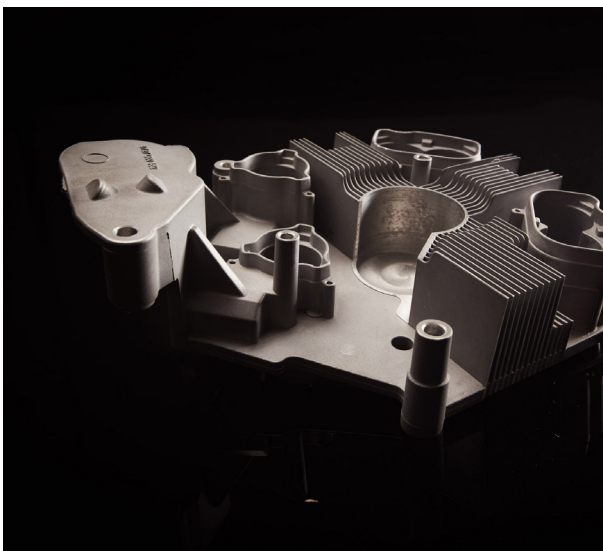


The hidden CO₂-saving in cars.

The chase to lower the CO₂ emissions from the production of cars is on and many great steps has been taken but one still remains to be found and used:

The low CO₂ from Rheocasted components.



→ Casted aluminum in cars

In a typical mid sized car there is around 200 kg of casted aluminum components casted with the casting process called High Pressure Die Casting (HPDC).

The benefits of this process is that very complex shapes can be casted to a very low cost. On the negative side HPDC requires often the use of eutectic alloys that contains a lot of silicon and by this lowering properties and also increases the CO₂ produced. This as Silicon is a strong CO₂ driver as it is a primary source and that it requires a lot of energy from mining, refining and later mixed with the aluminum scrap.

→ Why using Rheocasting instead of HPDC?

Firstly, Rheocasting is HPDC. The process is a melt treatment process that is in place between a furnace and a die casting machine why the technology can be implemented in any HPDC production.

The benefits with the process are higher properties and better quality but most important: lesser CO₂ used. The decreased use of CO₂ comes from the lower amount of Silicon used in alloys for Rheocasting, see the table below showing the numbers of CO₂ per alloy:).



Type of alloy

Kg of CO2 per kg of alloy

Primary China, coal based	18,0 kg
Primary Europe, hydro power based	4,6 kg
Secondary typical HPDC alloy	1,5 kg
Secondary alloy Rheocasting	0,47 kg
Eccomelt with Rheocasting	0,136 kg

Table 1. Typical values of CO2 per alloy sort.



→ How much can be saved?

The savings using a secondary alloy in combination with Rheocasting are the following for a typical car are shown in the table below.

Factor	Amount	Remark
Kg of HPDC castings	200 kg/car	Typical value mid size car
Transformation HPDC to Rheo	-200/car	From 11% Si to 5% Si as in general scarp, no added Si
Cost	-0 to -10%	Depending on component but: - Double tool life length - Smaller casting machine - Low cost alloy (no Si added)

→ If this is so great, why is it not happening then?

This is the question but I would like to rephrase it: why are not more companies following this route? As we are since some time seeing this happen and that our customers are taking benefits of the process. But the speed is slow and our understanding is that internal processes in automotive companies are that slow due to verification and also cost focus why we probably will see many years of transformation. But on the positive side: finally this subject is being discussed and people are acting why we feel hope that the hidden CO2 will be disclosed and used for a sustainable world.

More info
please contact:

Comptech
Staffan Zetterström
Staffan.zetterstrom@comptech.se
+46 76 17 15 650

COMP
Rheocasting *tech*