



**Case Study:**

**ax-lightness composites  
GmbH & Co.KG**



ax-lightness is one of the most innovative manufacturers and remanufacturing companies of CRP-composites in Germany.

**Company and  
Business Model**

ax-lightness was founded in 2001 and has 30 employees. The company started as a manufacturer for CRP-components (carbon fibre reinforced plastics) in bicycles, later on in motor sports and medicine industries.

The products and its components are predominantly designed for high performance usage and partially custom made. The high product price, the performance expectations form the customer and the small number of CRP-companies on this level in Germany are reasons why customers buy the products from ax-lightness. Due to this, the customers also bring their products or components back to ax when they are broken or worn, so the remanufacturing process becomes more and more important for the company.



**Products**

The products and the components for bicycles are manufactured in smaller and mid size batches, for medicine and motor sports they are predominant custom made.

**Remanufacturing Process**

The remanufacturing process starts with the disassembly and the analysis of the product to decide whether the product is repairable.

Due to the products ax-lightness produce, most of the repair operations focus on repairing tubes or surfaces, made from CRP. They usually separate the damaged CRP-component from the product and replace it with a new one. The critical process step is the integration of the new CRP-element in the existing structure of the old product. First, the replaced element has to fit perfectly in the cut area. The second challenge is to create a strong connection between the changed component and the connecting points of the product. This requires a lot of know-how and experience concerning CRP material.



Additional to the permanent quality tests conducted by the employees while remanufacturing, the products are tested finally on a test bench to verify the function and the performance parameters.

**Unique Characteristic**

The unique characteristic of ax-lightness is the expertise in

CRP-material characteristics and the interaction between its two complex components, the carbon fiber mesh and the resin. The strength of the connection points between the product and the changed element depends on the experience of the employee and the orientation of the CRP-meshes at the connecting areas. Ax-lightness can transfer the know-how from the manufacturing to the remanufacturing processes.

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