

## Case Study F

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| <b>Company:</b>  | FARAL                                      |
| <b>Location:</b> | Laval, France                              |
| <b>Product:</b>  | Engines, Turbos, Gearboxes, Cylinder Heads |
| <b>Type:</b>     | Independent remanufacturer                 |
| <b>Maturity:</b> | Experienced                                |

Founded in 1932, FARAL is a French supplier on the independent market of engines, cylinder heads, turbos and standard exchange gearboxes. Its annual turnover is €9M in 2014 and the company employs 75 peoples in 2015. The company is situated in Laval in France and all products are remanufactured in Laval's manufacturing facility.

### *Motivation for Remanufacturing*

The main motivations for remanufacturing are its technical know-how (the company is engaged in these activities since 1965), environmental (availability of raw material and environmental benefits of remanufacturing), and economic benefits.

### *Product Description*

FARAL remanufactures automotive parts (around 2000 engines per year, 6000 turbos, 1200 gear boxes and 2000 cylinder heads). The company has developed its own patented remanufacturing process for cylinder heads. More than 300 types of engines, cylinder heads and turbos (Fig. 8a) can be remanufactured by the company.



Fig. 8a FARAL engine

Fig. 8b FARAL's Ecolabel

Fig. 8c Made in Mayenne Label

### *Design for Remanufacturing*

Cores collected by FARAL are designed by OEMs (PSA, Renaults, Ford, Opel and so on). In the case of engines most of the cores collected by Faral are designed to be remanufactured, but this is not the case for turbos and gear boxes. Engine parts are designed for milling and machining operations so they can be refurbished easily. Engines are also designed for durability which facilitates remanufacturing activities (core collections for example). For turbos and gear boxes, FARAL recommends that OEMs don't use parts that have to be changed frequently or where there is limited availability of spare parts, as doing so ultimately makes remanufacturing activities more complicated.

### *Environmental Benefits*

Using environmental studies undertaken by OEMs, Faral calculated the environmental benefits of its remanufacturing activity. The company developed its own ecolabel (Fig. 8b), to ensure to the consumer that buying Faral's remanufactured engines decreases CO<sub>2</sub> emissions, energy consumption and raw material depletion. Since it started remanufacturing, Faral has recovered more than 18000 tons of steel into new engines and automotive parts. Moreover, the company conducts measures to increase material recovery for parts that are not remanufacturable (waste sorting and partnerships with recyclers).

### *Economic Benefits*

Remanufactured engines are sold to customers for 20 to 40% cheaper than new engines. For turbos and gear boxes, it is the same order of magnitude. Moreover, the production costs of remanufactured engines and parts are significantly lower than the production costs of new parts. The company strives to extract the highest possible economic value from old materials and parts.

### *Social Benefits*

Every Faral product is associated to the "Made in Mayenne" label (Fig. 8c) which shows that the company is involved in the promotion of economic activities in the Mayenne 'department' (province) in France. This label demonstrates the company's willingness to train and recruit young workers from the region.

### *Business Model*

Faral's business model is based on quality assurance and strong collaboration with partners (recyclers, providers).

### *Future Challenges*

According to Faral, there is a necessity to improve the image of remanufactured products. The main challenge for the company is to change mind-sets to the circular economy and remanufacturing. In France, Faral thinks this can be accomplished through better communication of the main benefits of remanufacturing. Other challenges for the company are:

- Ensuring access to new cores, which is controlled by OEMs
- Preparing for oncoming new legislation (eg. tax regulation) that could impact remanufacturing activities
- Preparing for evolving new technologies that could facilitate remanufacturing activities (eg. additive manufacturing technologies)