SmartMelt:

A Data-Driven Melting Process Optimizer

-5% efficiency loss

Heat Loss

High energy consumption and C02 emissions

➢ Typically 700 – 1400 kWh/ton

➢ Worldwide 50 millions tons CO2 emissions yearly

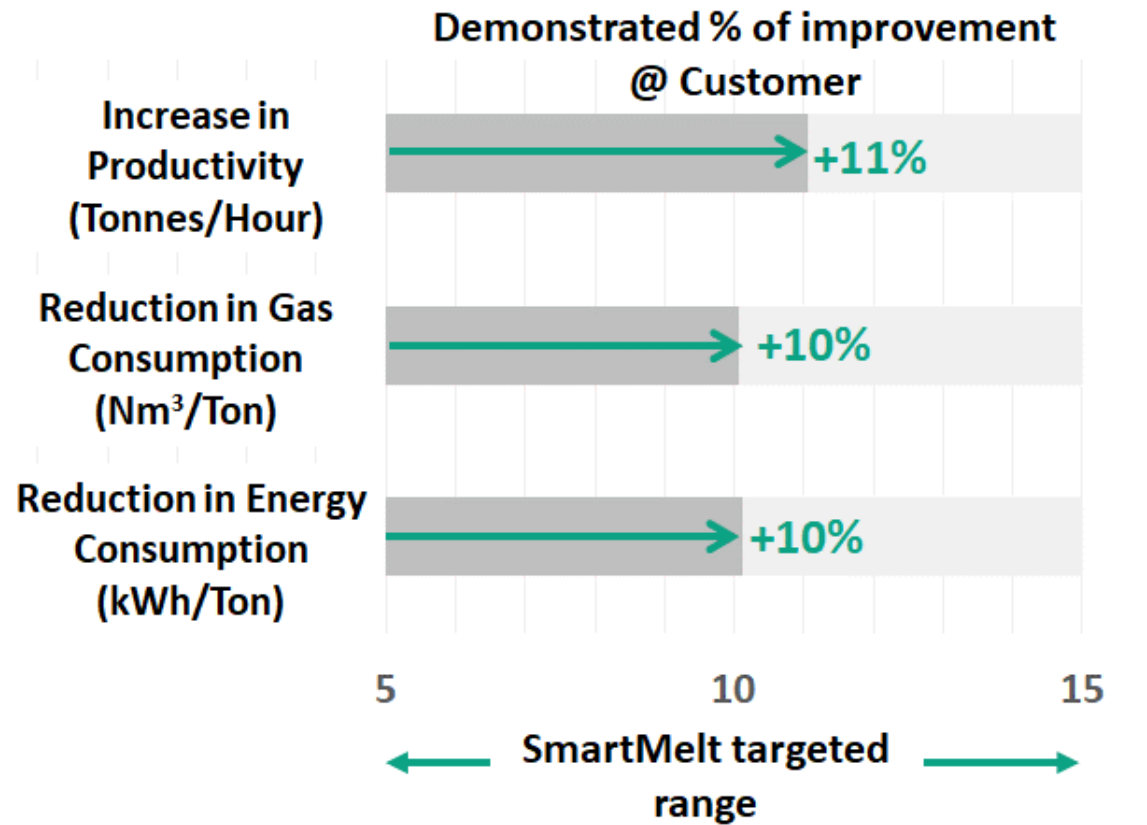## Lack of process transparency and efficiency

➢ 1 door opening = -5% efficiency

Driven by operational human-based decisions

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SmartMelt
A Data-Driven Melting Process Optimizer

Physical Furnace → **Data Acquisition** → **Digital Twin**

Save Energy and Reduce CO_2 emissions
Increase Production Efficiency
Strive for Eco-Friendly Processes
Enhance Processes Safety

✓ Very efficient numerical simulation coupled with on-line data acquisition

✓ Predictive tool to optimize melting cycle operations

✓ Save energy and increase productivity

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Demonstrated % of improvement @ Customer

Increase in Productivity (Tonnes/Hour): **+11%**

Reduction in Gas Consumption (Nm³/Ton): **+10%**

Reduction in Energy Consumption (kWh/Ton): **+10%**

← SmartMelt targeted range →

Productivity and Cost Reduction Impact

✓ 11 % increased productivity

✓ 10% cost of energy savings

Environmental Impact

✓ 10% less C02 emissions

✓ About 75 kWh/Ton less energy consumption

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Past Events
Sensor Measured Data

Prediction of Future Times
Numerical simulation
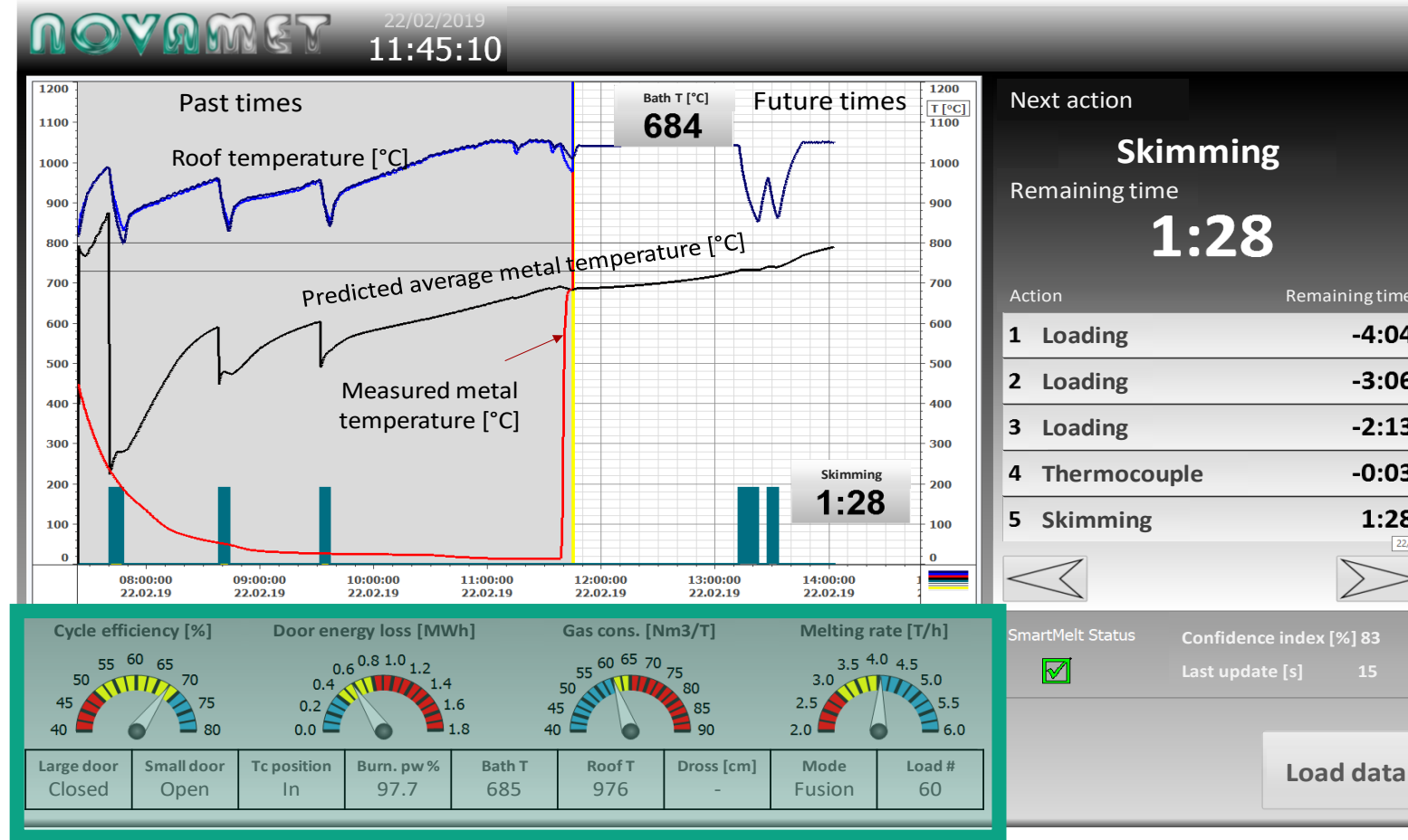
Instruction for operational sequence (what and when)

KPI of Fusion Cycle Performance

Key Advantages of SmartMelt

- Allows to determine **on-line key process parameters that are not directly measurable** (metal temperature during melting, amount of energy loss through door openings, record of load types, etc.)

- Enables operators to **take informed data-driven decisions on the operational sequence and timings** based on the directions given by the interface and past events

- Provides the **ability to quantify and monitor productivity, energy consumption and CO2 emissions**

- Enables process engineers, plant directors and corporate managers to **remotely monitor, via a web-connection, the operating performance of their furnaces** and plan for improvement and longer-term optimization activities.

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✓ Linkedin: *https://www.linkedin.com/company/novamet/*

✓ m.salgado@novamet.ch

✓ Telephone: +41 79 309 58 55