Measuring PM’s economic pulse

Kenneth J A Brookes, consultant editor, looks at the relationship between the overall economy and raw materials used in the production of hardmetal tooling.

Because of its close relationship with manufacturing, the powder metallurgy industry in general, and the hardmetals end of PM in particular, are sensitive indicators of industrial and commercial health. In a survey, it’s obviously as useful to know whether production is on some kind of plateau as it is to learn if it’s going up or down. To assist our analysis, the American economy is recognised as perhaps the most advanced internationally and the US Census Bureau and US Geological Survey produce useful statistics on a wide range of materials. Among these are key cutting-tool constituents tungsten and cobalt.

Let’s start with a few caveats. When the manufacturing business is in good health, industrialists build stocks of needed cutting tools; largely tungsten carbide-based hardmetals. When business is poor and production drops drastically – as in a recession – one of the first reactions of manufacturers is to de-stock, that is to run down their stores of expensive tools to an absolute minimum. Thus, for a time, the recession’s effect on the cutting-tool industry will be far greater than in industry as a whole. When stocks of these tools reach an absolute minimum, tool orders rise again, at a low but steady rate that accurately reflects day-to-day consumption, or so-called “just-in-time” deliveries. If business then picks up, even slightly, tool orders must necessarily be augmented immediately to service increased demands. In this phase, tool orders and consumption reflect very accurately the commercial health of manufacturing industry. Stocks will only approach pre-recession demands when that recession is well and truly over and confidence builds again.

Cobalt as an indicator

It’s been said that you can prove anything with statistics, but they can be valuable when used correctly. Although statistical values can indeed be misleading, they’re pretty definite in this instance. If we look at cobalt, the metallic binder in cemented carbide, total US consumption for that purpose for January-May 2012 (the latest figures available) was 327 tonnes, which compares with 328 tonnes for January-May 2011, virtually the same value. The figure for May 2012 was 66 tonnes, a fifth of hardmetal usage in a fifth of the time.

It’s disappointing to see such precise confirmation that the US is bumping along the bottom of the same depression that currently ensnares Europe, but in this case I trust the statistics. Since cobalt comes in many interchangeable forms, imported from and exported to many countries, there’s not much else relevant that we can learn from the USGS cobalt publication. However, we can seek a little more enlightenment from the equivalent data on tungsten.

Tungsten and WC/Co

We can check our conclusions by reference to the “Production and stocks” table in the corresponding USGS publication on tungsten (Table 1). In this case, the latest available compilation takes us to April 2012 rather than May 2012 for cobalt. Pro rata, 1510 tonnes of WC in four months (January-April) would be 4530 tonnes for a full year, within touching distance of the 4460 tonnes recorded for 2011. There may be some double-listing here, because tungsten metal powder is the raw material from which WC is made, though it can equally be used for sintered tungsten or tungsten alloys.

However, this isn’t the whole story. We also have to allow for imports and exports (Tables 2 and 3). For simplicity, other precursors such as ammonium...
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