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IMP Group



IMP started in South Africa 25 years ago

IMP is now 100% Australian owned – offices in Perth, Toronto, Belo Horizonte and Johannesburg

Work closely with Herzog to distribute, support and design sample prep equipment used for XRD, XRF, ICP etc

 Service and technical sales staff in each of these countries. Herzog and IMP employ more than 400 people

Globally we have sold more than 400 robots for sample prep

IMP Group



IMP challenges the status quo of traditional sampling and sample processing.

We work with like-minded customers to provide innovative solutions from sampling to analysis that -

- Improve ergonomics, health and safety for laboratory operators,
- improve sample integrity, quality and precision of analytical data
- Increase productivity.

Key Industries



Iron and Steel













Mining











Non-Ferrous







Milestones



- Have supplied over 75 automated laboratories
 - The largest laboratory automation project in the world to Anglo Platinum in South Africa (the facility is the size of a football pitch and uses 14 robots)
 - The largest robotic sample preparation and wet chemistry system in the world for FMI (previously Phelps Dodge) in the USA
 - The largest fully automated iron ore laboratory in the world for BHP BIO in Western Australia



Traditional Sample Prep It's horrible work





Manual Handling



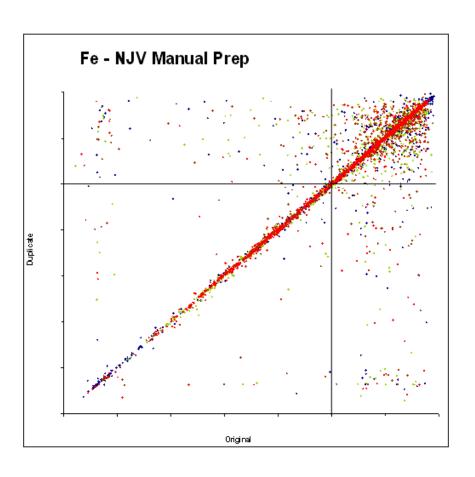
- In the manual based laboratory each sample could be handled up to six times in its full sample mass before being processed. Typically the process below was followed
 - Sample pick up
 - Sample drop off
 - Sample riffled
 - Sample crushed
 - Sample loaded onto oven trolley
 - Sample removed from oven trolley
 - Sample pulverised
 - Sample weighed out for analysis

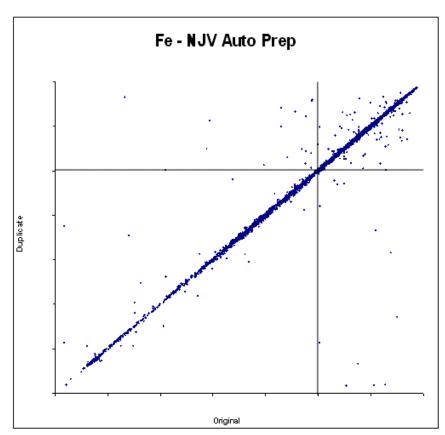
For every movement the risk of incurring a manual handling injury increased. There was also the risk around highly repetitive tasks



NJV Manual x Automated Preparation







Getting Results





Results

Reliable, Accurate, Repeatable, Timely and Efficiently Produced

Why Automate?



Automation

- Improves repeatability of results and precision
 - Less chances for error
 - Less repeated samples
 - More reliable results
 - Less sample "mix-ups"
- Provides a safer, cleaner and healthier work environment for employees
 - More interesting work for employees
 - Less insurance claims
- Usually lower price per sample (cheaper)
- Programmed and managed maintenance schedules
- Higher productivity

Laboratory Automation Concepts

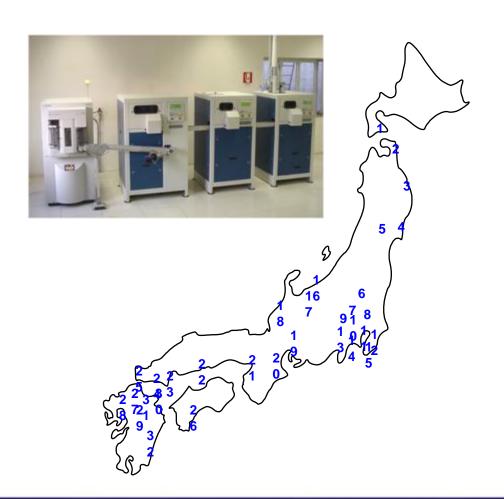






Automated Cement Installations

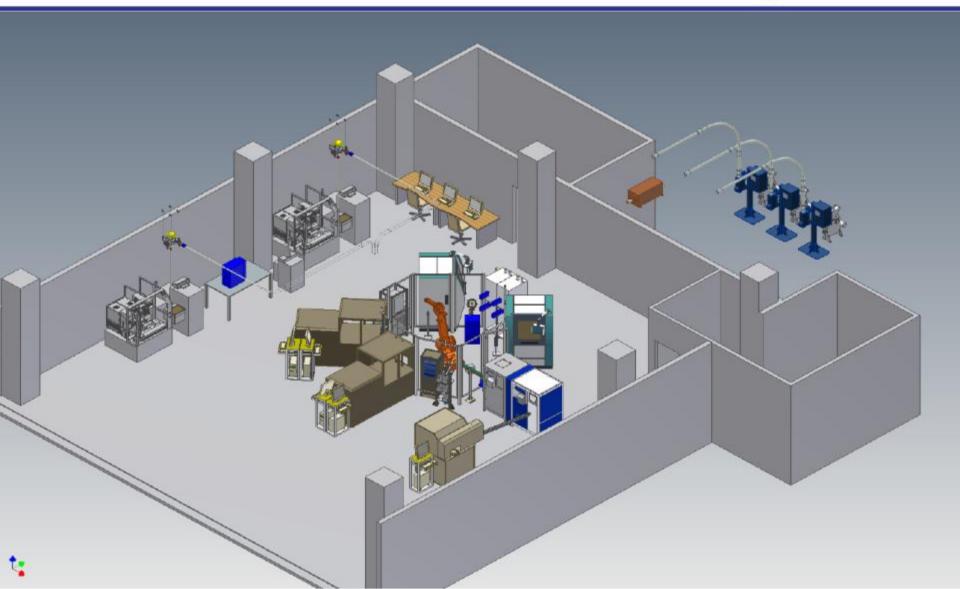




- IMP's partner,
 Herzog Japan, has
 installed 30+
 automated cement
 labs.
- Philippines and
 Europe all have may
 automated
 Herzog/IMP labs

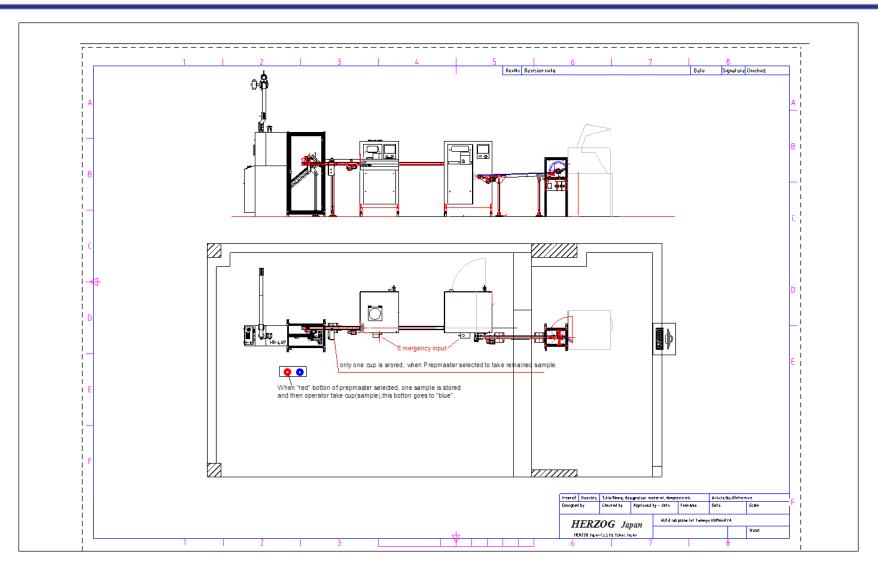
Taiheito Cement - Raw Meal





Cement - Linear System



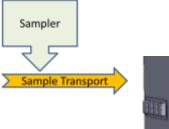


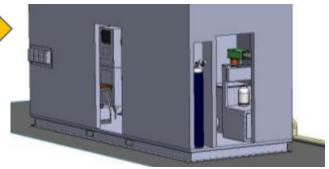
Cement Container Lab



System comprises:

- Container to hold the system
- Automatic sampling station (outside of lab)
- Sample preparation
- XRD, XRF and/or particle Sizing Instrument & software communicates directly with plant control systems

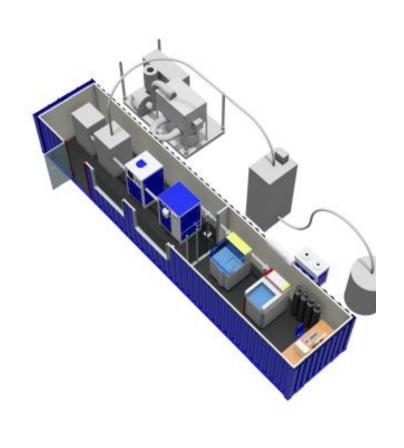


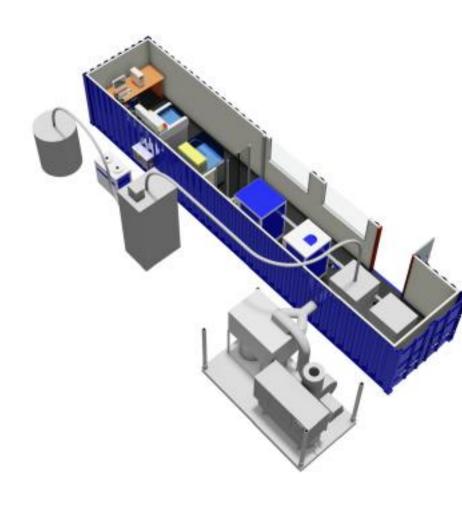


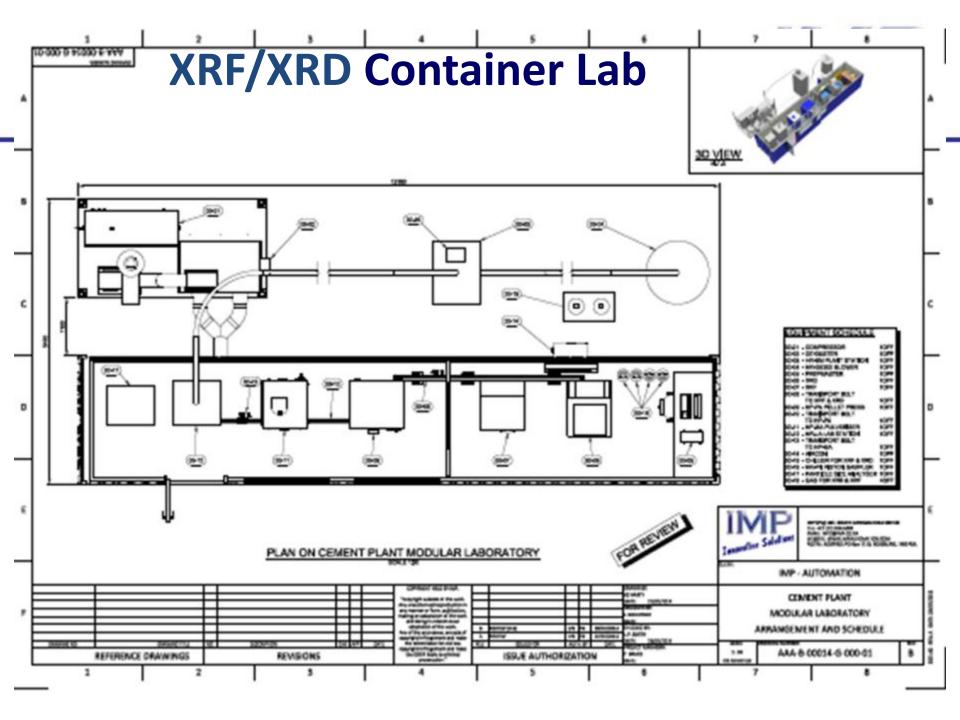


XRF/XRD Container Lab









XRD Container Lab





XRD for Process Control



- Automatic mineral phase analysis
- In plant On-Stream location (in a container)
- Automated laboratory
- Linked to plant control system
- Continuous or Batch analysis
 XRD
- Data trending





IMP can automate most brands of XRD

On/In-line XRD



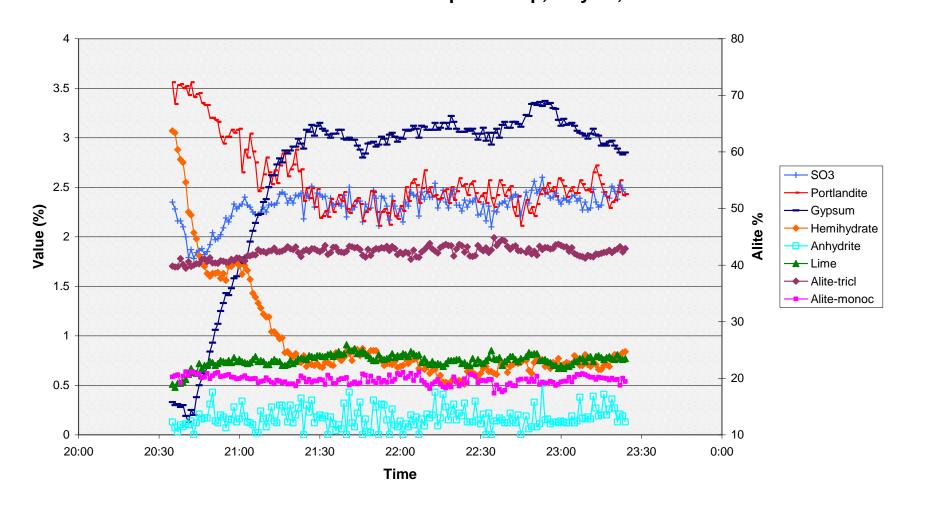
XRD WILL DIRECTLY ANALYSE

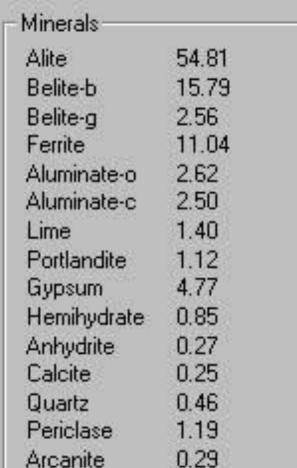
- CLINKER
 - C3S, C2S, C3A, C4AF, CaO, and their various forms
 - Other crystalline minerals if required
- CEMENT
 - C3S, C2S, C3A, C4AF, CaO, Ca(OH)2, CaCO3,
 CaSO4.2H2O, CaSO4.1/2H2O, other crystalline minerals if required

XRD Final Cement Composition

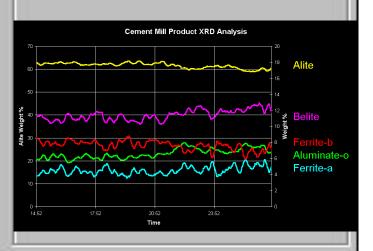


Mill exit cement after a power trip, July 28,2004





Si02	20.89
Al203	4.76
Fe203	2.70
CaO	63.59
Mg0	2.47
Ti02	0.26
S03	3.07
Na20	0.12
K20	0.45
P205	0.12
Loss	1.43





NITA Online Process Control Elemental Analysis





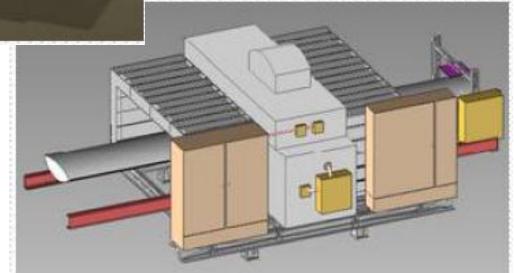
NITA – Elemental Analyser.

Designed by the Australian

CSIRO. Long life Source (432

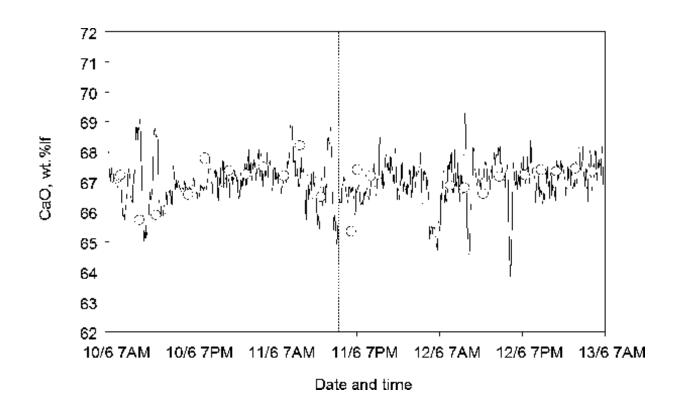
years), multiple detectors, never
re-calibrate or replace the

source = low running costs!!



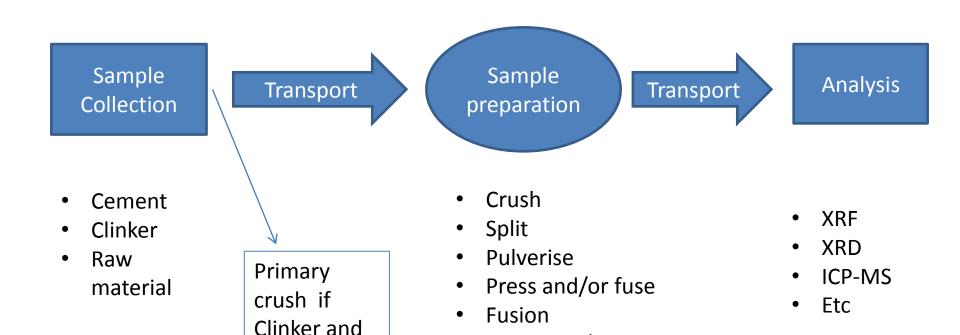
Results Achieved for Cement CaO (NITA)





Cement Lab Automation





Digestion / Wet Chemistry

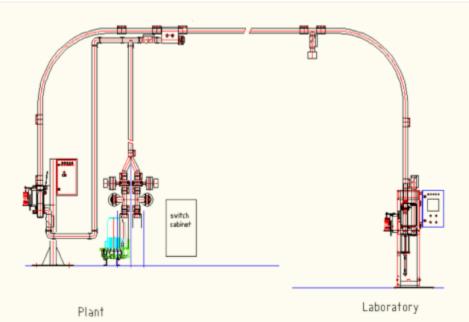
SAMPLE is TRACKED and MANAGED in PrepMaster and/or LIMS

from mine

Delivery & Sampling







A range of sampling and sample delivery solutions for Clinker, Cement and raw meal. All

Sample Preparation







Sample Prep. - Mills



Mills

Manual Mills – with PLC







Semi Automatic



Automatic





Automated mill and press

Sample Prep. – Pressing Manual & Semi Auto





IMP has a range of Manual and Semi Automatic Presses available. The HTP-40 Press (right) is an industry favourite





Sample Prep. Automatic Pressing





HR-LA, Mill & Press with XRF



Automatic Mill and XRD Press



Automatic Mill and Press combined

Fusion - Auto Flux Weighing













Fusion – Semi to Fully Automatic











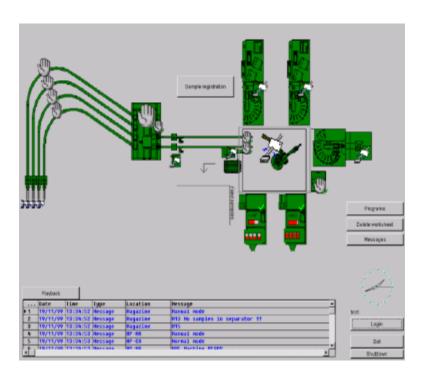


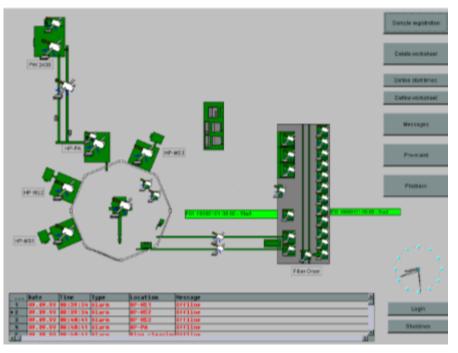
IMP has a range of Fusion instruments and accessories to suit your requirements, from manual to fully automatic high output instruments

Laboratory Control



Herzog Prepmaster software will control you Automated Laboratory





Conclusion



- IMP has the expertise, experience and product to design, build and support your cement laboratory
- IMP can provide a complete solution
 - Online elemental analysis
 - Automated Mineralogical Analysis (XRD)
 - Automated Sample collection
 - Automated Sample Sending
 - Automated and/or manual sample preparation solutions

IMP Group











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