Transforming the spare parts supply chain with digital manufacturing

Husqvarna Group, a Swedish global leading producer of outdoor power products for forest, park and garden care, has a more than 300-year legacy of producing high-quality, leading-edge products centered around their customer needs and businesses. One of the reasons Husqvarna Group has been able to remain such a successful company for over a century is because of its ability to evolve with shifting technology and customer demands. So, when 3D printing began to reach production-grade levels, the company naturally wanted to explore how this advanced manufacturing approach could drive impact for their business. This led them to Fast Radius.

The Fast Radius team has worked closely with Husqvarna Group over the past year to identify parts that could be made more efficiently and sustainably through additive manufacturing — driving a reduced carbon footprint, improved customer experience, and lower costs.

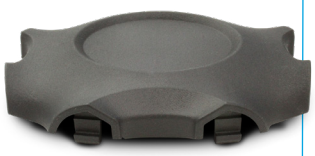
Streamlining Husqvarna Group's global spare parts supply chain with additive

At the outset of the project, the Fast Radius team of application engineers collaborated with Husqvarna Group to screen and identify parts that could be produced at production scale and quality with additive manufacturing. Fast Radius drew on our extensive knowledge of the landscape of additive technologies to align on the approach best-suited to produce the parts based on price and performance needs. In the case of Husqvarna Group, HP® Multi Jet Fusion (MJF) and Carbon Digital Light Synthesis (DLS) were the ideal technologies for a broad set of the company's replacement parts.

Once we identified families of parts (i.e., parts with similar size and performance parameters) that could be produced with AM, we needed to validate their performance and durability, and certify them for production and sale. This meant performing UV resistance tests, chemical resistance tests, days-long cycle tests, and then evaluating real-world performance in the field.

An initial batch of parts has already passed Husqvarna Group's rigorous Production Part Approval Process (PPAP) and are now being stored in the Fast Radius Virtual Warehouse. And while we're in the early stages of the journey, Fast Radius and Husqvarna Group now have a proven, systematic approach to on-board additional parts to the Fast Radius Virtual Warehouse. The company plans to leverage this approach to add additional additively produced production parts in the coming quarters and beyond.

The ongoing transition to production-grade additive manufacturing is adding value to Husqvarna Group's spare parts supply chain in three key ways:



1. Reducing company carbon footprint through less material waste
2. Improving the customer experience with spare parts never being out of stock
3. Eliminating inventory carry costs - including working capital, warehousing, and obsolescence

Sustainability impact of Husqvarna Group's spare parts program

In 2016, Husqvarna Group established a group wide Sustainability program "Sustainovate", including publicly recognized and testified CO2 reduction targets for the year 2035. Unlike traditional

manufacturing processes, which require high minimum order quantities, additive allows for economical production in units as small as one. Because of this, Husqvarna Group can produce only as many parts as their customer need at a time —no more, no less— resulting in less material waste, no obsolete parts, and a lower carbon footprint.

Enhanced customer experience with their never-out-of-stock spare parts program

With traditional manufacturing, if a customer needs a part that isn't readily available, replenishment can take weeks – or worse – the part has reached "end of life" and isn't available at all. Now, when a Husqvarna Group customer needs a replacement part that's hosted in the Fast Radius Virtual Warehouse, Fast Radius can produce and deliver the part in a matter of days. The part will never be out of stock again, delighting Husqvarna Group's end customers.

Eliminating supply chain waste with virtual warehousing and on-demand production

Inventory comes at a high cost — nearly $550 billion is tied up in inventory in the manufacturing industry alone, according to a report from the National Institute of Standards and Technology (NIST). For a company the size of Husqvarna Group, working capital amounts to hundreds of millions of dollars in the traditional manufacture-warehouse-sell process.

Because the additive manufactured parts will be stored digitally and produced on demand in any quantity, transitioning to additive manufacturing eliminates the supply chain costs of traditional manufacturing, such as:

- **Warehousing costs.**
- **High minimum order quantities.**
- **Unnecessary material waste.**
- **Part obsolescence.**
- **Working capital tied up in tooling and inventory.**

Production-grade manufacturing is here and can deliver meaningful impact to your business

At Fast Radius, we specialize in providing scalable, full lifecycle additive manufacturing solutions. Our world-class team will help you understand what's possible, build the economic business case and host a technologically advanced virtual warehouse for your products – ultimately delivering industrial-grade replacement parts that drive positive environmental, customer experience, and economic impact.

Talk to our team today about how your organization can leverage production-grade AM to drive cost and sustainability efficiencies up and down your supply chain.

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