



The Turbo Guy has been remanufacturing car turbochargers since 2010. The company, based in Glasgow, employs 6 people and has a turnover of £0.5m, over 90% of which arises from its remanufacturing activities. The majority of the company's business is within Scotland, regularly supplying turbochargers to 150 independent and franchise garages and motor factors.

The company began when Allan Mitchell, the Technical and Sales Director, noticed that no one was offering a turbocharger remanufacturing service in Scotland, the only service offered was repair. With a combination of reverse engineering, experimentation and testing, the company has developed its own remanufacturing process and now sells about 150 remanufactured turbochargers every month.

The company operates in the aftermarket segment of the automotive value chain

The remanufacturing process



1. Turbocharger core is sorted into high priority work (green), low priority work (yellow) and flagged items (red), e.g. unrecognised model.



2. Each turbocharger is allocated a part number and stripped down into individual components. For some devices, replacement bolts can be difficult to obtain so these will be reused where possible.

3. All of the component parts are cleaned—cast iron components are metal shot blasted while other components are washed with water and glass beads.



4. Broken parts will be replaced where necessary—typically only 20% of turbine assemblies and 70% of variable vane mechanisms will be suitable for remanufacturing.



5. The turbocharger will be reassembled and any worn or broken parts replaced. Once reassembled, the turbocharger is ready for testing.



6. Where it has been possible to remanufacture the turbine assembly, the assembly must be balanced. The Turbo Guy is one of only a few turbocharger remanufacturers who have this capability.

7. Turbochargers undergo a 10-15 minute test cycle on the flow bench test to ensure the maximum and minimum flow rates through the device are correct.



8. Finished turbochargers are bagged and placed in stock until needed. The company has about 300 remanufactured turbochargers in stock covering about 100 different models.



Why remanufacture turbochargers?

- **Product suitability**—turbochargers are suitable for remanufacturing with a number of structural components, such as the casing, which do not degrade over time. Other more complex components can either be remanufactured or replaced as necessary.
- **Cost**—a remanufactured turbocharger (about £300+VAT) is generally cheaper than the equivalent new unit (about £700+VAT).
- **Waste reduction**—remanufacturing reuses approximately 70% of the original components by mass.
- **Reduced lead times**—the lead time for a remanufactured turbocharger will be shorter than sending the turbocharger for repair, or even ordering a new unit. The Turbo Guy has a stock of around 100 different turbocharger models available off-the-shelf: up to 70% of orders are available the same day.
- **Superior quality to repair**—the thorough strip and rebuild processes and extensive testing undergone by remanufactured turbochargers means that they will perform better than repaired units.



Customer service

The Turbo Guy realises the importance of good customer service. Good customer service includes:

- Offering same day availability for many parts.
- Offering a health check service—if the turbocharger is working, the client is only charged for labour.
- Sharing information on what else might need to be done to a vehicle based on the device failure mechanism or model.
- Identifying the turbocharger model based on the vehicle registration.
- Offering repair services if there are no parts available for remanufacturing, it is a simple fix, or if cost is an issue.

Relationship with parts suppliers

The Turbo Guy has developed good relationships with its part suppliers:

- The company can get next day delivery from their UK-based supplier.
- The company can request specific parts that are not yet on the aftermarket, e.g. when a new turbocharger model is to be released.
- The company will talk to its part suppliers about opportunities to improve component design to prevent recurring faults. The Turbo Guy has noticed in particular turbocharger models. The supplier can then produce an improved replacement component.

Branding and marketing

The Turbo Guy considers branding and marketing to be key to the success of its business. The company works hard to encourage its clients to buy their remanufactured turbochargers over new or repaired alternatives:

- Business is currently spread mostly by word of mouth recommendations.
- The company has 3,500 garages on its database and regularly sends out mailings to raise awareness of the company and remanufacturing.
- The Turbo Guy is keen to distinguish between remanufacturing and reconditioning. Reconditioning involves only a functionality check, and not a full rebuild with warranty.



"Garages do not always understand the term 'remanufacturing'; they talk about 'reconditioned' instead, which is a very different thing."

Allan Mitchell—Technical and Sales Director, The Turbo Guy

The Turbo Guy has faced, and still faces, a number of challenges to their remanufacturing activities:

- **Lack of information on remanufacturing processes**—when the business first started, they found a lack of information on general remanufacturing processes, for example, how to prepare metal surfaces. The business has since built up the skills necessary to perform high quality remanufacturing, but access to information on these general engineering processes would have been helpful.
- **Technology evolution**—The Turbo Guy has needed to keep up with changes to turbocharger technology. For example, there are now three different types of turbocharger that the company will see—old devices will have no control mechanism, newer devices will have a vacuum controller and the latest devices will have electronic controllers. The introduction of electronic controllers has made remanufacturing more challenging—the company needed to invest in flow bench test equipment to ensure devices meet the OEM flow value limits, otherwise they will not work in the vehicle.
- **Customer understanding of remanufacturing**—garages do not always understand the term 'remanufactured' and often refer to 'reconditioned' parts. For The Turbo Guy, the challenge is to communicate the difference between them and explain why remanufactured parts are better.
- **Competition**—while remanufactured turbochargers are generally less expensive than new units from the OEM, new units from the Far East (which are typically reversed engineered from OEM models) are available at a price comparable to remanufactured units.

Future plans and opportunities

The Turbo Guy has seen growth in its turbocharger sales since its formation and the company is aiming to continue this trend. The installation of flow bench test equipment has allowed the company to extend its product range into electronically controlled turbochargers with strict operational ranges. The introduction of twin turbo technology is starting to come through: this technology uses two turbochargers per vehicle, one of which is typically smaller and spins faster, which may require more frequent remanufacturing as it is less robust. Were the business to expand, the company would need to consider the localised nature of its customers, with the majority operating within a 30 mile radius. The company might consider regional repair benches and distribution centres, while benefiting from the economies of scale and maximizing equipment utilisation through a centralised remanufacturing facility.

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