Machine Tools

The Market At A Glance

- Whilst global demand for machine tools is rising, the UK stock is falling by 6% every year (Benchmark report, 2006).
- Half of the UK’s machine tool production is destined for export, with a similar quantity being imported into the UK.
- Imports from Asia have greatly reduced the demand for lower value remanufactured machine (below around £25,000).
- The aerospace and steel sectors are currently showing healthy growth, and with growth comes demand for machine tools.
- The automotive sector accounts for around 40% of machine tool purchases.
- UK firms are using their expertise to break into foreign markets demanding re-engineered and remanufactured machine tools of very high quality.
- The aerospace sector is buying large, high value machines from the UK.
- Half of the UK’s machine tool production is destined for export, with a similar quantity being imported into the UK.
- Imports from Asia have greatly reduced the demand for lower value remanufactured machine (below around £25,000).
- Many of these are currently being remanufactured.
- The proportional level of remanufacture increases at a rate of 2% pa in line with predicted UK machine tool production growth.
- The proportional level of remanufacture remains constant at 2006 levels, with a decrease of 5% in line with UK machine stocks.

What Makes Up A Machine Tool?

- A machine tool is any non-portable device that works a material by cutting, forming or physiochemical means.
- Most consist of a heavy iron bed, with electrically controlled actuators and spindles to create relative movement between tool and workpiece.
- Computer numerical control (CNC) is now standard on all but the most basic machines.
- Rapid advancement in computer power is enabling the design of ever more accurate and sophisticated machines, capable of lights out operation and active process monitoring.
- The bed castings make up the majority of any machine’s mass and can be remanufactured indefinitely.
- Machines generally have a lifetime of around 20 years, after which they will need remanufacture.
- It is normally possible to upgrade machines to incorporate the latest CNC controllers and drive motors, making remanufactured machines very competitive with new ones.
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Looking to the future...

- The key to securing foreign orders is innovation and the ability to provide the latest spec on reengineered machines – this requires an active research and development presence.
- Core must be sourced internationally to fulfil orders, as there is a net export of large, high value machines from the UK.
- Firms that concentrate solely on the UK market will find it very hard to gain sufficient orders.
- The heavy iron castings that make up the majority of a machine tool hold a large amount of embodied energy and as such should be remanufactured where possible.

Conclusions

- The UK must strive to compete in the international remanufacturing market place.
- It is important to nurture the skill and knowledge that is allowing the UK to take a leading role in the machine tool reengineering sector.
- The heavy iron castings that make up the majority of a machine tool hold a large amount of embodied energy and as such should be remanufactured where possible.

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Overall output and assumptions</th>
<th>Tonnes diverted From Waste Stream (kt)</th>
<th>CO₂e Saved (kt)</th>
<th>£mil Spent On Reman Products</th>
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<td>Ref</td>
<td>The proportional level of remanufacture remains constant at 2006 levels, with a decrease of 5% in line with UK machine stocks.</td>
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<td>The proportional level of remanufacture increases at a rate of 0.2% pa in line with predicted UK machine tool production growth.</td>
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<td>A2</td>
<td>The proportional level of remanufacture increases at a rate of 2% pa which represents the predicted growth of the European machine tool industry.</td>
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<td>40</td>
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