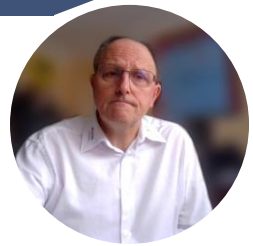
IBAAS 2025
TECHNICAL LECTURE SERIES

INCREASE EFFICIENCY AND SAFETY IN YOUR CAST HOUSE USING AUTONOMOUS RAIL MOUNTED FURNACE TENDING EQUIPMENT AND SMART IN-FURNACE CAMERAS

Mark Bumford, Sales Director, RIA Cast House Engineering GmbH

RIA Cast House Engineering GmbH



Rackwitz Industrieanlagen GmbH established in 1997

- Cast House Products
- Downstream Extrusion Line Products

Rebranded **RIA Cast House Engineering GmbH** in 2018

- Autonomous Furnace Charging Machines
- Autonomous Furnace Skimming Machines

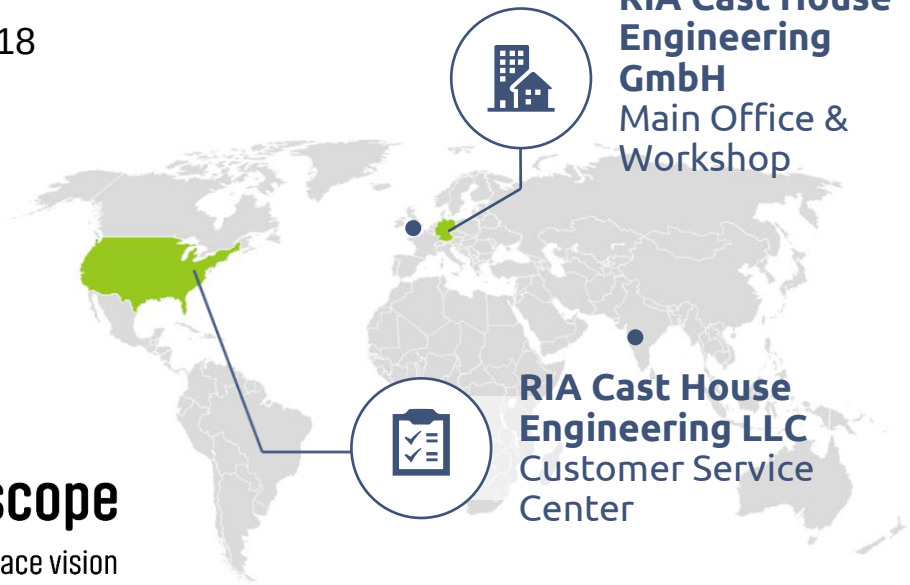
RIA Cast House Engineering LLC established in USA

- Spares, Service and Support
- US Sales

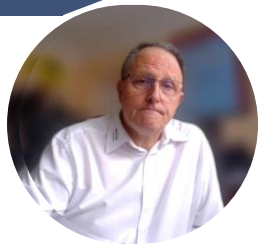
Introduction of first **Fioscope GmbH** Cameras in 2014

- Exclusive agreement for Aluminium Cast Houses 2021
- MD RiA becomes MD of Fioscope and RiA 2022
- Business relocated from Freital to Leipzig 2022
- Shared office space and resources 2022

fioscope
in-furnace vision



92 Charging and Skimming Machine References Worldwide



Autonomous Furnace Charging Machines

Charging Machines: 57 Total

30 Europe | 25 Americas | 2 Asia

Autonomous Furnace Skimming Machines

Skimming Machines: 35 Total

18 Europe | 16 Americas | 2 Asia

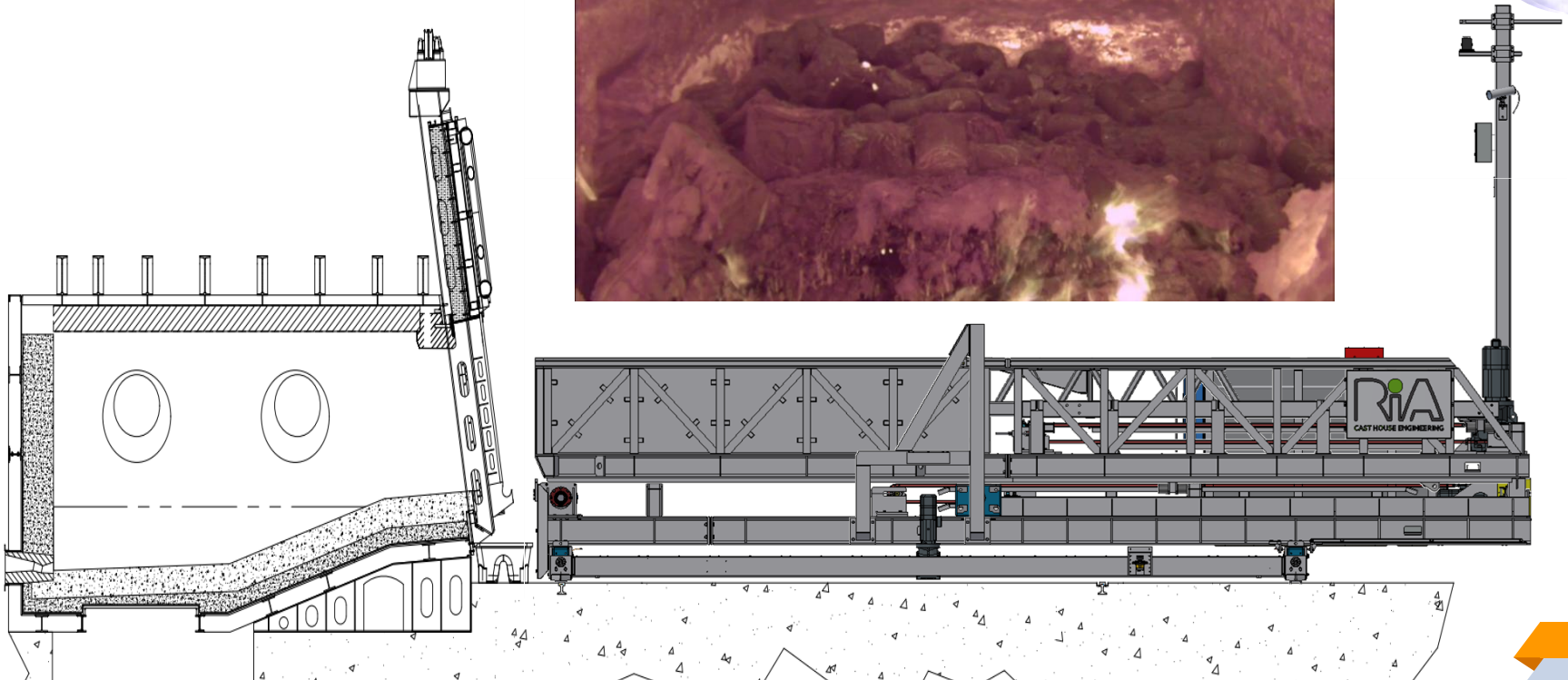
RiA Customers

GNA alutech
JASPER
insertec Furnaces & Refractories
TEXARKANA ALUMINUM
Hydro
WESTERN EXTRUSIONS
ELLWOOD Aluminum
COMMONWEALTH Rolled Products
RioTinto
REAL ALLOY
KAISER ALUMINUM
TOWER EXTRUSIONS
Novelis
MATALCO
sapa:
HUECK
LOGAN ALUMINUM
Constellium
BENTELER makes it happen
HINDALCO
Alexin LLC
remi claeys aluminium
SPEEDLINE ALUMINIUM
AGN Aluminium NACHRODT
Höfer HMT
WW extrusion Erbslöh Aluminium GmbH
HODAKA
TALUM
thöni
STEP/G
ALINVEST Member of MTX GROUP
mkm KME

RiA Charging Machines

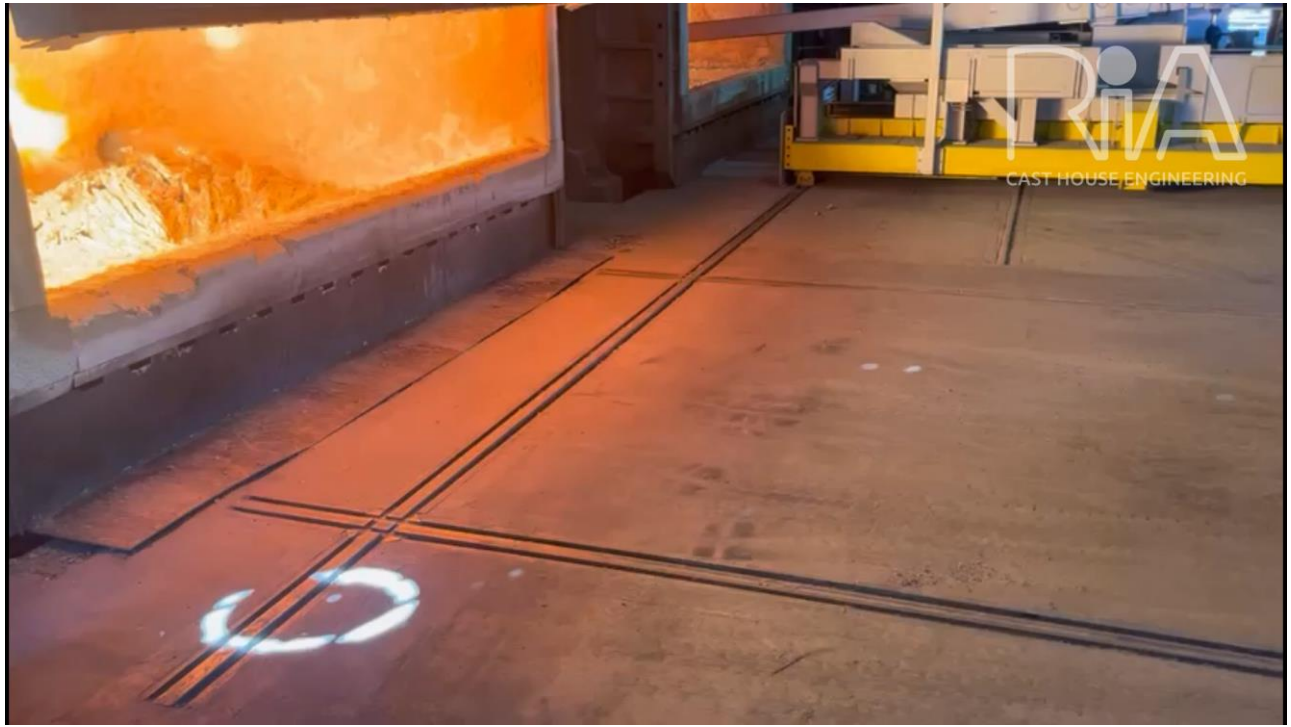
100% staff safety through fully automated charging
Up to 25% higher melt rates and energy savings due to shorter charging cycles
A reduction in melt loss due to less oxidation
Less vehicle movements in the cast house
Significantly reduced furnace and vehicle maintenance
Integrated weighing technology to weigh individual items/ loads and batches, improving inventory control
Precise Laser position control
Safety Laser Scanners

RiA Charge Cycle



Hydro video of RiA Machine in Operation

Better charging increases melt efficiency and reduces metal loses



- Factors affecting melt efficiency:
  - ✓ Even load distribution in the furnace
  - ✓ Not blocking burners
  - ✓ Charging at the right time
- Estimate 5% energy savings and 0.3% reduction in metal loss.
- Less metal loss also equals to less dross generation and less waste landfilled.

Why no Operator onboard?

Keeping the facilities most valuable assets out of harms way!

107 Fioscope In-Furnace References Worldwide, since 2022

In-Furnace Cameras can be easily retrofit to existing furnaces

fioscope
in-furnace vision

Fioscope cameras occupy a small footprint on the furnace shell

Pneumatic and Electrical control boxes are compact

Utilities Required; Compressed Air Feed and Electrical Connection

Fioscope Customers

JASPER
ghi SMART FURNACES
insertec Furnaces & Refractories
Mechatherm
GNA alutech
MATALCO
TEXARKANA ALUMINUM
LOGAN ALUMINUM
COMMONWEALTH Rolled Products
ELLWOOD Aluminum
TOWER EXTRUSIONS
RioTinto
WESTERN EXTRUSIONS
ARCONIC
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HINDALCO
STEP/G
Alexin LLC
HODAKA
ALUnna TUBES
Höfer
HMT
SLOVALCO
TALUM
ALINVEST Member of MTX GROUP
Hydro
Constellium
Alumil
BENTELER makes it happen
aludium premium aluminium
speira
trimet
Profilglass PEOPLE, PASSION, ALUMINIUM
AssanAlüminyum
ASAŞ
RIA CAST HOUSE ENGINEERING

Expect the unexpected

The ability to visualize or alert to potentially dangerous Events before they happen!

What should you do?

- Shut of the gas?
- Emergency Stop all Cast House Processes?
- Evacuate the facility?
- Change the furnace atmosphere?
- Vent the furnace?
- Auto - Call Emergency Responders?
- DO NOT OPEN THE DOOR!

What could you do?

- Using visualization & AI-Control it can all be done before it’s too late.

RiA Autonomous Charging

Smart Air-cooled Cameras mounted In-Furnace identify scrap pile height, shape and progress

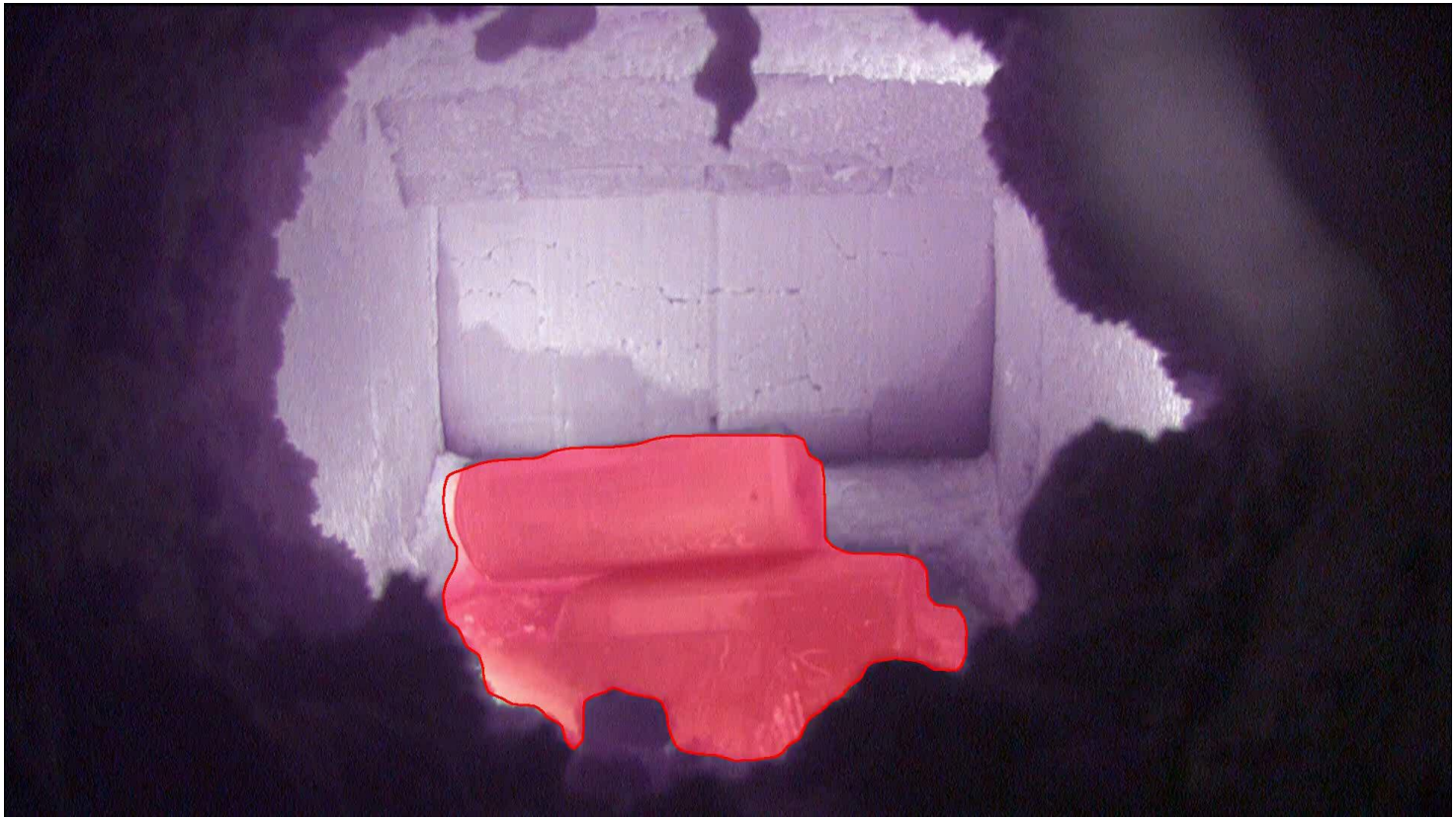
Production Advantages

Critical recharge time identification allows for shorter cycles, leading to energy savings and higher productivity.

Safety Advantages

See what is going on inside of furnace, avoiding risky/ dangerous conditions.

Autonomous Furnace Charging



Charge at the earliest and safest time, every time

- Trigger charging machine cycle with Fioscope autonomous furnace charging
- Ensure no production time is lost
- Increase safety during the charging process
- Lower Energy Consumption
- Reduce Cycle Times

Remote monitoring from a safe location

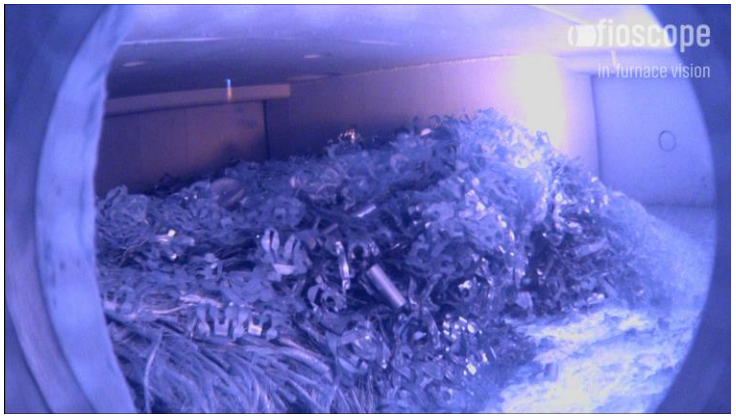
Operators can observe the Autonomous Furnace Charging and Skimming Cycles from a safe location.

Cameras mounted onboard the machines relay a live stream of the Furnace Charging and Skimming Cycles

Machines can be driven from the remote location using the Joystick controls

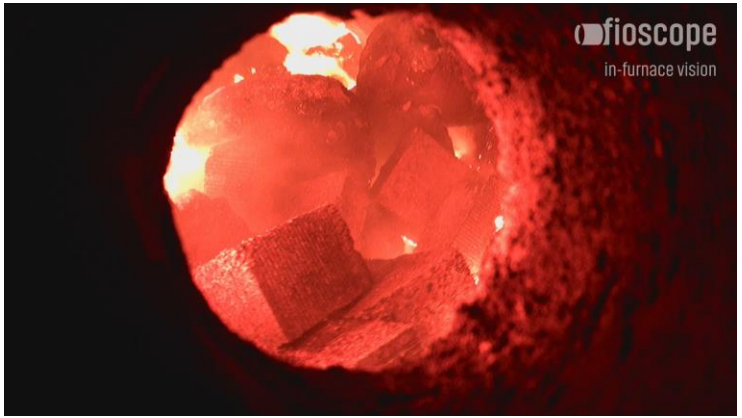
In-Furnace Cameras for all applications

Single Chamber



Multi Chamber

Decoating Technology

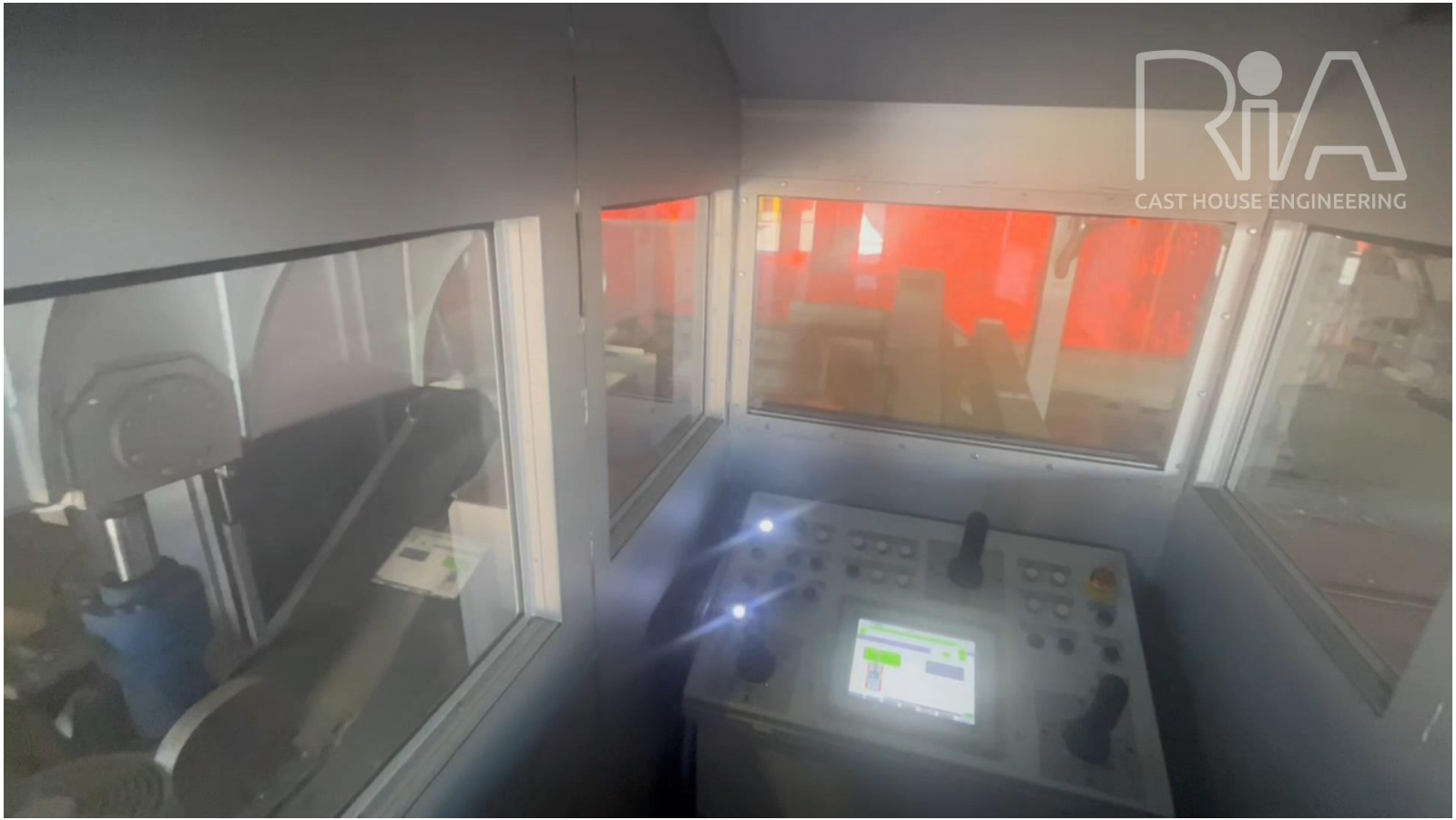


Tilt Rotary

RiA Skimming Machines

Designed for Skimming, Mixing, Stirring and Cleaning of Melting and Holding Furnaces
Increased staff safety through protected operator cabin (or NO Cabin) and safety laser scanners
Fully automated or autonomous skim cycle for shorter furnace cycle times
Protection of refractory lining by precise position and pressure control
Significantly reduced furnace and vehicle maintenance
Air cooled boom
In-Furnace Dross Processing

Operatorless/hands free Operation



Operator free Skimming and IFDP, approx. 10 mins

Increased yields with additional Aluminium units remaining in the Furnace

WITHOUT IFDP

WITH IFDP

Less skimmed dross weight and volume (due to less aluminum)

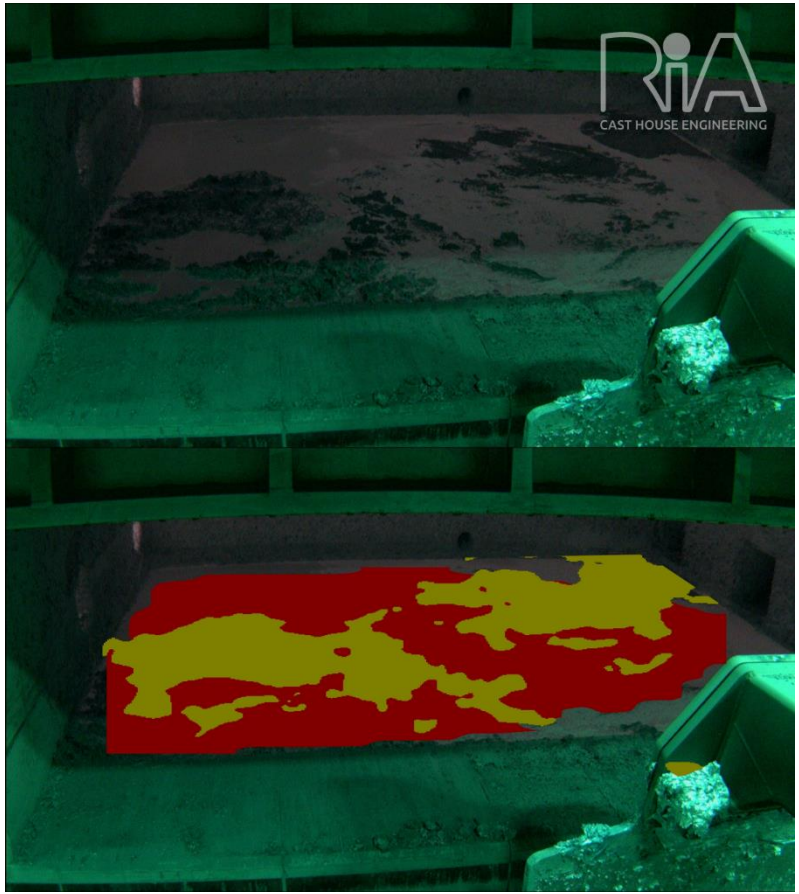
Reduces transportation and processing emissions

Better overall recovery

Reduces the need of “new” aluminum to be brought into the system.

Load spreading captured by onboard Smart Cameras

Dross Detection for Autonomous Skimming

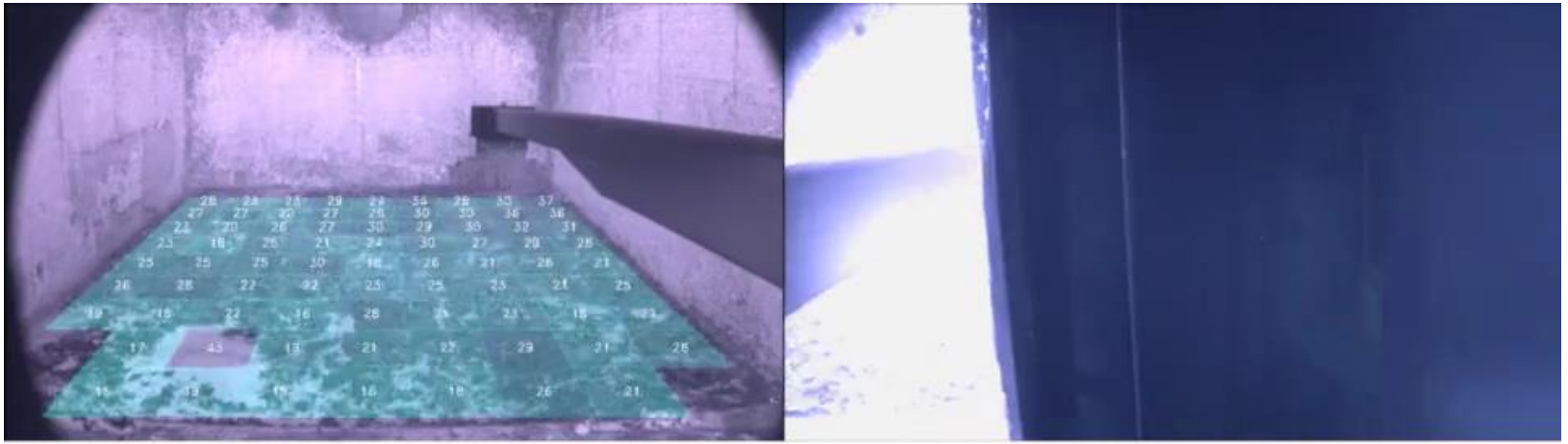


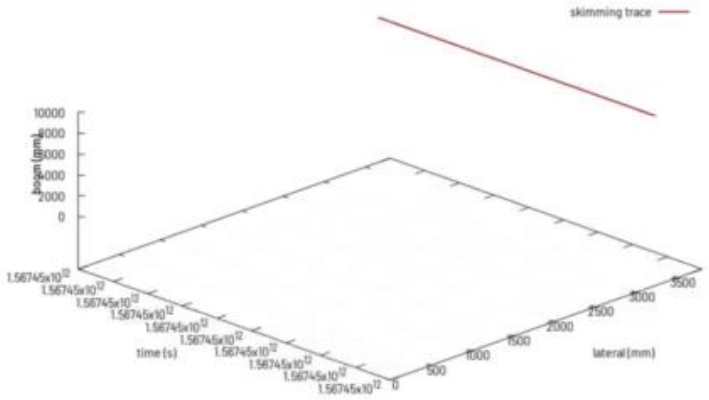
Smart On-Board Cameras identify dross coverage and its location

Advantages

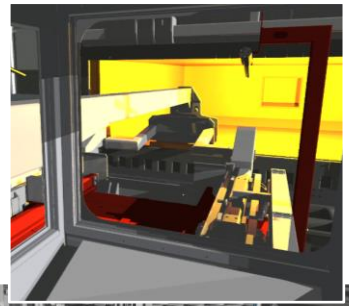
Detection of dross
Only Skim where necessary
Re-Skim if the Dross moves
Faster and more precise than human operator
Repeatable

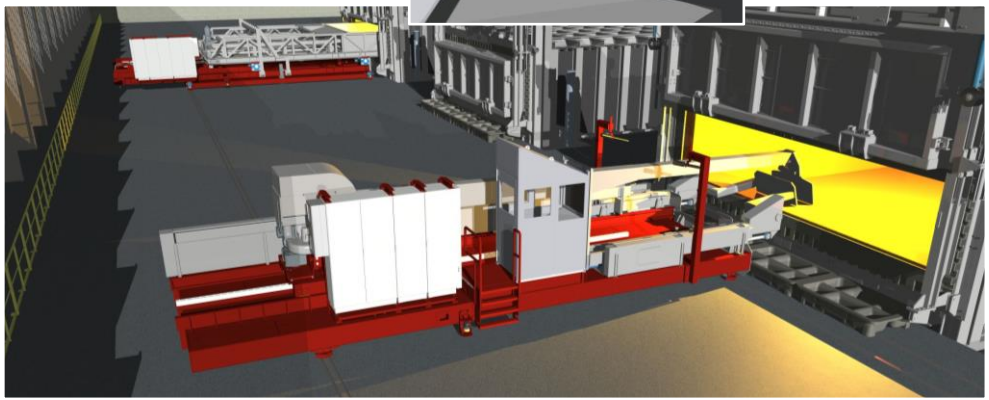
Autonomous Skimming with Smart Cameras





Benefits of using RiA/Fioscope technology





- Increased **Plant Safety**
- Increased **Plant Productivity**
- Increased **Refractory Life**
- Fully **Autonomous Operation**
- Reduced **Dross Generation** and Increased **Metal Recovery**

Question and Answers

Thank you!

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