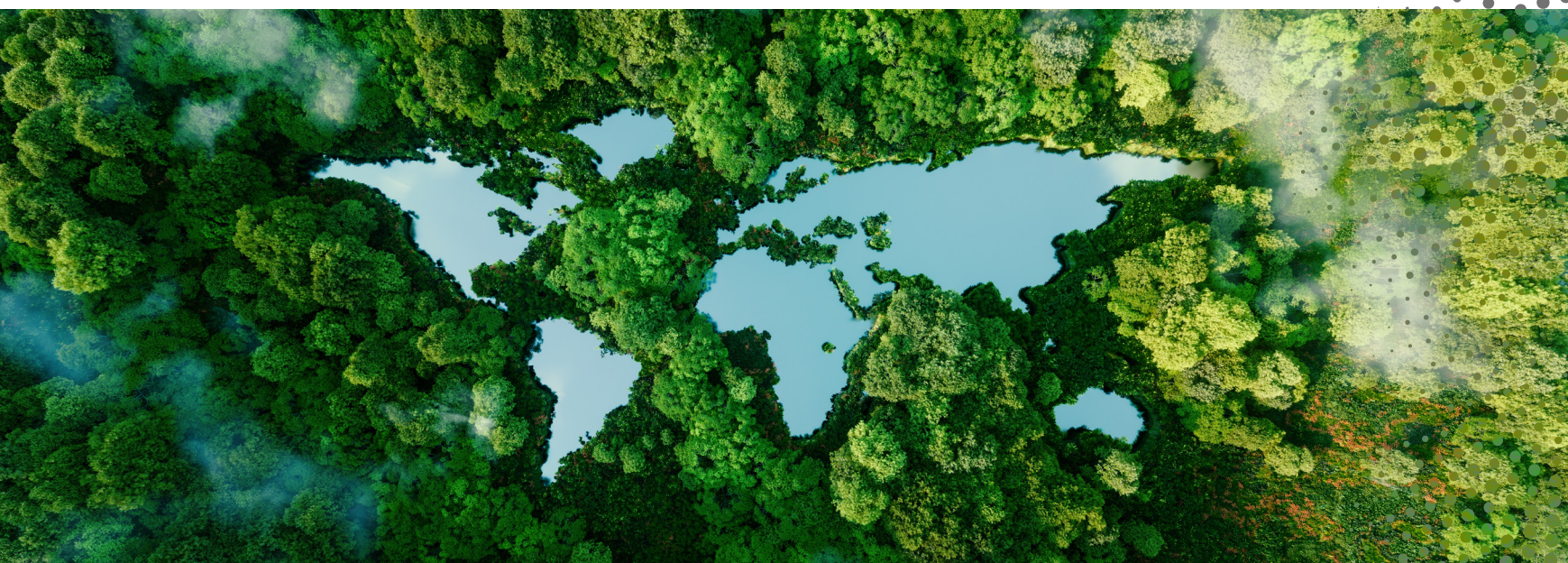
All Group companies hold internationally recognised quality accreditations such as ISO 9001 and ISO 14001.

EXPERIENCE

We are the global leaders in reclaiming precious metals from industries around the world and our respected team of experts have unrivalled knowledge and experience in processing all types of precious metals.

TECHNOLOGY

All of our operations have developed novel technologies to enable us to recover precious metals from ever more complex waste streams.



COMMITTED TO SUSTAINABILITY

Mastermelt are committed to being an integral part of the sustainable circular economy. Our goal is to continually improve our environmental and social performance. We achieve this by: reducing energy consumption and greenhouse gas emissions of our operations; ensuring that the materials we recover and reclaim are from responsible, post-industrial and post-consumer sources only; excellent EHS performance beyond compliance at our facilities; and developing innovative new recycling techniques.

GOLD 2022 ecovadis Sustainability Rating

ECOVADIS GOLD AWARD

Mastermelt achieved the Gold sustainable rating by the leading sustainable rating partner EcoVadis.

DESIGN

Catalyst characterisation based on an extensive knowledge base and experience, will determine a tailored treatment process, which will deliver the best value returns.

Treatment of catalysts used in common reactions:

Pd on carbon
Pd on silica
} Hydrogenation

Pd Acetate – Cross Coupling
Rh – Hydroformylation

YOUR PROCESS

Understanding your process where the catalyst is utilised will help determine the treatment route and matrix effects, such as the residual solvents present, base metals and halogen species will vary. Finally, the plant pre-treatment of the catalyst will also effect our processing techniques such as steam treatment, solvent washing, nitrogen purging are important, as are the type of filtration or separation method used to isolate the catalyst.

ANALYSE

Once we understand these aspects we will conduct analysis on a small sample of catalyst. Including matrix evaluation and thermogravimetric properties of the material.

SCALE UP

Technical scale-up of the tailored process route, which is monitored using rigorous process controls, ensures safe and effective production.

INSPECT

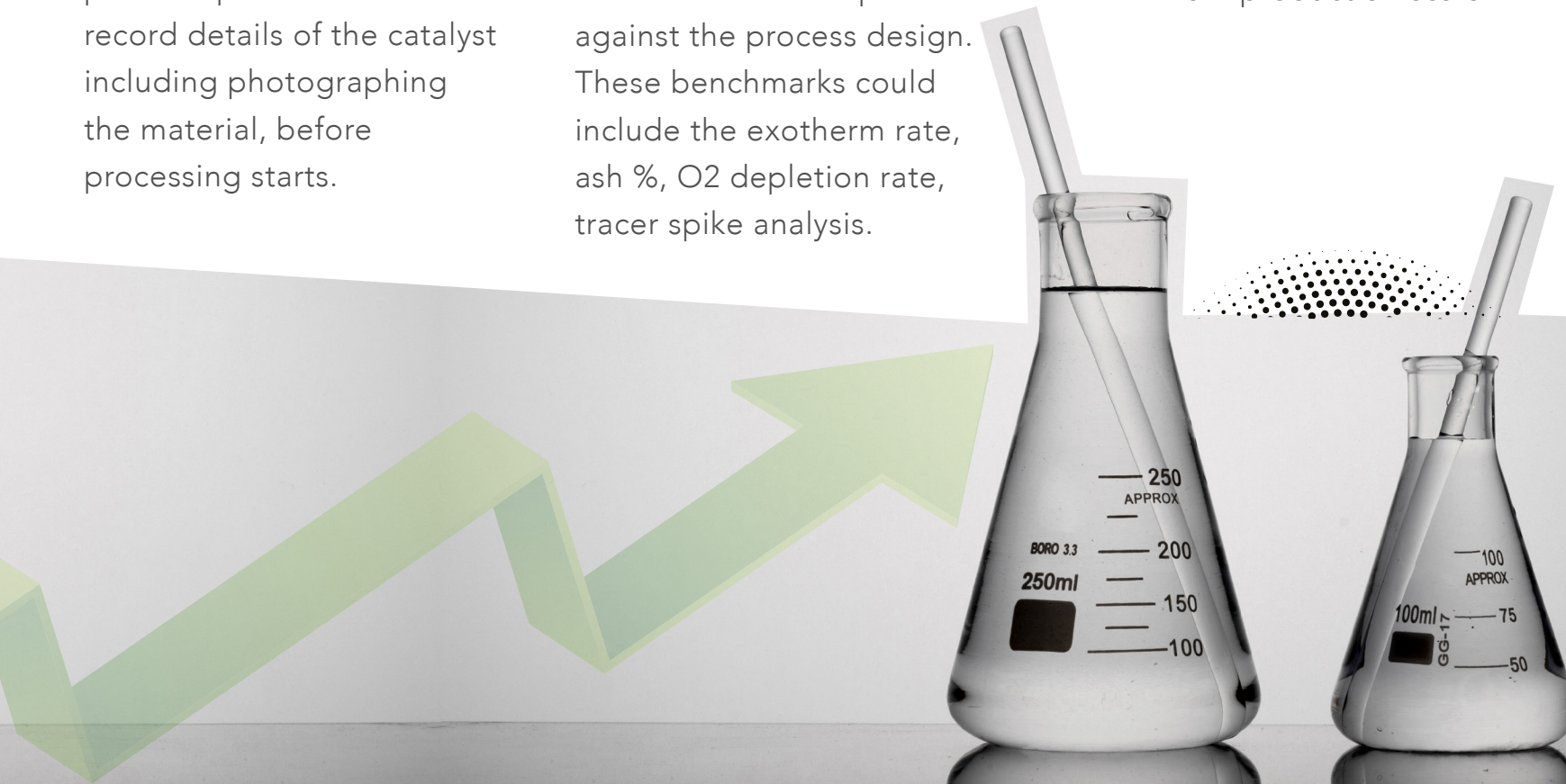
We will inspect the 1st delivery of catalyst the material to ensure that it conforms with the sample previous provided. We will record details of the catalyst including photographing the material, before processing starts.

MEASURED

Initial processing of a small sample of catalyst, normally 10-25kg. It's then monitored by our technicians and process measurements compared against the process design. These benchmarks could include the exotherm rate, ash %, O2 depletion rate, tracer spike analysis.

VOLUME

Assuming the initial trial benchmarks are within limits, then the volumes will be increased to a minimum production scale.



OPTIMISATION

Efficient and expedient processing of large volumes of catalyst, underpinned by performance benchmarking, resulting in industry leading precious metal returns.

PRODUCTION

When the performance benchmarks have been met, the production technicians look to optimise the throughput of the catalyst. Using Mastermelt's unique processing equipment and operating methods to increase the throughput of the process.

RECOVERY

Knowing the benchmark envelope will enable the maximum amount of precious metal recovery. This will be measured by our class leading sampling and analysis techniques.

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