Commissioning the Zimplats Smelter Expansion & SO_2 Abatement Project

Setting the benchmark for future PGM smelting projects

ZIMPLATS
Member of the Implats Group

HATCH

Project Overview

Overview and Purpose

Triple smelting capacity to support growth and third-party concentrate toll treatment

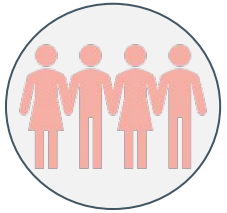
Location and Industry Impact

Selous Metallurgical Complex

Zimbabwe

Partnership and Timeline

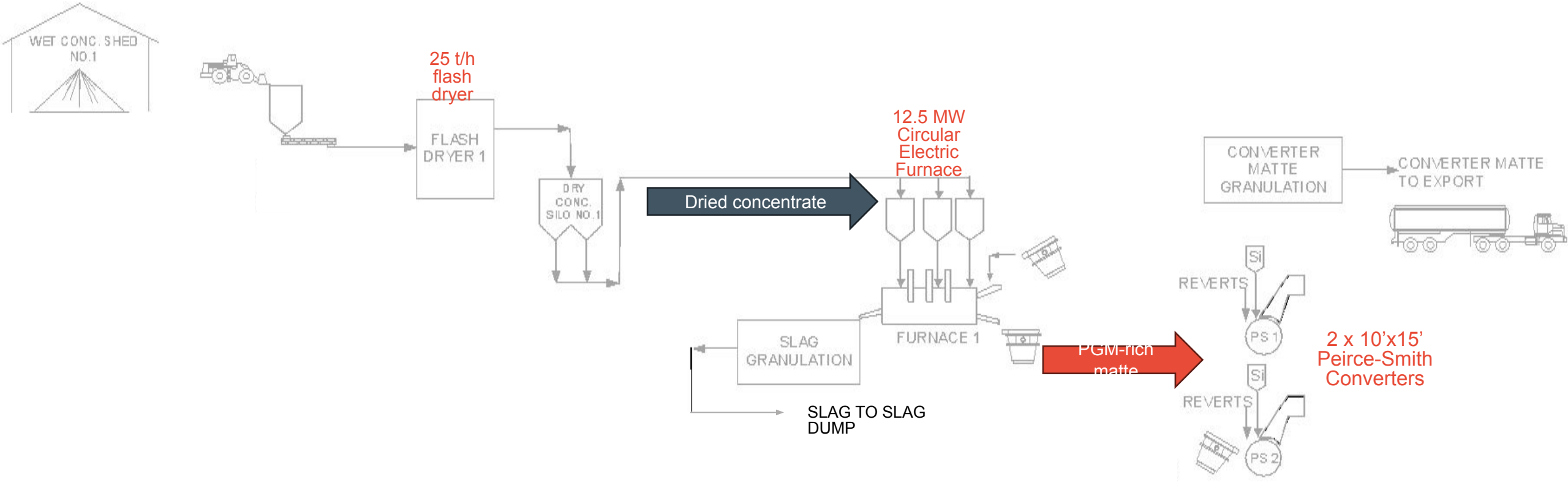
Hatch managed engineering, procurement, and construction; commissioning began July 2024 with matte tap in October 2024.



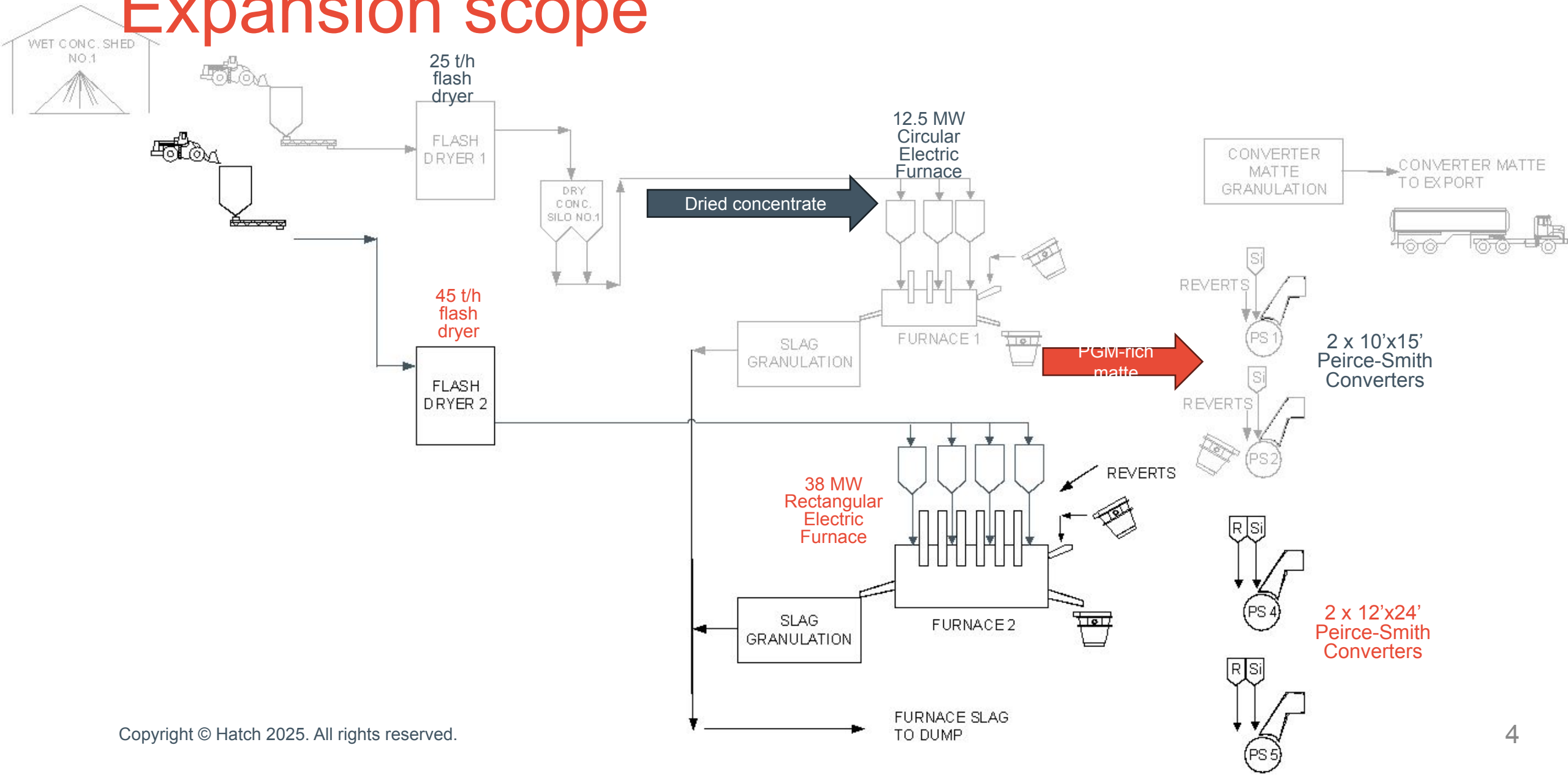
Collaborative Achievement

Successful first matte tap marks achievement of client's schedule and long-term collaboration since 2002.

Pre-expansion setup



Expansion scope



Design Considerations

Independent Operation Design

- Operate independently from the existing smelter
- New utilities (compressed air, cooling water, etc.)
- Extended converter aisle

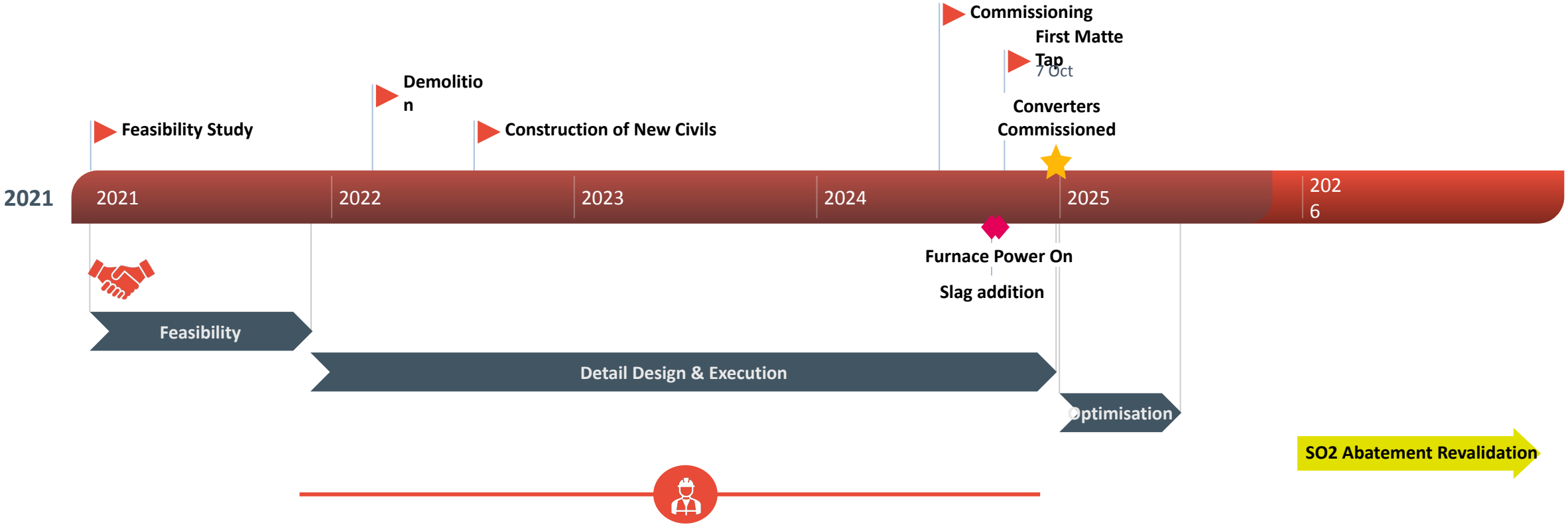
Off-Gas Handling System

- Primary and secondary off-gas systems
- 160 m tall concrete stack
- Hot bypass to minimize disruption during tie-ins and shutdowns.

Future Infrastructure Preparedness

- Infrastructure was prepared for deferred projects like the SMC Base Metal Refinery upgrade and SO_2 Abatement Plant installation.

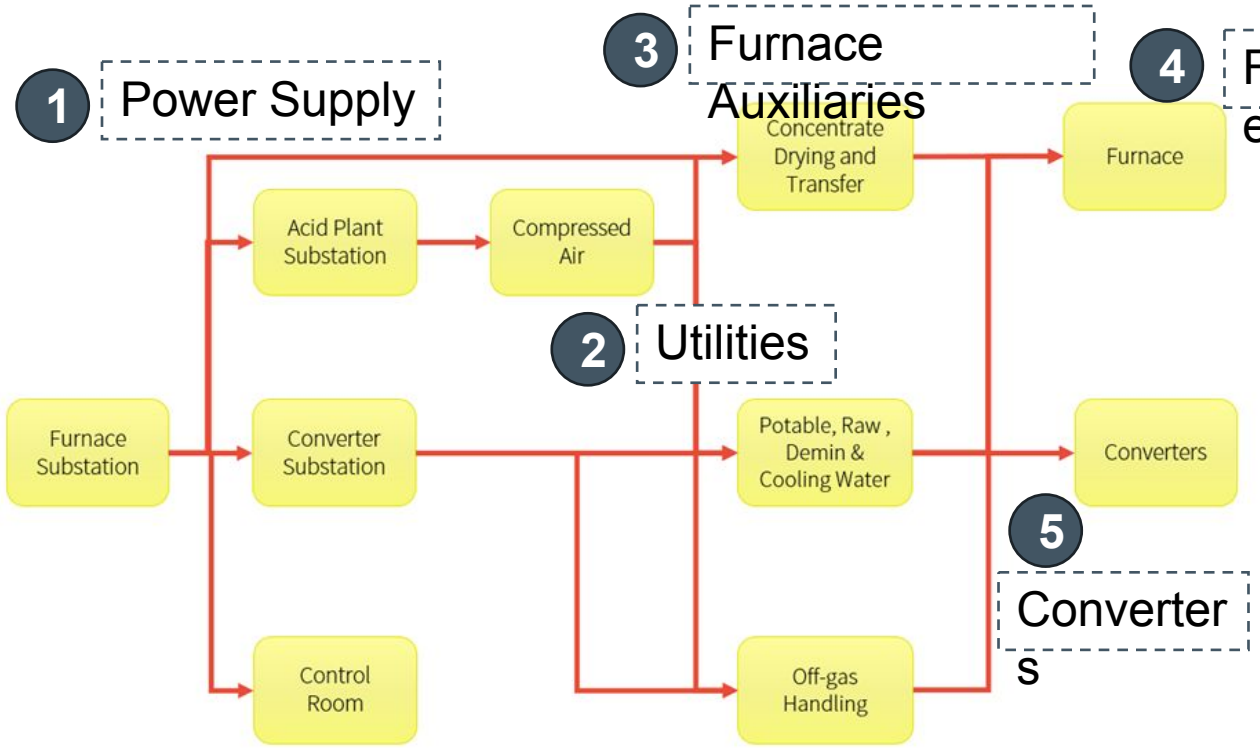
Timelines Highlights



Overlapping design, construction and commissioning
Significant integration & collaboration between teams

Commissioning Sequence

Priority furnace start-up readiness



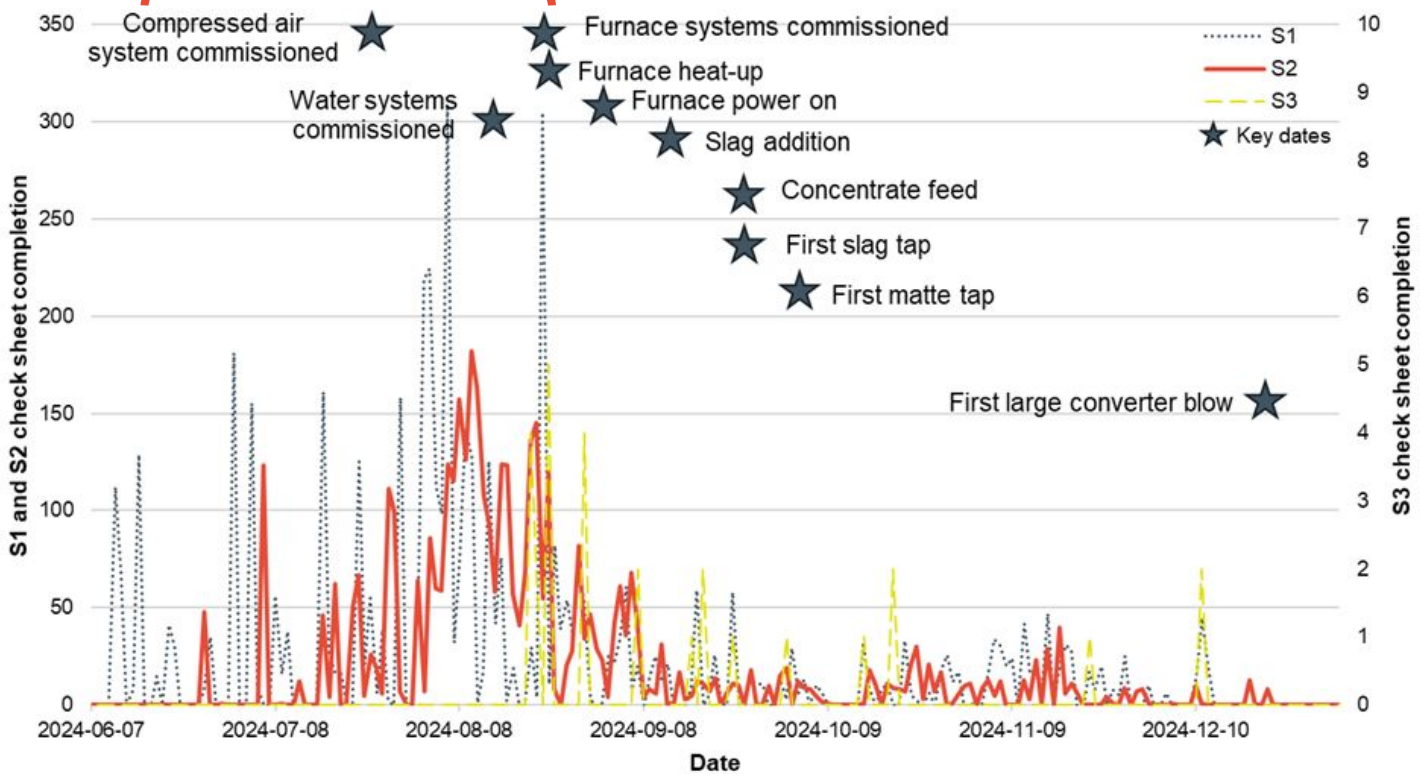
		Jun	Jul	Aug	Sep
1	Furnace substation	MV Energized; LV Small Power Energized; LV MCC Energized			
2	Acid plant substation	MV Energized; LV Small Power & Network Commissioned; LV MCC Energized			
	Converter substation	MV Energized; LV Small Power & Network Commissioned; LV MCC Energized			
	Control room	Control Room Operational			
3	Compressed air	Compressed Air Commissioned			
4	Concentrate feed	Flash Dryer and Concentrate Transfer Commissioned			
	Water	Water Systems Commissioned; Central Cooling Water Plant Commissioned			
5	Furnace commissioning (S1 - S3)	Furnace Refractory Complete; Furnace Systems Commissioned; Slag Granulation Commissioned			
	Furnace start-up	Furnace - Heat-up			Furnace - Power On; Slag Addition; Concentrate Feed; First Slag Tap; First Matte Tap

Depending on construction progress in a specific areas, some systems were partially commissioned before formal handover.

Commissioning in a fast-paced environment

16 July - 17 August 2024

6,707 check sheets completed by construction and commissioning teams



Check sheets

- S1: 5,143
- S2: 4,192
- S3: 33

Equipment

- +3,000 new IO
- 11 new PLCs and their SCADA integration
- 3 new substations

Teams

- ~70 Hatch employees (construction, commissioning and start-up)
- Zimplats instrument technicians and operational personnel
- OEM equipment vendors (flash dryer, converters)

Success-recipe

- Close collaboration between teams
- Daily check sheet tracking using online system

Commissioning Challenges & Solutions

Fast-tracked schedule

Managing scope changes

Inevitable late design changes due to:

- Fast-tracked project schedule
- Proactive risk-taking
- Operator involvement and updated information influenced several design modifications

Implementation of changes during ongoing construction and commissioning activities.

Adapting for Deferred scope

Shared utilities between smelter expansion and SO_2 abatement plant:

- 60% of cooling water requirement by SO_2 abatement plant
- Largest impact on off-gas system and control

Managing Handovers

Overlapping phases and concurrent operation of both furnace = capacity of operators to be involved with cold commissioning was limited

Commissioning Challenges & Solutions

+ *Ramp-up and Optimisation (case study)*

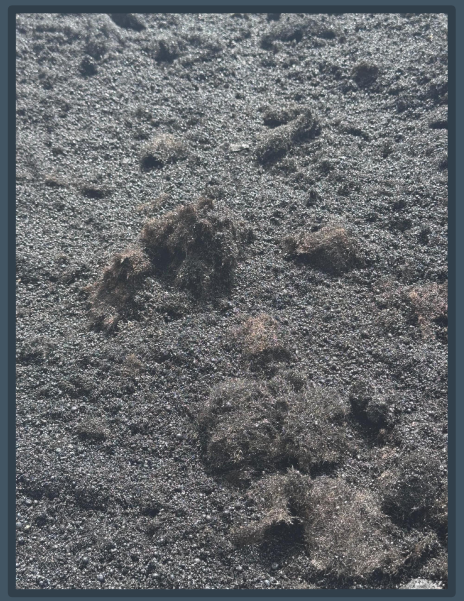
Furnace slag transfer system

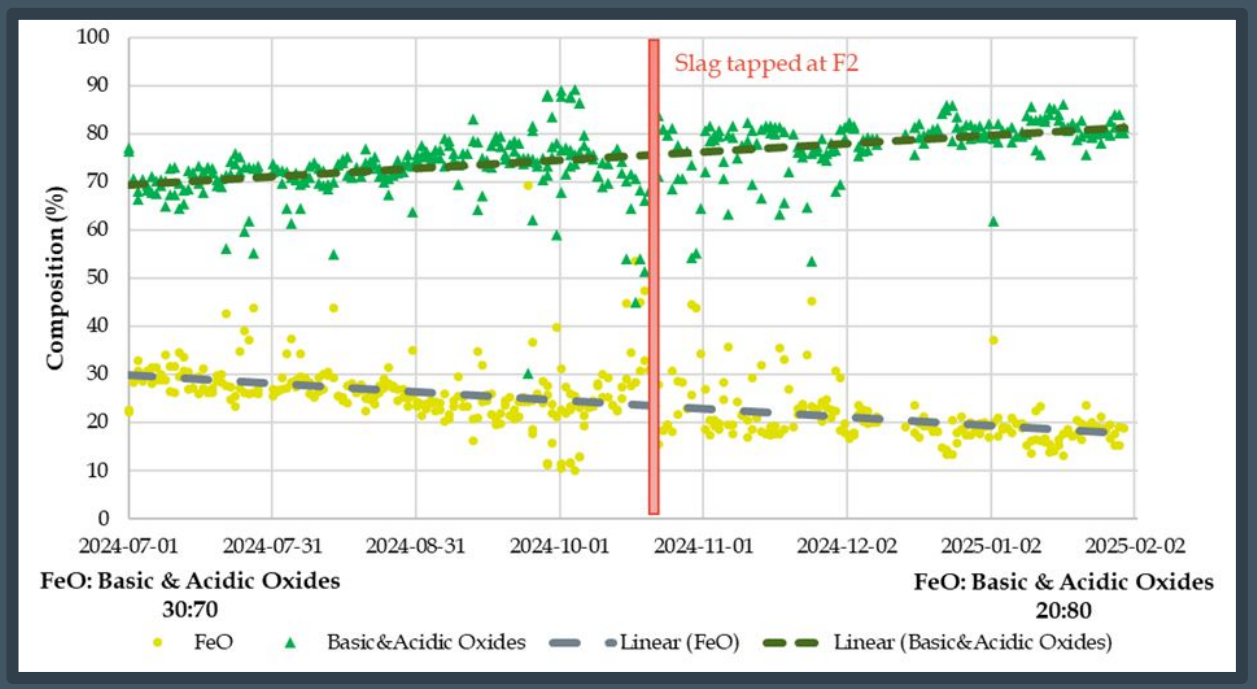
Fibers / angel hair in granulated slag

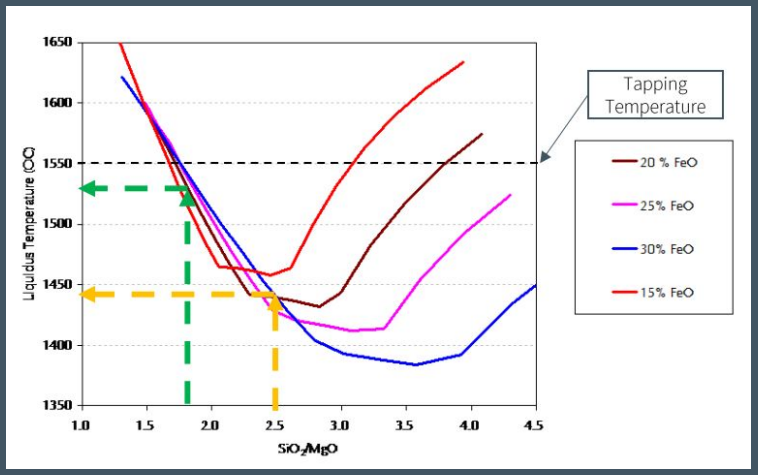
Interim manual removal required

Reviewed chemical and physical properties

Adopted changes improvements







Project Success

Fast-tracked execution

- Feasibility in 2021 □ Hot commissioning by Dec 2024 (4 years)
- Integration across design, construction, and commissioning □ smooth project progress and quality outcomes.

Collaborative Partnership

- Collaboration between key partners was critical in managing scope changes and meeting tight deadlines effectively.

Adaptive Focus

- Maintaining adaptability and focus on core objectives enabled timely completion and achievement of performance targets.

Strategic Planning

- Strategic planning and teamwork formed the foundation for the project's successful completion and achievements.

Benchmark for future PGM smelting projects

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