

Great leap forward?



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EDITOR

It's not so often in any industry that dramatic change is presaged by a single development. But the potential impact of the Activated Nanotech Powder (ANP) process could be truly staggering for the metal powder industry, providing the motive force to drive it from its "niche" applications into the huge markets currently occupied by purveyors of wrought, machined and investment cast products.

Given that potential, I make no apology for devoting a large amount of editorial space in this issue to the process and to an essay on disruptive technologies written by one of the inventors of ANP.

As many people will know by now, ANP uses standard ferrous powders, conventional compaction, a special lubricant and high-temperature sintering to produce near full density products. PM steels produced via ANP have been tested and show mechanical properties comparable to low-alloy wrought

steels without the cost factors of additional processing.

The nanotech of the name is drawn from the fact that the powders do contain fine particles that may exercise an effect during the complex transient liquid phase sintering which gives a densified structure homogenised by high temperatures.

The test results announced at Chicago, agreed by PM *cognoscenti* to be remarkable, have been reconfirmed by further testing since. But perhaps the best confirmation has been sales to companies - in test packages, to be sure, but quite substantial test packages.

For an industry normally characterised by its close-lipped and not overly co-operative demeanour, the ANP collaborators have been offered a fair amount of help. Two furnace experts, CM - in one of whose furnaces the possibilities of ANP first saw the light of day - and Gasbarre's Sinterite Hayes group have offered help with the high temperature aspects of the process. Powder manufacturers, too, are thought to be on hand with help and advice. That's hardly a surprise, given the good news for them that this could be. But many others in the supply chains that keep the industry going will have taken note and be looking at the possibilities of the process from their own standpoints.

Perhaps more constructively, those with a vested interest in seeing the PM industry go from good to better should also be considering how they might lend a hand in creating the truly disruptive technology that will not only have the initial push, but also the sustained momentum

to start the expansion into (probably first) the lower reaches of new markets.

In his essay on disruptive technologies, which draws heavily on the wisdom of Harvard Business School's Clayton Christiansen, Ira Friedman makes the point that in an earlier convulsion in the iron industry the traditional, established and indeed gigantic steel companies with familiar names such as Bethlehem Steel that had been intimately associated with the success of the American industrial mass manufacturing revolution of the middle years of the 20th Century were (in a none too elegant, but accurate phrase) upended by the rise of the minimill phenomenon - a disruptive technology. Bethlehem Steel went bankrupt.

The story of disruptive technologies goes back as far as the invention of the wheel and maybe further. For examples close to home in the communications industry we need to look no further than first, the invention of the printing press 500 years ago and, within the last two decades, the Internet. And just as freely available printed matter led to social and political upheavals in the 15th and 16th Centuries, the Internet has changed what we do and, more importantly, the way in which we do it. Although mass access to electronic communication has arguably hit the printed word industry quite hard, it has by no means killed it. Indeed our customers appreciate the advantages of both media.

If the potential of ANP is realised, many areas of the PM industry will still go on as they do now, making parts at a reasonable cost (and profit) that would otherwise be prohibitively expensive, or downright impossible.

Where PM stands to advance most is in the high-strength applications that frustratingly lie just beyond reach at present.

With this development we may be seeing another chapter being written in the comparatively short history of PM and a substantial addition to the list of disruptive technologies that changed things for the better.

Shanghai programme unveiled

EVERY copy of this month's *Metal Powder Report* should contain the programme for the PM Asia 2005 Conference and Exhibition to be held in Shanghai next April. The packed three-day conference programme features internationally respected names from the world of powder metallurgy. Specialist workshops on metal injection moulding (MIM) and soft magnetic composites for electric motors are an added attraction.

The conference will be complemented by an international exhibition featuring major powder and equipment suppliers. Stands are already selling fast, so acting sooner rather than later would be good advice.

If for some reason your programme is not included, please contact the editorial or sales staff listed on the Contents Page who will be pleased to rush you your copy.