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## PRESS INFORMATION

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### *Fakuma Press Release*

## Lightweight Design for Winners

**Structural components are exposed to severe conditions in motocross sport and, as a result, are often made of die-cast metals. Despite this, intelligent lightweight design solutions can also be achieved for these applications using high-quality performance polyamides. This is illustrated by the example of a rear frame for Husqvarna Motorcycles.**

Motocross machines need to be extremely tough and resilient. Long jumps, rough ground and riding close to the limits really takes it out of the bikes so that structural parts often need to be made of aluminium or steel. The weight, however, has a direct influence on the handling and vehicle dynamics and as usual, lighter is better. This makes the trend towards lightweight design a current topic for motorbikes as well.

### **Weight in focus**

The Swedish manufacturer Husqvarna Motorcycles is always looking to further develop its models and this is the reason why the rear frame of the FC 250 and FC/FS 450 models was to be made of polymer materials instead of the previously used traditional aluminium. An ambitious project as the application puts extremely high demands on the material used. Along with high torsion and flexural stiffness, extremely high impact strength is required. The material must also have good surface quality and be UV resistant, but the most important factor is the maximum possible reduction in weight in order to further improve handling of the bike. Converting the component to a polymer material needed to take all these points of view into consideration.

### **Tailor-made material**

For this challenging application, Husqvarna Motorcycles decided to use Grilamid LCL-3H, a polyamide made by EMS-GRIVORY and reinforced with 30% long carbon fibers. This material offers very high stiffness and strength with, at the same time, an extremely low density (1.15 g/cm<sup>3</sup>). Additionally, it convinces with excellent

impact strength and UV resistance, good surface quality and a low tendency to creep – perfectly suited for this demanding metal replacement application.

### **Superior polyamide solution**

The result was extremely convincing: It was possible to reduce the weight of the rear frame (new 1.4 kg) by 30%, thus optimising the centre of gravity and ensuring more precise handling. The component made of polymer material offers 20% higher torsion stiffness and 30% higher flexural stiffness than the original aluminium part. In addition, the new component is made up of three screw-fastening single parts instead of the previously 20-part design. The crowning achievement of this innovative solution is that converting the rear frame to use of polymer materials has tripled its life-expectancy!

Lightweight, strong and lasting: Grilamid LCL-3H makes lightweight design possible, even under the most demanding conditions.

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*Rear frame made of Grilamid LCL-3H.*



*Rear frame made of Grilamid LCL-3H.*



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