

Comparative life cycle assessment of a directly interlinked inline injection moulding painting process with the conventional painting process of a mounting frame as a fastening frame of the instrument panel in the interior of an automobile

Client: Varioplast Konrad Däbritz GmbH

Agent: SKZ – Das Kunststoff-Zentrum



Life cycle assessment based on ISO 14040/44

The reason for the life cycle assessment comparison is the innovative development and commissioning of a directly interlinked inline painting process by Varioplast, which saves energy, water and paint compared to the conventional painting process. The aim was to determine the effects of these savings on the environmental impact of the overall process. An overview of the results for selected impact categories is given below. A comprehensive background report contains a description of the methodological procedure and the evaluation of further environmental impacts.

Ergebnisüberblick

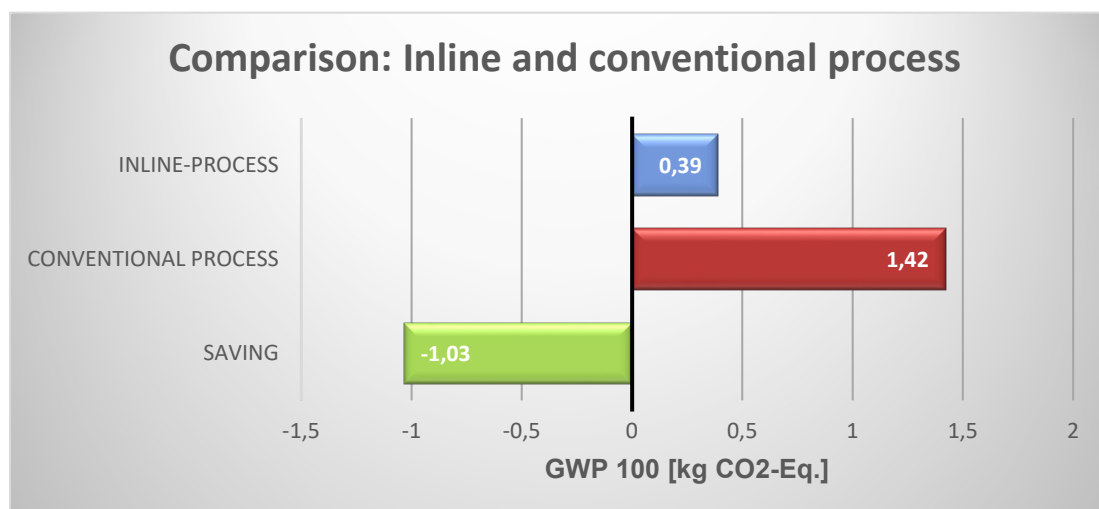


Figure 1: Global warming potential (GWP) of the two processes in comparison

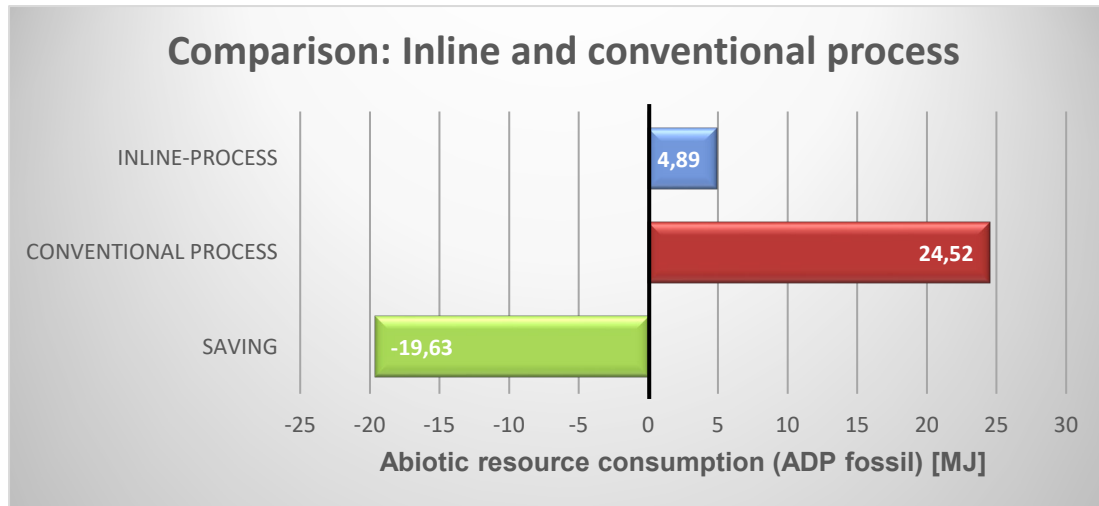


Figure 2: Abiotic resource consumption (ADPf) of the two methods in comparison

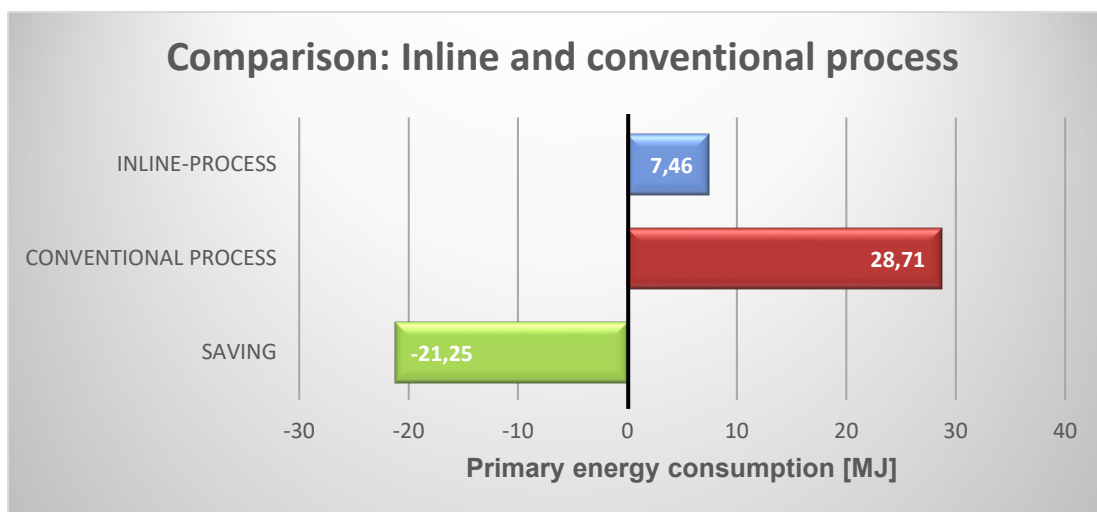


Figure 3: Primary energy consumption (PEC) of the two processes in comparison

Figures 1-3 show the environmental impacts of the two processes in comparison in the impact categories global warming potential (GWP or carbon footprint), abiotic resource consumption (ADPf) and primary energy consumption (PEC). The processes included in the analysis are the **painting process** itself, the use of a **power washer** in the case of the conventional process versus **CO2-cleaning** in the case of the inline process, **thermal post-combustion** and the **manufacturing efforts / thermal recycling** of the **scrap** quantities accruing in each case. The results refer to the painting of a mounting frame (1 component).

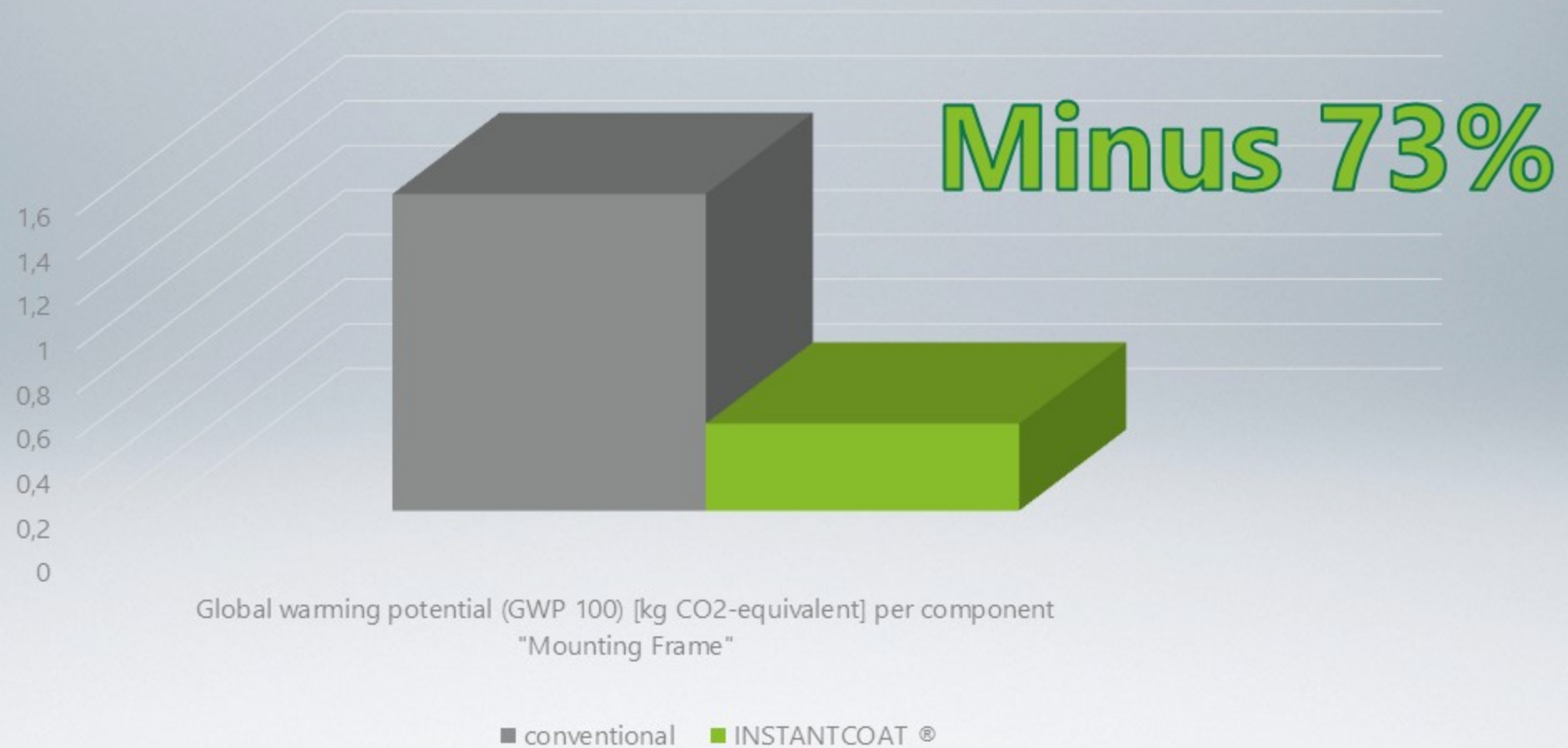
It can be seen that the inline process the **GWP** of the overall process from 1.42 kg to 0.39 CO₂-eqv. and thus by **73 % reduces**. The **ADPf is reduced by 80 %** from 24.52 MJ to 4.89 MJ by the inline process. The **PEC is reduced from 28.71 MJ to 7.46 MJ**, which corresponds to a relative saving of **74 %**.

Würzburg, 07.10.2021

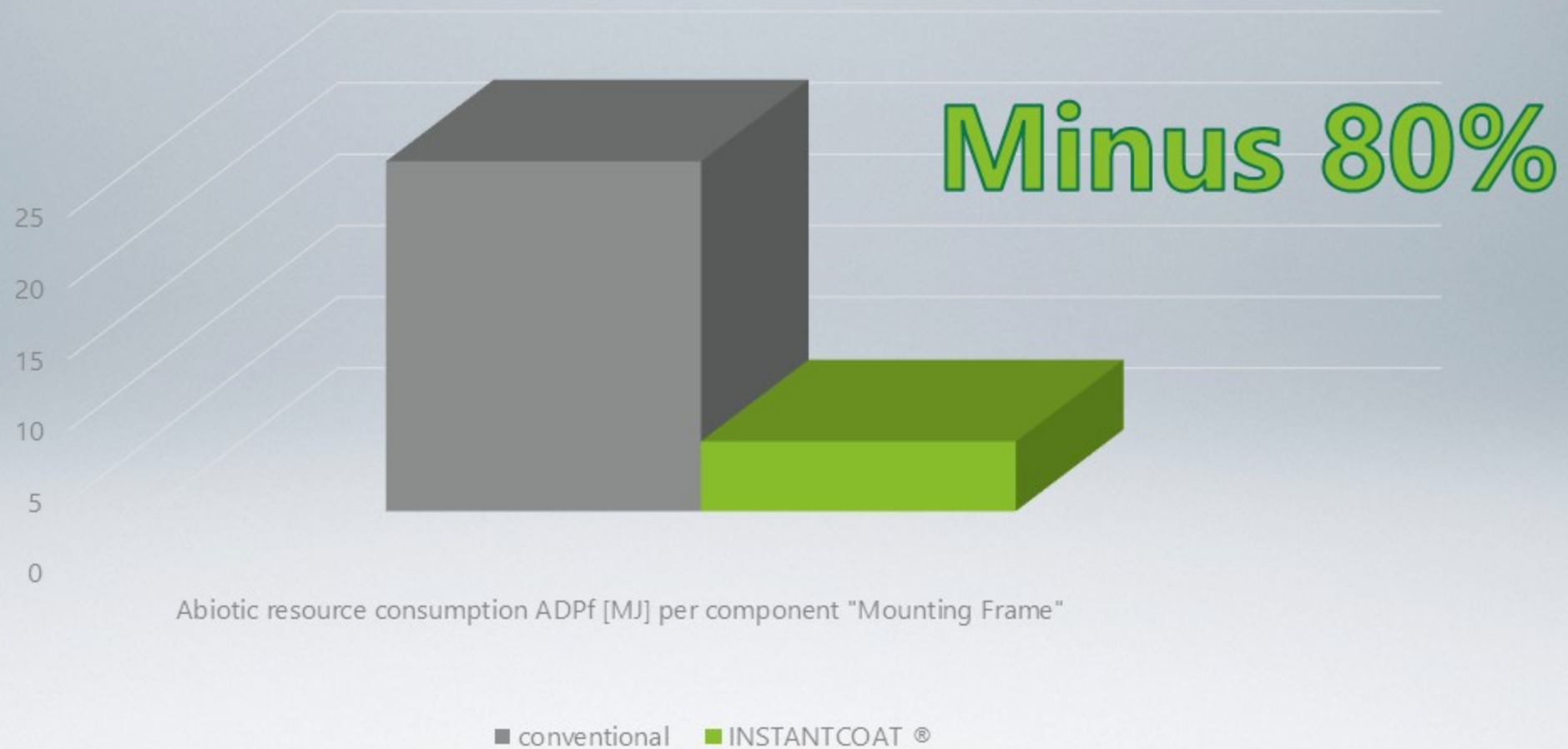
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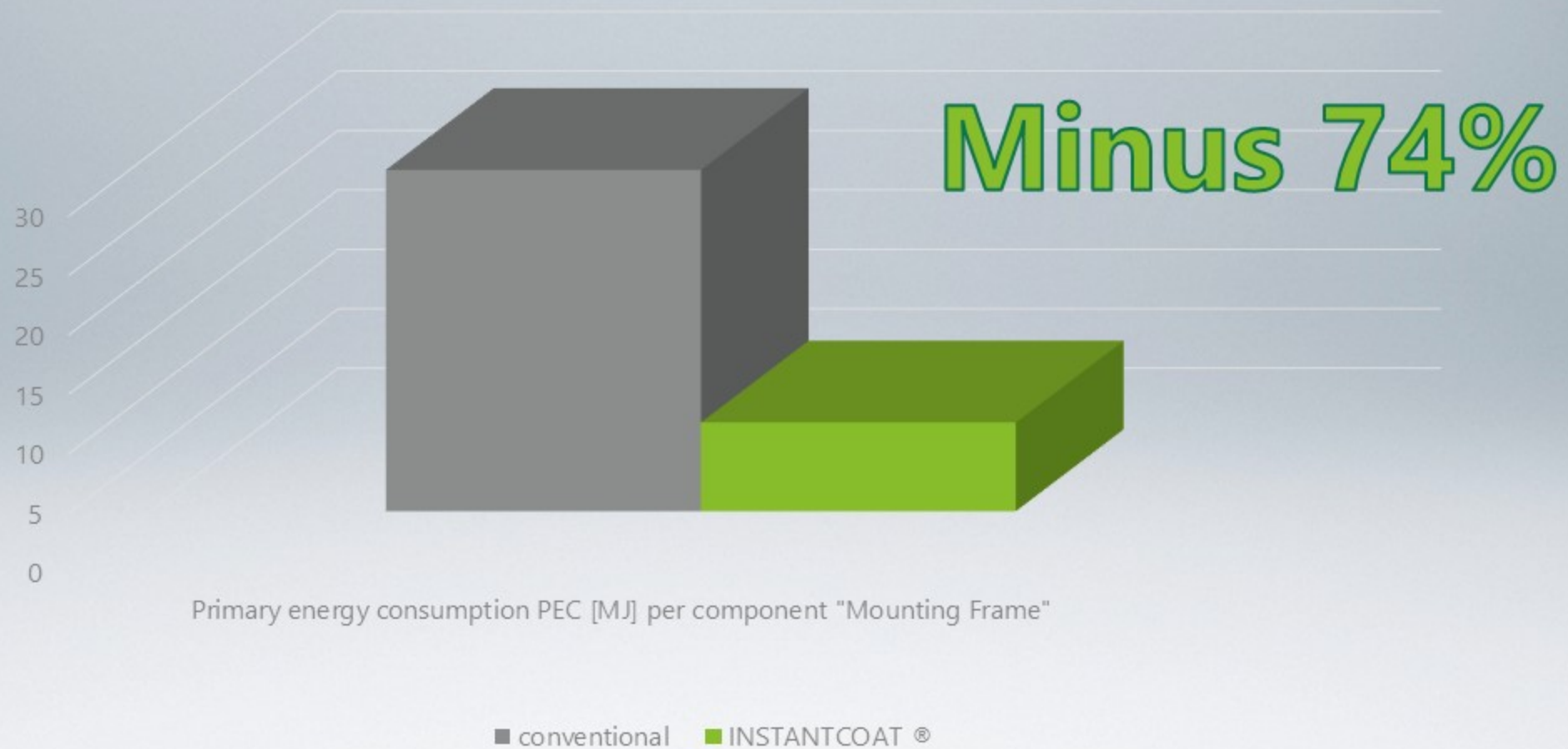
Reduction of the CO₂ footprint



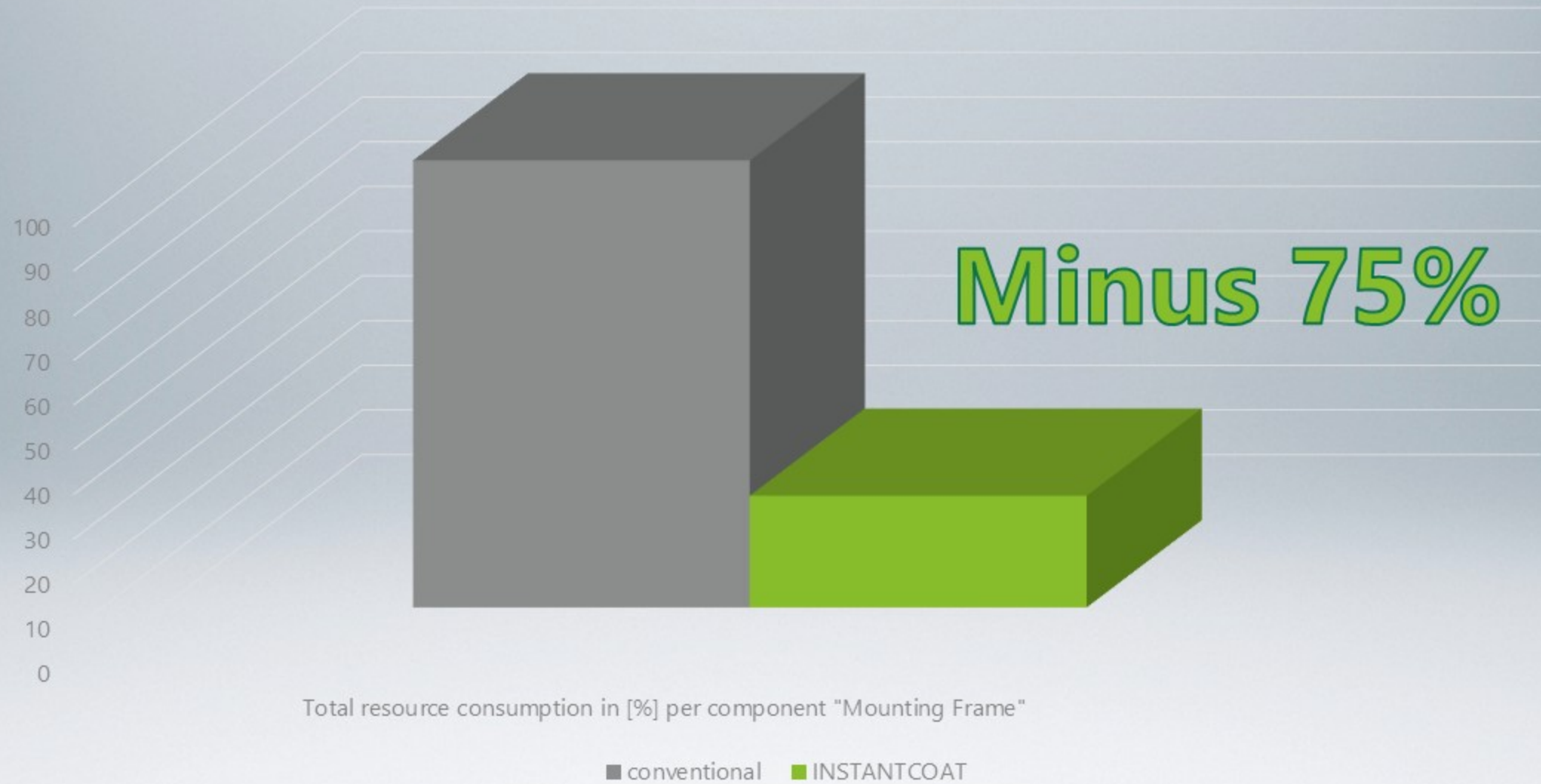
Reduction of the fossil resource consumption



Reduction of primary energy consumption



INSTANTCOAT®: Reduction of the ecological grey footprint



Confirmed by Süddeutsche Kunststoffzentrum Würzburg (SKZ) on 7.10.2021