Lower CO_2 footprint with casting flux Serie 7

BACKGROUND
Customers needs

CONCEPT
Calderys solution

SUMMARY
Recap of the solution

RESULTS
Concrete benefits

The background situation

The casting flux plays a critical role in steel quality and operational stability in the casting process.

Each flux is custom engineered to fit the constraints of each caster and steel grade.

Any change in its composition could lead to dramatic consequences in the casting process.

Therefore, it is a challenging plan to lower the CO_2 footprint of existing products without taking any risk for the casting process.

The request from the customers

Although the steel Industry is increasingly motivated to lower its environmental footprint, in the specific case of the casting process, it **cannot be at higher cost or by taking some risks for the steel quality or the operation stability.**

Exercise has been initiated with one of our best-seller product:
ACCUTHERM ST SP/220 DP

The new product, at comparable performance will be called SERIE 7
ACCUTHERM ST SP/720 CM

Analysis of the customer request

To respect existing properties of the casting flux, both the chemical composition and the behaviors parameters have to be strictly respected.

The new products should also fulfilled a certain number of lab tests, before being tried at customers site.

Main elements of the chemical composition
SiO_2
Al_2O_3
CaO b
Na_2O
Fluor
K_2O
MgO
TiO_2
Fe_2O_3
MnO_2
P_2O_5
Total C
CO_2
Free C

Limited selection* of behaviors parameters * *Other are confidential*
T° fusion
Visco IRSID 1300°C
Basicity index

Lab tests

Set of trials at customer's caster

Calderys solution

- **ACCUTHERM ST SP/220 - DP**
- **ACCUTHERM ST SP/720 - CM**

Same specification for both Accutherm ST SP/220 - DP Accutherm ST SP/720- DP	
SiO_2	33.5-36.5
Al_2O_3	4.10-5.50
CaO b	28.2-31.2
Na_2O	7.5-8.5
Fluor	6.4-7.4
K_2O	<1.3
MgO	2.3-3.3
TiO_2	<0.7
Fe_2O_3	0.9-1.9
MnO_2	<0.5
P_2O_5	<0.5
Total C	5.6-7
CO_2	6.1-7.5
Free C	3.9-4.9

Same behaviours parameters for both Accutherm ST SP/220/DP Accutherm ST SP/720- DP	
T° fusion	1070-1130
Visco IRSID 1300°C	1.7-2.7
Basicity index	0.8-0.9

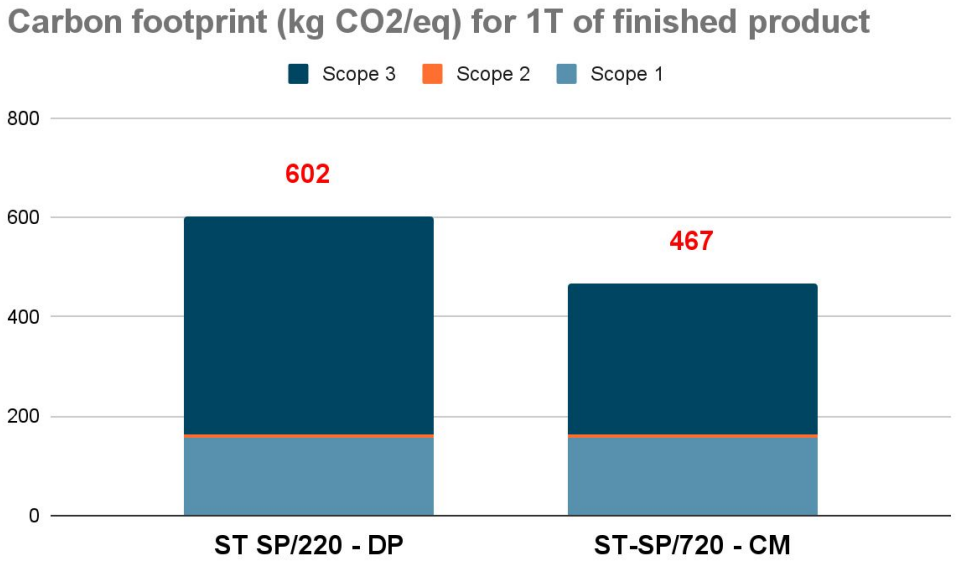
Benefits brought by the solution

A significant improvement of the CO_2 footprint by 20%

- **Greenhouse gases emissions are calculated according to IPCC* 2013 methodology.**
- It corresponds to impacts on Climate Change over a 100-year timeframe

Scope 1 : CO_2 emissions from our direct energy consumption
Scope 2 : CO_2 emissions from our purchased energy (i.e electricity, steam…)
Scope 3 : CO_2 emissions from upstream supply chain (e.g production/mining) and transportation of our raw materials

****IPCC : International Panel for Climate Change***



Cradle to gate Life Cycle Assessment studies based on Calderys specific on-site data (2021):

- Product composition (covering >95% of ingredients)
- Upstream transformation of raw material from quarries to the beneficiation plant
- The processing stages occurring in the plant (beneficiation, drying, separation…)
- The packaging of the finished product

Downstream transportation to customer gate (sea, road, rail transportation) is not included

Thank you for your attention

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