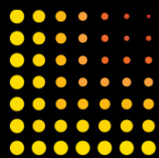


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International Precious Metal Refiners

Thermal Pre Treatment
An example in collaboration

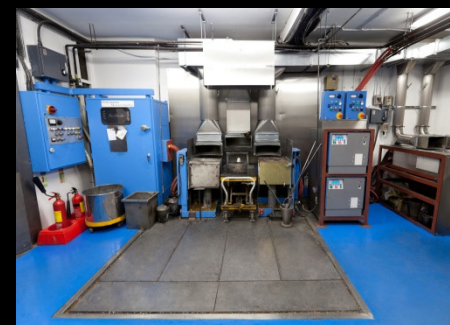


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Operations



Mastermelt Ltd
Furnaces, Thermal Pre Treatment,
Lab, Presman Scrap Counter

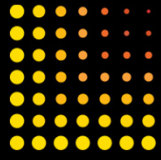


Mastermelt Refining Services Ltd
Furnaces, Thermal Pre Treatment,
Chemical



Mastermelt America LLC
Furnaces, Thermal Pre Treatment,
Chemical, Lab

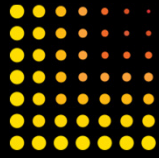




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New JV in Singapore opened in October 2016





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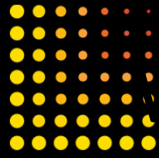
Catalyst Processing

The majority of catalysts require a thermal pre treatment stage.

Removal of organics, water, carbon and plastics.

Collaboration with our customers to assess the catalyst.





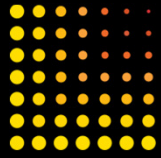
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What is thermal pre treatment?

The controlled ashing down of catalysts and filters to remove organic based material.

The off gases need to be taken to an afterburner to destroy the organic molecules before passing through an abatement system to neutralise and remove particulate.





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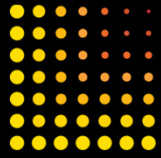
Capacity

By 2014 our capacity for thermal pre treatment was reaching its limits.

Opportunity to either buy the BASF UK site or purchase their equipment.

Decision was to purchase and relocate to Buxton.





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Rebuilding

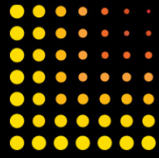
First task was to gain planning consent; approved.

Work then undertaken to dismantle the plant.

Issues on corrosion

Only with the contractors collaboration could the transfer of the plant have happened.





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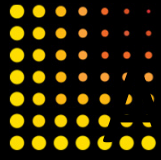
UK Environmental Agency

The Buxton site had been running since 2000 under the permitting from the EA.

Changes and new plant had been added to the existing process

Would they be an enemy or our best friend!





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A new plant is born

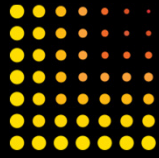
The construction of the new plant took 14 months

Still a significant investment as many modifications required.

Commissioned in March 2016.

Now fully operational.





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A supportive EA

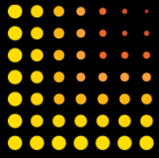
In March 2016 the UK EA re permitted the Buxton site inclusive of the new plant.

June 2016: trebled the number of EWC codes for the site.

August 2016: EA permitted many more codes for Basle pre consent.

The International Shipping Dept of the UK EA has been very supportive of TFS applications.



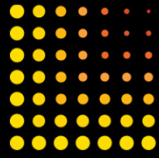


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The Benefits

With the doubling of thermal pre treatment capacity gave the ability to take on additional work. Rate of throughput has increased so reducing customer lead times. Resulting reduction in overtime.

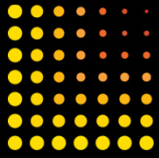




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Collaboration

- . Between BASF and the landowner to sell the plant to us. Also with the contractor in transferring the plant.
- . The MRS management team working together with the local authorities to gain planning permission.
- . Our ongoing relationship with the UKEA to grant the permitting and the increase types of intake.
- . With our customers in staying loyal to us during this time.



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We believe in a collaborative
approach

It certainly makes life easier!