

MAGMA

International MAGMA User Meeting 2024

October 9-11, 2024

RADISSON BLU – Frankfurt

BE
PART
OF
IT

The logo for MAGMA, featuring the word "MAGMA" in a bold, sans-serif font. The letter "G" is stylized with a red circular element around it.

MAGMA ECONOMICS

Continuous Casting

Constantino Krafthöfer

Frankfurt

International MAGMA User Meeting 2024

October 9-11, Frankfurt



How do you we use MAGMASOFT® today?

Quality and process optimization

- Reduce defects
- Increase productivity
- Save time for development
- For learning



MAGMASOFT®
autonomous engineering

But what is the real purpose of MAGMASOFT® ?

- Gain a competitive edge
- Save energy, reduce CO₂
- Make better decisions
- Improve communication

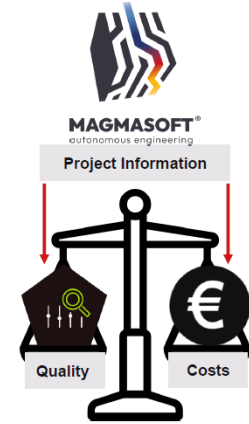
➤ **To reduce costs**



MAGMA ECONOMICS

- A new perspective in MAGMASOFT®
- Tool for estimating manufacturing costs
- Bridge the gap between technical and economical info
- Economic objectives can be considered in optimization

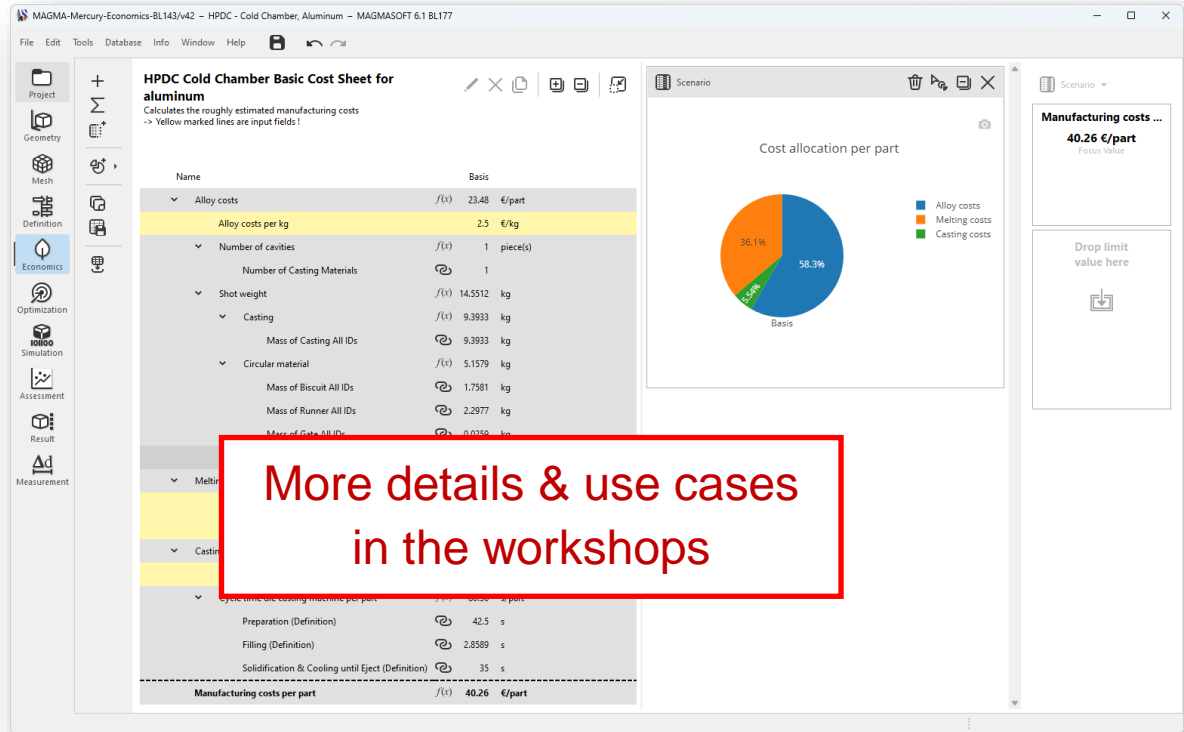
➤ **Make economically and ecologically sound decisions**



MAGMA ECONOMICS – Cost Sheet

What is a Cost Sheet?

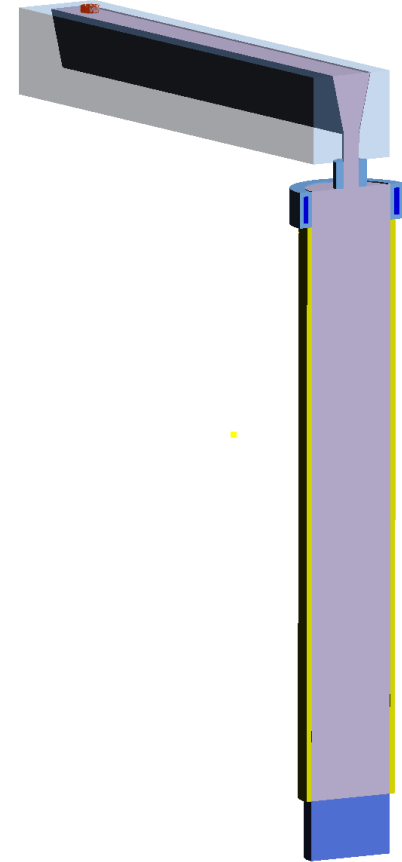
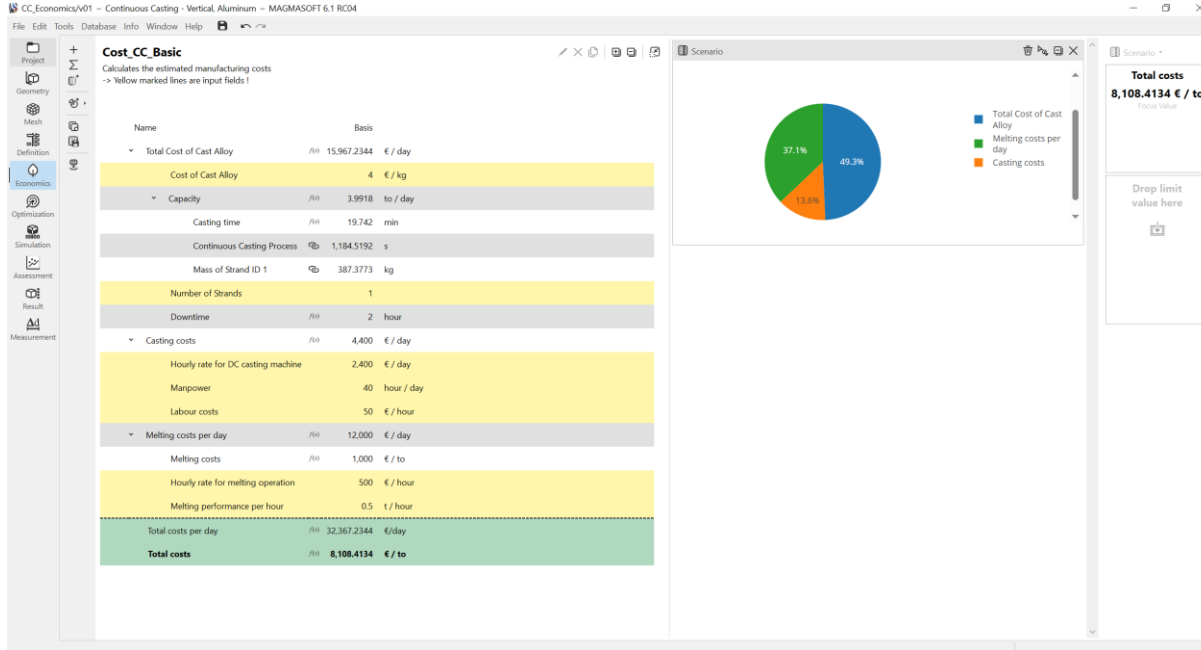
... but how do I
make this cost
estimation in
MAGMASOFT®?



Live Demo

MAGMA ECONOMICS – Cost Sheet

What is a Cost Sheet?



MAGMA ECONOMICS – Continuous Casting

Example: CC-Aluminium Project

Objectives

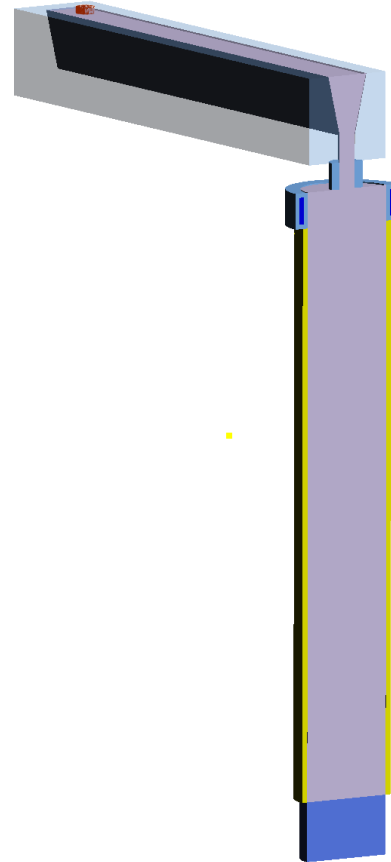
- No Breakout
- Reduce Microporosity
- Minimize Gradient
- Reduce Total Costs

Design Variables

- Initial Temperature
- Withdrawal
- Mold Cooling
- Spray Cooling
- Film Cooling

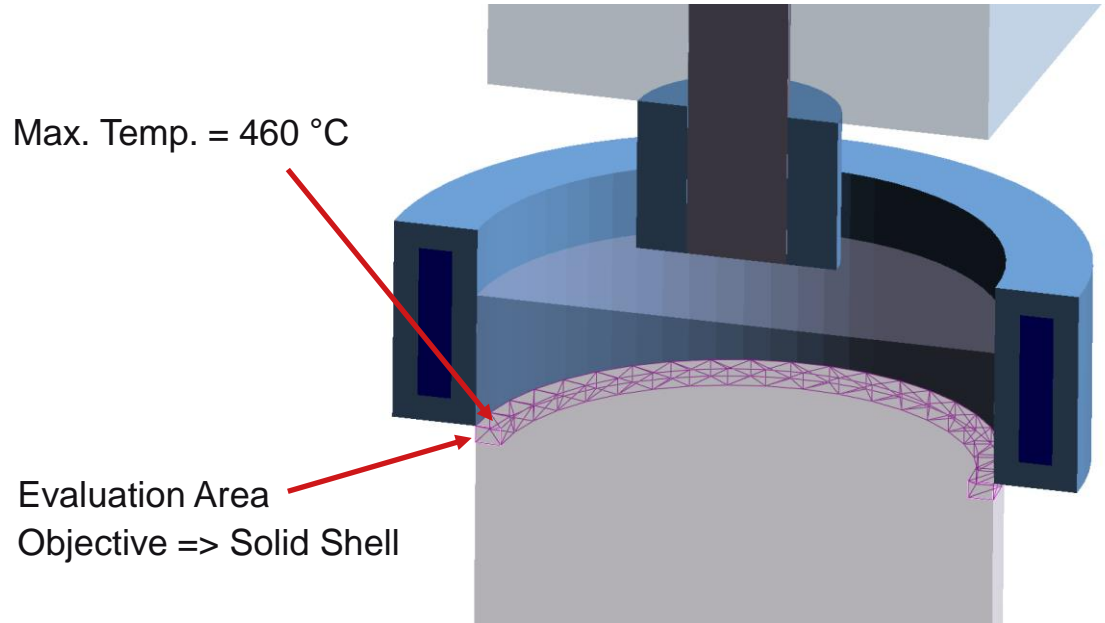
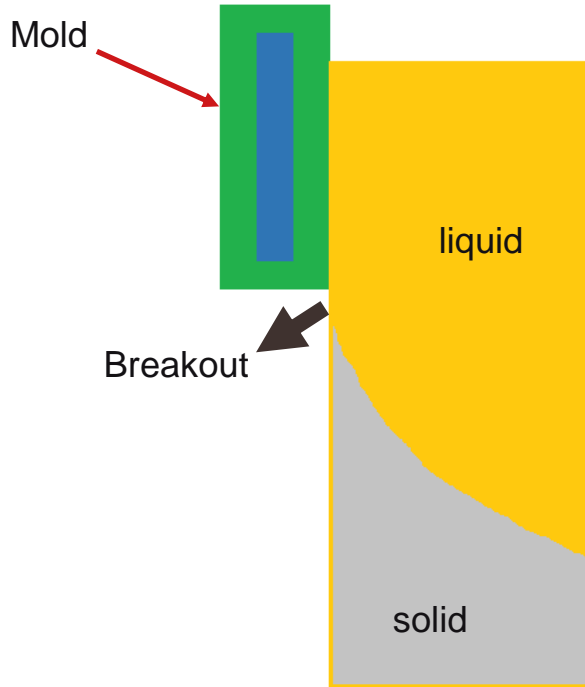


36 Designs



Breakout

Solid Shell



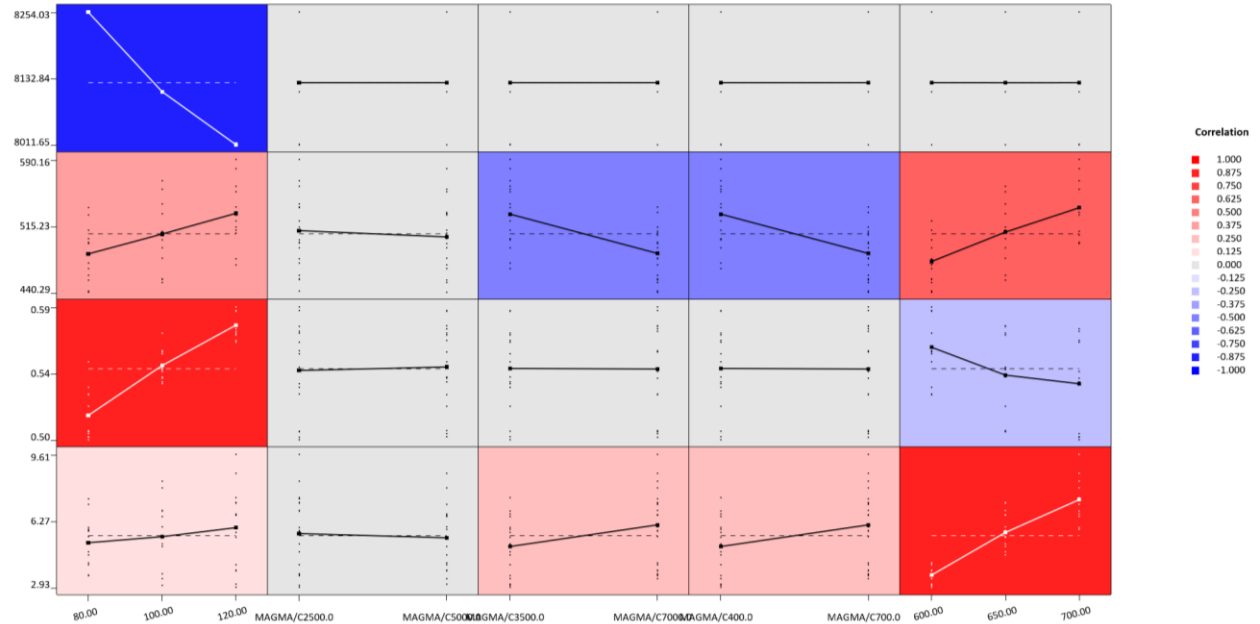
Main Effect Matrix

Total Costs [€/to]

Max. Temp. (Eval. Area) [°C]

Microporosity

Max. Gradient [°C/mm]



Withdrawal [mm/min]

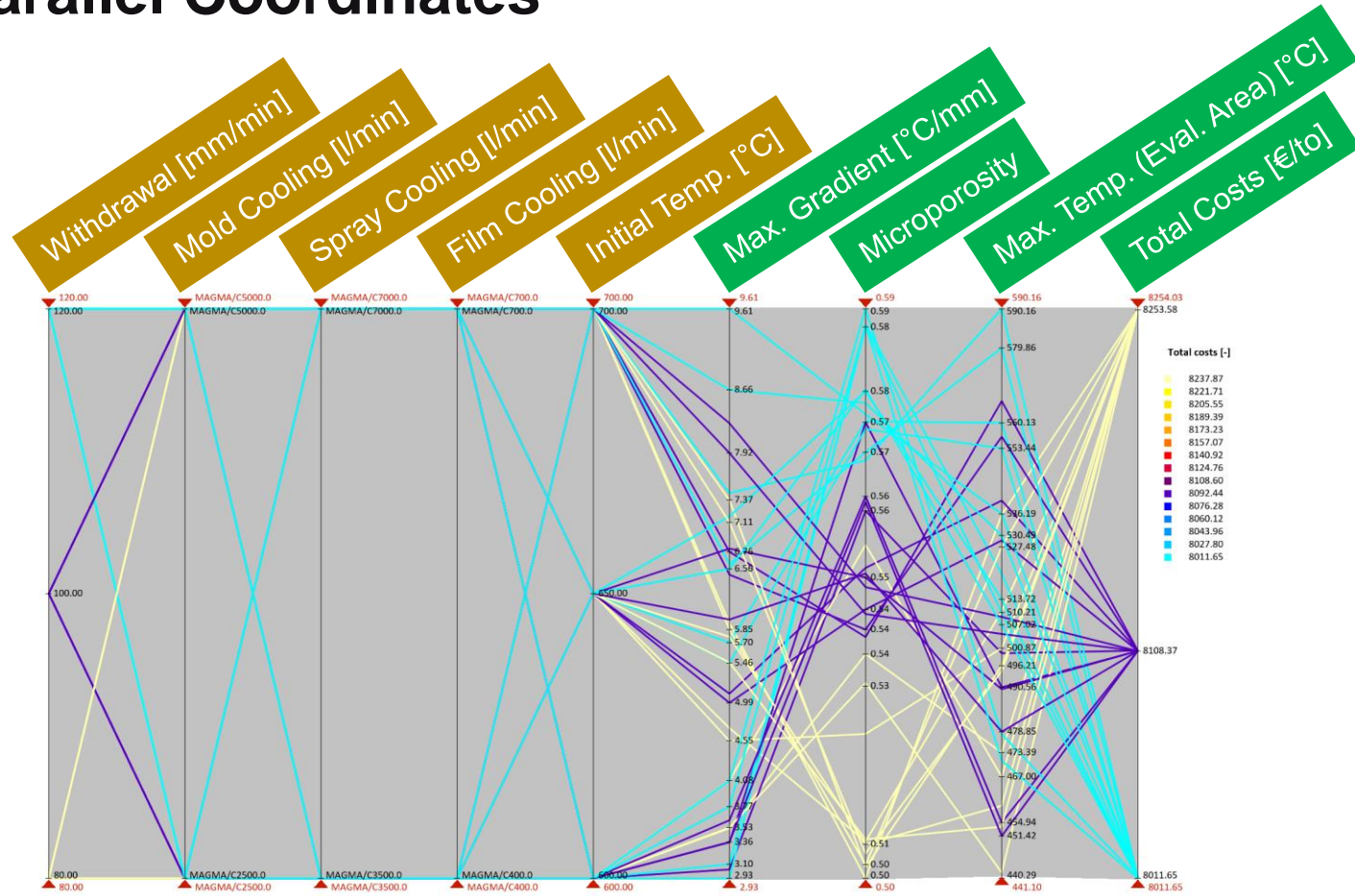
Mold Cooling [l/min]

Spray Cooling [l/min]

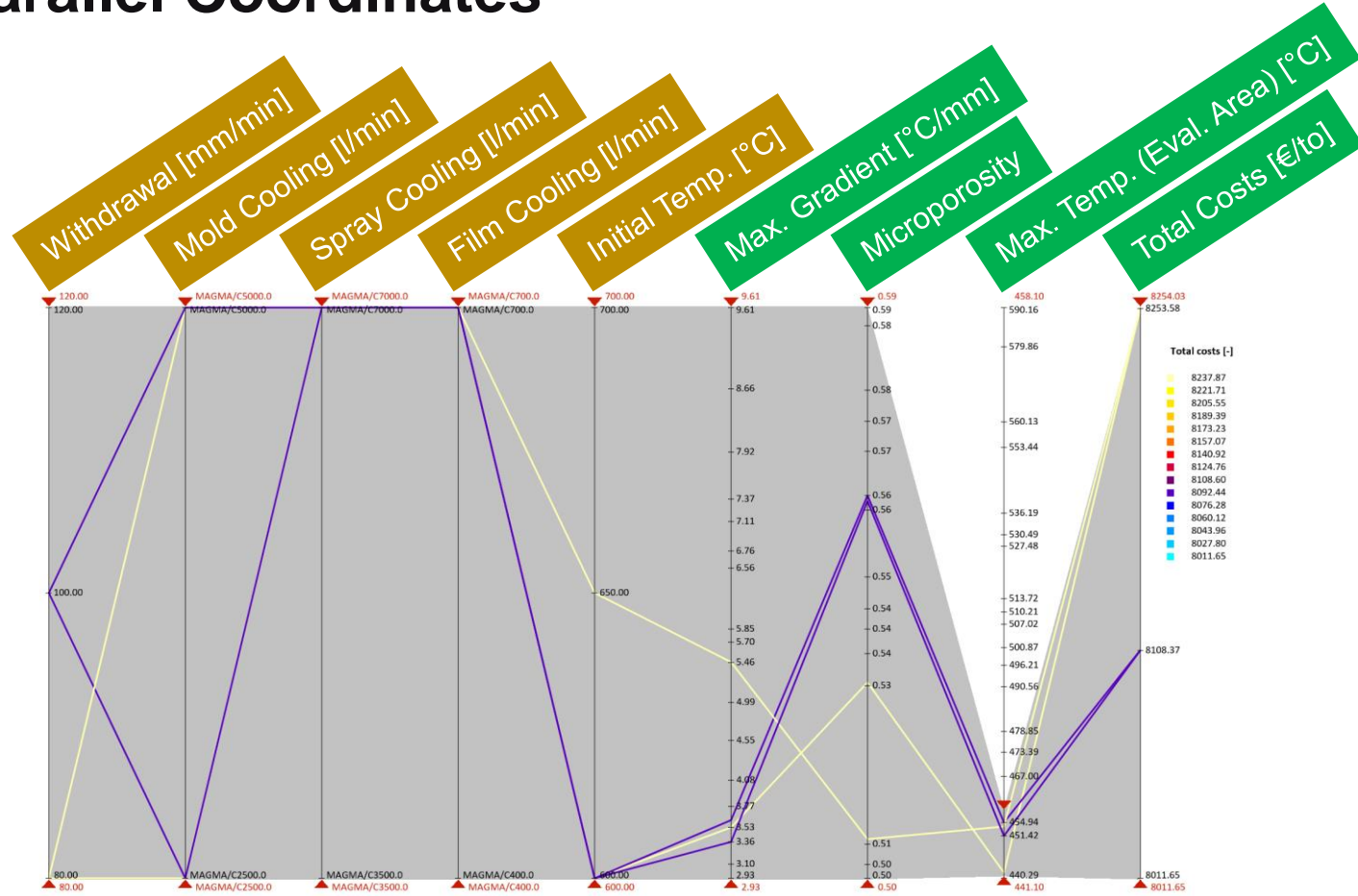
Film Cooling [l/min]

Initial Temp. [°C]

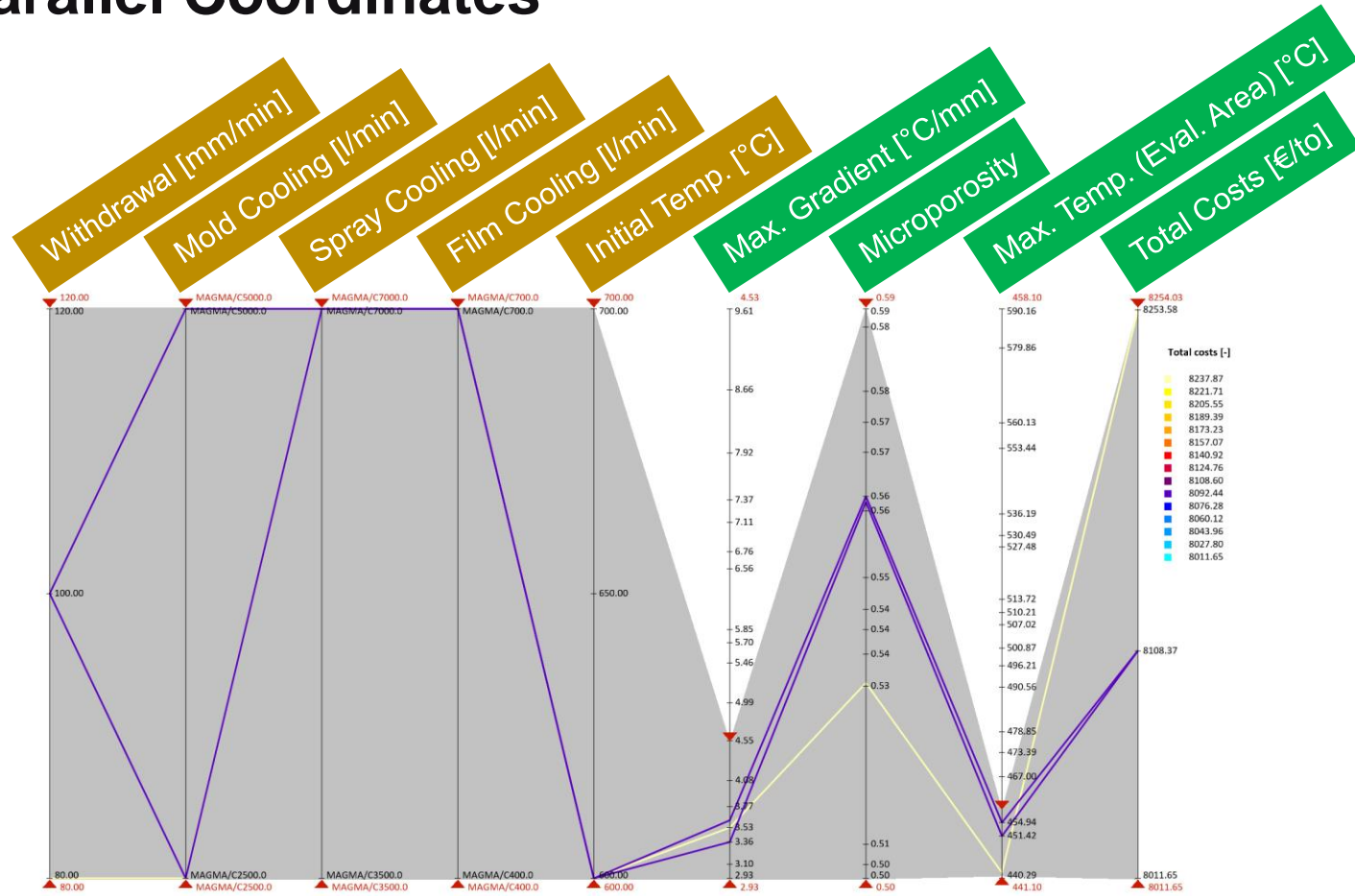
Parallel Coordinates



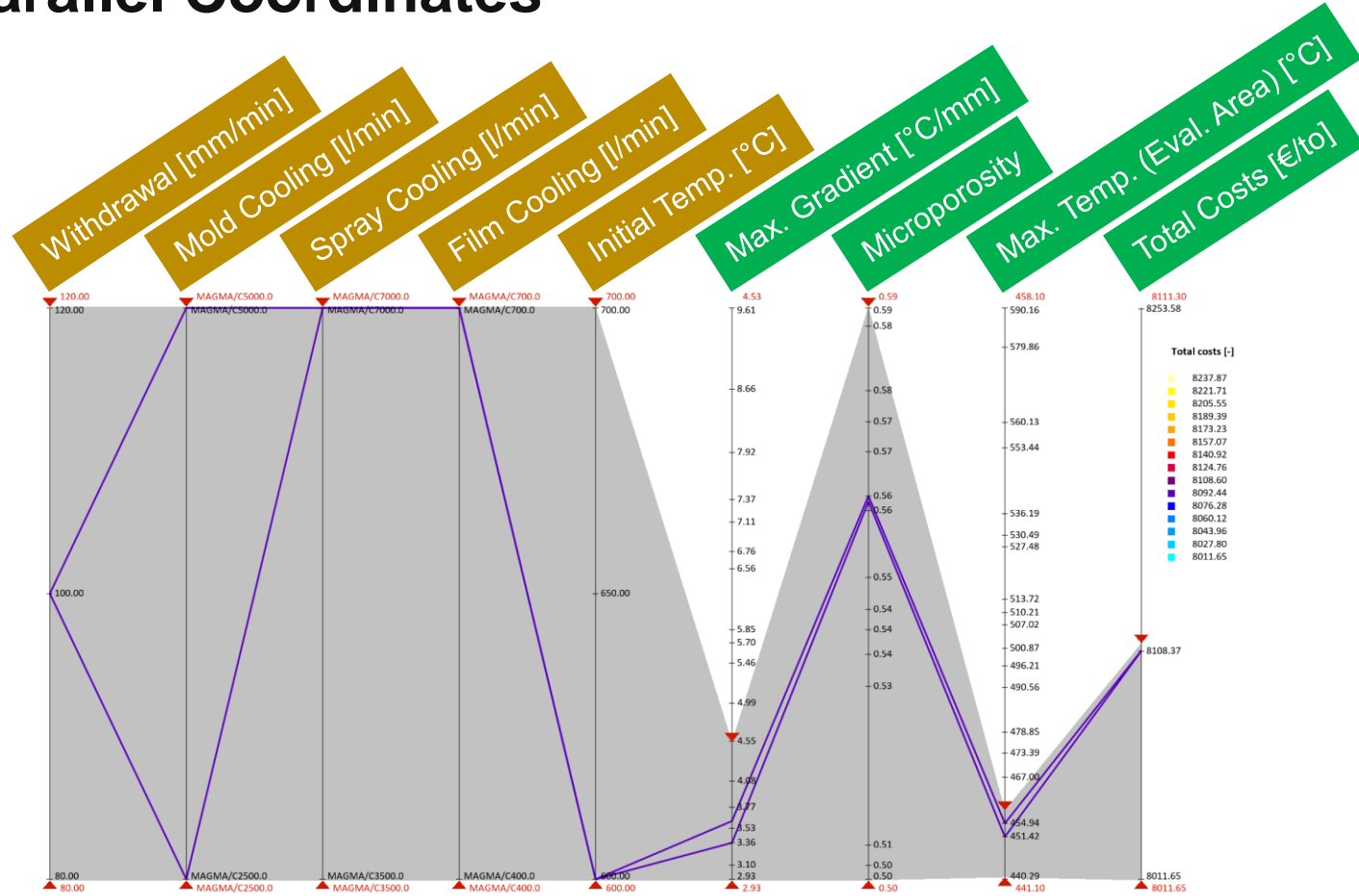
Parallel Coordinates



Parallel Coordinates



Parallel Coordinates



Summary

Summary

MAGMA ECONOMICS as a Calculation Tool

- ▮ We are estimating costs



- ▮ NO replacement of existing cost calculation tools !

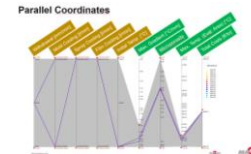
- ▮ We are talking about costs, NOT prices !



- ▮ An additional basis for decision-making in the evaluation

A screenshot of a software application window displaying a large table with multiple columns and rows of data, likely representing cost calculations or material properties.

- ▮ Better CO₂ footprint



Thank you for your attention.

Constantino Krafthöfer

MAGMA Gießereitechnologie GmbH

c.krafthoefer@magmasoft.de