

The installation of an Induction Furnace Casting system in the development of next generation metal coatings at Bluescope Innovation Laboratories

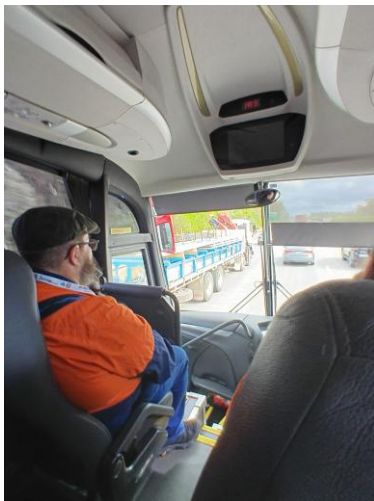
Peter Gandy

BlueScope Innovation Laboratories
Product Prototyping and Evaluation

October 2026

BLUESCOPE - WHO WE ARE

Global leader in metallic coatings and painted products for building & construction.



- Supplies vital components for houses, structures, and industrial applications.
- Present in key global markets
 - Australia
 - NZ & Pacific Islands
 - Asia
 - North America
- Committed to being a responsible leader of innovative and enduring steel products and technologies

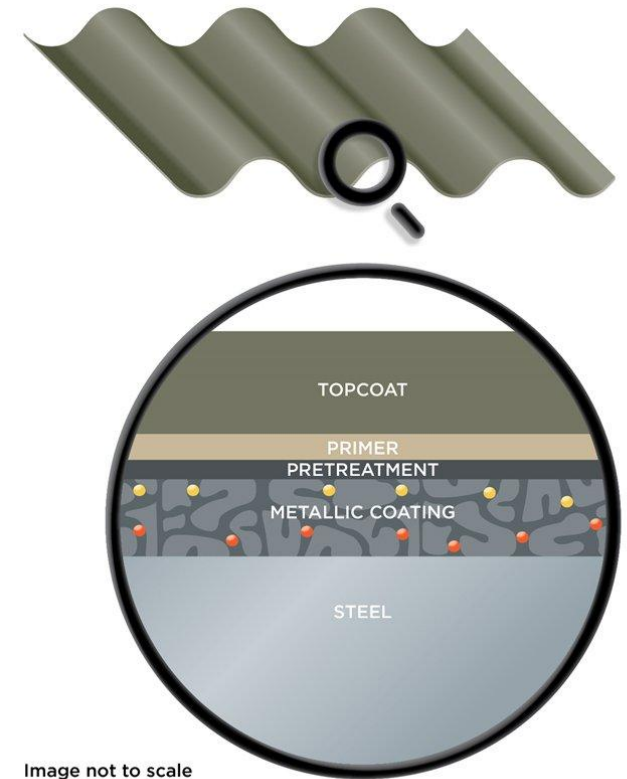


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METALLIC COATINGS

Metallic coated steel products include

- ZINCALUME® steel
- TRUECORE® steel
- DECKFORM® steel
- GALVASPAN® steel

Foundation for prepainted products, including COLORBOND® steel



Note (1)



Note (2)

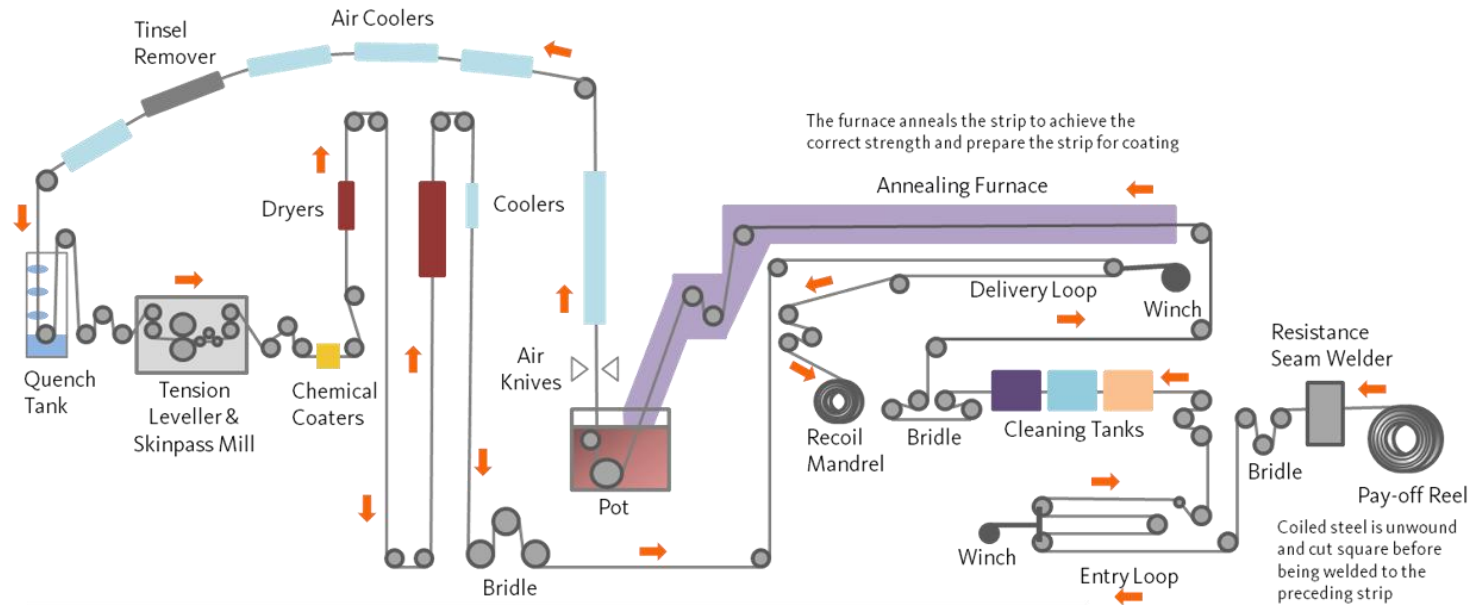


Note (3)

1. Coated Steel - Prepainted Data Sheet November 2025 [colorbondr-steel-data-sheet](#)
2. [TRUECORE® steel | BlueScope Steel Products for Australia](#)
3. [Outpost 7427139 | BlueScope Steel Products for Australia](#)

METAL COATING PRODUCTION

Continuous production of metallic coated steel strip



Note (1)

Note (2)

METAL COATING LINE SIMULATOR

Allows for experimentation

- Without impacting industrial scale production/customer needs
- Has inherent energy, prime product and waste savings
- Fast melt changeover-transferring from idea to test piece in days rather than months
- Ability to fail fast/learn fast



METALLIC COATING LAB HAS TWO PARTS

Both alloy development followed by hot dip coating of steel coupons is performed in the laboratory

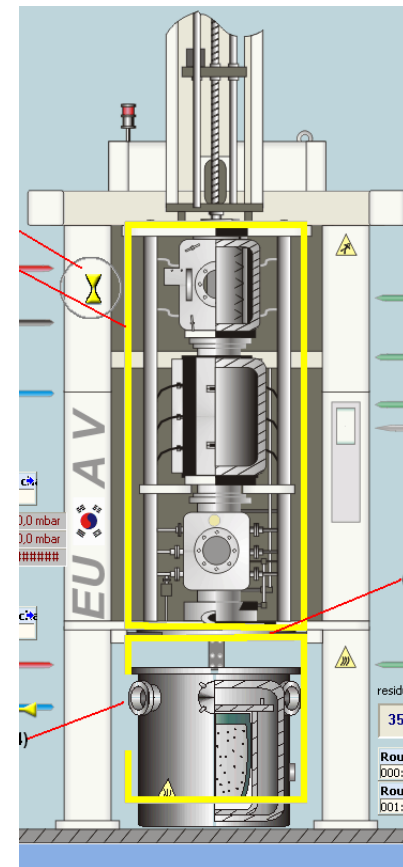
Alloy Production

- Via an induction furnace
- Each 7 kg heat requires 2 hours of preparation
- Three heats are required to fill the crucible of the Hot Dip Process Simulator molten metal furnace (MMF).



Hot Dip Process Simulator

- MMF melts 18 kg of the prepared alloy
- Melting is completed immediately before the dipping stage
- Melting occurs over 48 hours

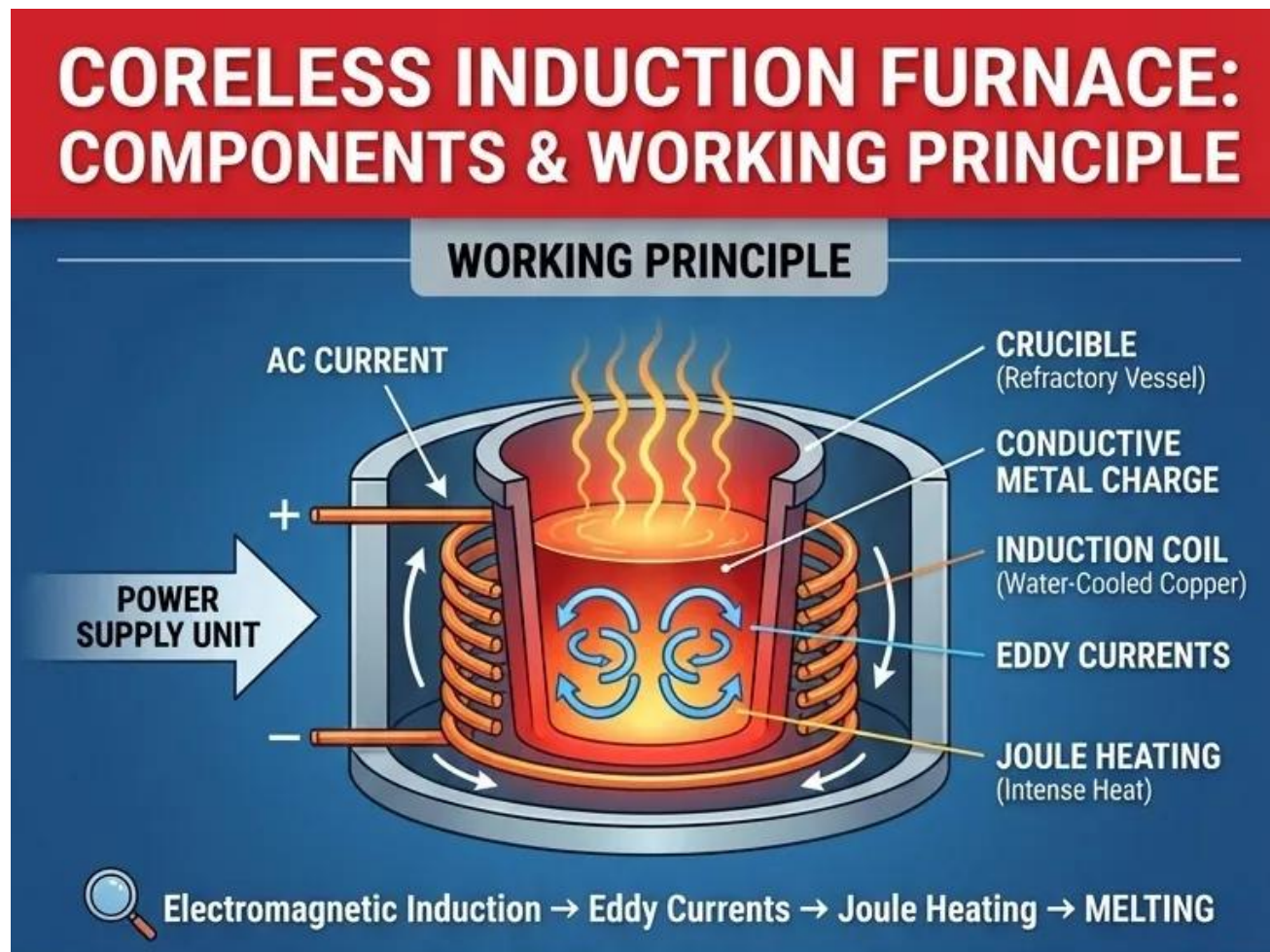


INDUCTION FURNACE

Technical Advantages

Pure melt, no insertions

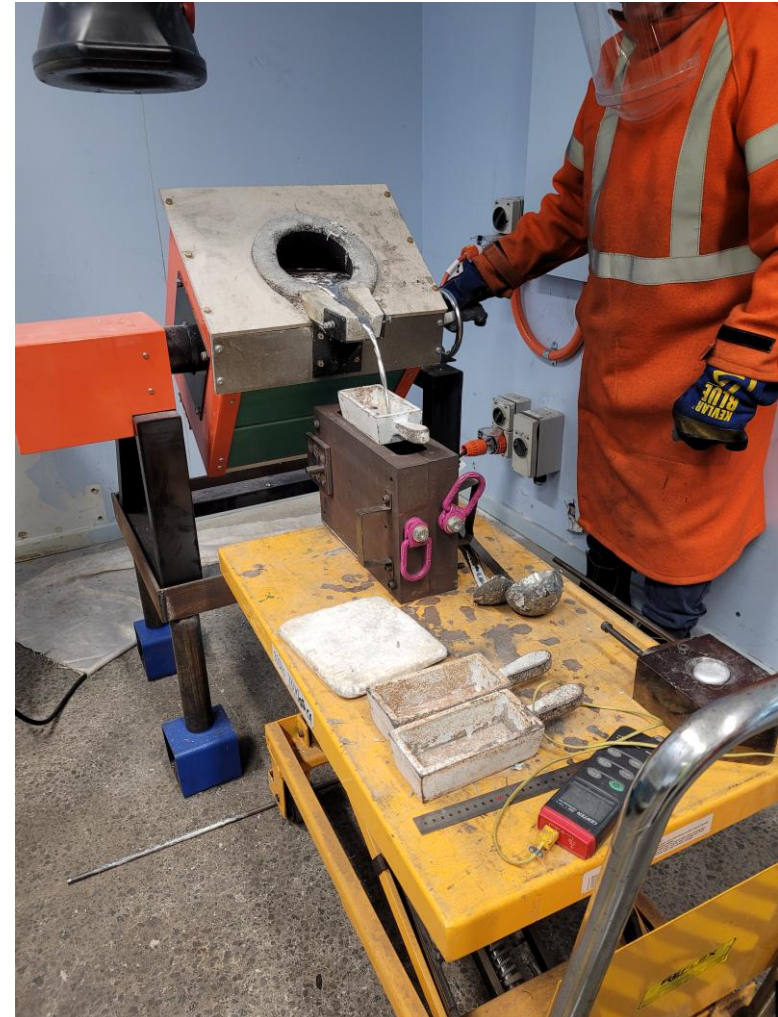
Eddy current stirring



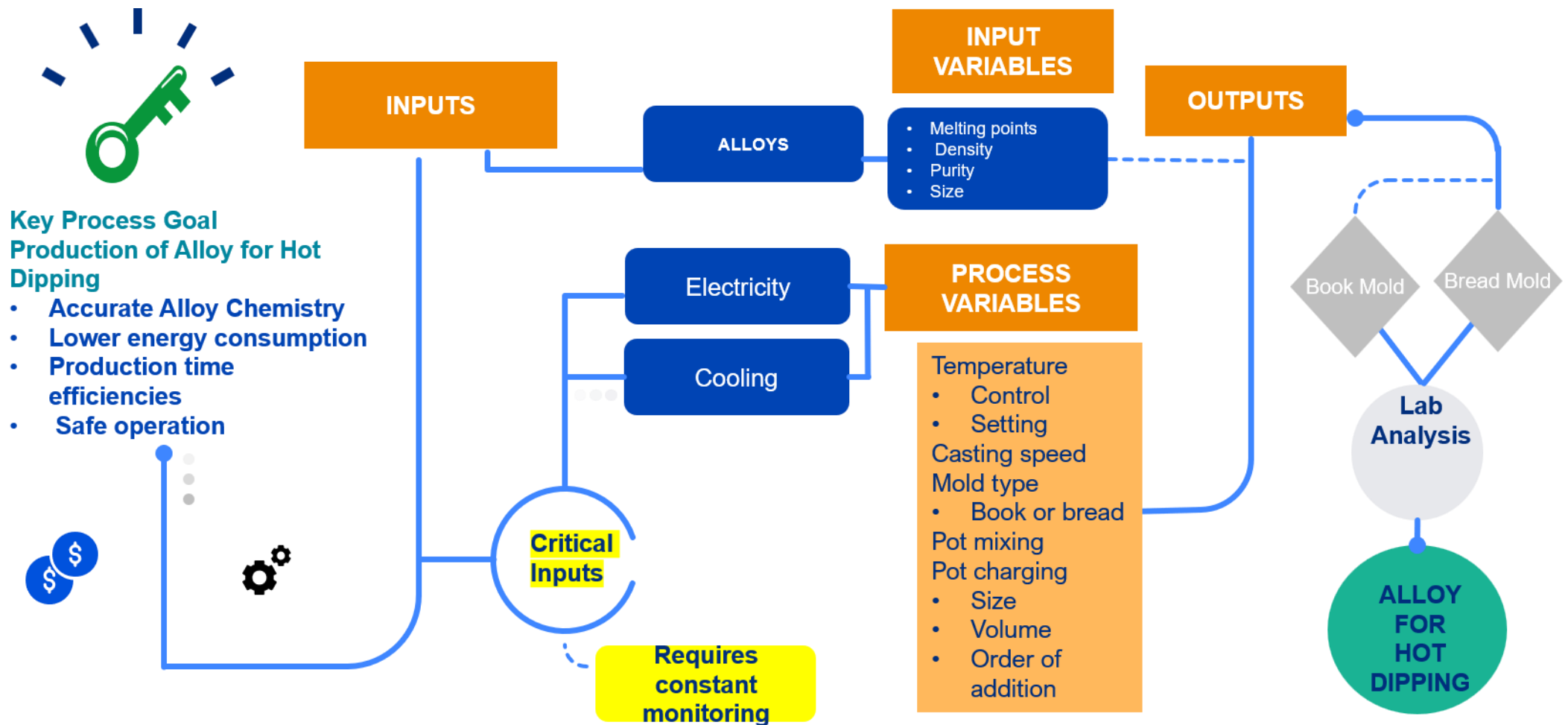
METALLIC COATING ALLOY PRODUCTION

The research team provides a target alloy specification for investigation

- Master alloys of aluminium, zinc, magnesium, silicon, and others are cut and weighed according to the desired formulation .
- These metals are added to the crucible inside an induction furnace.
- ITF crucible capacity 8kg.
- MMF crucible capacity 22kg .
- Melt is heated to 600°C.
- The melt is cast and analysed to confirm the desired concentration of metals.
- Modifications are made to subsequent melts to achieve the desired formulation.



PROCESS MAP INDUCTION FURNACE HDPS



ENVIRONMENTAL ADVANTAGES OF INDUCTION FURNACE CASTING

Energy Savings

- 48 hours of operation in the Resistance Heating furnace vs 6 hours in the Induction Furnace. (IF)
- Alloy Remakes
 - every 5th heat has to be remade due to experimental error (variation from desired analysis)
- **Projected Energy Saving-** using the IF we predict a **30-40 %** energy saving in Alloy production.
- **Confirmation** needs to be quantified by connecting **energy meters** during operation.



Safety Advantages

- 87% less time of active hot metal present in the lab
- Heats are supervised 100% vs 38% in the resistance furnace

BREAKING THE MOULD

TAKEAWAYS FROM AFI 26

- Need for a coherent Energy strategy for Manufacturing. Is Hydrogen the answer?
- Development of simulations- rapid development , matching reality, process correction and preventing unexpected disruptions.
- Being brave and managing risks- The Sub Standard example, rolling HY grades



THANK YOU AFI FOR YOUR ATTENTION

