Bucking the trend

by Stephen Smith, SFAR, France

SFAR is located in the heart of France, close to the town of Le Creusot in Burgundy. The history of the region is inextricably linked with mining and metallurgy, and a number of large factories still employ considerable numbers of people in the town.

King Louis XVI ordered the construction of a forge for the manufacture of naval cannons as long ago as 1782. SFAR is part of the global Areva group, and has a close working relationship with the sister company forge and foundry situated closeby.

Changes in the world economy

In common with other international cement industry suppliers, SFAR has been subject to changes in the fortunes of the world economy.

On the one hand, recent times have witnessed a series of sudden swings in demand for large machined components. Only one year ago, most forges and foundries were fully booked, and for certain large castings and forgings, deliveries of more than 24 months were not unusual. The unforeseen arrival of the credit crunch has brought an end to that boom: many large projects have either been cancelled or put on hold. Inevitably, gaps have started to open up in the manufacturing schedule of cement industry suppliers, giving rise to shorter delivery times and causing a dip in prices.

Globalisation of supply

On the other hand, the globalisation of cement supply has brought into being the existence of a number of truly worldwide cement companies. For some years, these global entities have been attempting to profit from their enormous scale, by setting up worldwide purchasing divisions tasked with securing the supply of 'key components'.

These 'key components' are those items which are:

1. usually made to order, and are not obtainable from stock
2. integral parts of the cement plant, and without which the plant will not function
3. high value items, and are subject to widely fluctuating delivery cycles
4. products which are not regarded as 'spares', but are considered as part of the original plant as constructed. The lifetime of such pieces may be as long as 20 years
5. often manufactured in specialist plants, and cannot be obtained in many countries.

Machining of tyre of kiln support roller

Against this background, SFAR has sought to be acknowledged by the cement industry as a supplier of tailor-made kiln support rollers. This aim was bolstered when, after lengthy discussions, Holcim Americas in Miami selected SFAR as a nominated supplier of kiln support rollers.

In the early part of 2009, SFAR received a flurry of orders from different corners of the world, all from new customers.

Kiln support rollers

In total SFAR received orders for 10 kiln support rollers from four international clients during the early weeks of this year.

Forged or cast?

When a cement plant decides it is time to replace a kiln support roller, the first question is whether to choose a cast or a forged steel replacement. Engineers differ as to whether forged rollers offer advantages over the cast product, with the maintenance department of one European based global cement company considering that both processes offer rollers with similar working lifetimes. It must be stated that it is SFAR's experience that in general there is a clear preference amongst customers for the forged product, with relatively few asking for cast tyres.

Monobloc or separate tyre and shaft?

Although it is possible to offer support rollers machined from a single forging, the cost of the larger one-piece forging is disproportionately expensive, and so SFAR usually supplies rollers assembled by heat shrinking a forged tyre onto a forged shaft.

Sizes of rollers

SFAR has an exceptional range of machine tools able to handle the largest forgings, allowing the company to manufacture 64t support rollers destined for new projects in the USA in 2007 and 2008. However, the orders cited above have been for a wide range of sizes, with the smallest tyres having a diameter of 690mm and the largest being 2500mm.

Steel grades

42CrMo4 is almost universally requested as the steel forging material for the

Clockwise from left: kiln support rollers at SFAR ready for shipping
Alternator shaft on milling machine
Fan shaft on parallel lathe
Motor shaft on grinding machine

tyre. One of the roller tyre forgings is specified as C45. Certain of the shafts are 42CrMo4, with others being materials such as C45, St60.2, 34CrMo4 or 34CrNiMo6.

Design and drawings

SFAR occupies a niche position in the cement industry, relying on direct contacts both with cement companies and with plant engineering companies to ensure a flow of orders. Although the company employs only 150 people, SFAR has been able to develop a wide range of clients.

The company's strength lies in its ability to respond quickly to customer inquiries. Most of its people are working on the machines or carrying out assembly work, since SFAR does not employ large numbers of office workers or sales personnel. As soon as an inquiry arrives on his desk, the commercial manager is able to rapidly put together a quotation and delivery date.

SFAR emphasises that they have no design capability whatsoever. They expect their customers to provide their own manufacturing drawings. It is not uncommon for a client to have lost or mislaid the original drawings, since sometimes it can be many years since the original rollers were installed. In that case, SFAR advises cement companies to arrange with a specialist engineering company to visit their site and to measure the support rollers during a shutdown period. Upon receipt of the drawings, SFAR confirms that all the necessary dimensions and materials have been defined.

Clients

SFAR has been delighted to book orders for kiln support rollers from new clients as shown in Table 1. Although SFAR has no cement process knowledge, the comprehensive list is clear evidence of credibility in the marketplace.

Table 1: SFAR new clients

Company	*Purchasing office location*	*Installation site*	*Number*
Lafarge	Amman, Jordan	Fuhais and Rashadiya plants, Jordan	2
Holcim	Alesd, Romania	Alesd, Romania	1
Cimpor	North Africa	North Africa	1
Sinoma	Beijing, China	Oman	6

In the last five years, SFAR has worked directly for the following companies:
Plant engineering companies: FLSmidth (USA and Denmark), Polysius, KHD, FCB and Technip.
Cement manufacturing companies: Lafarge, Holcim, HeidelbergCement, Italcementi, Fujairah and Aalborg.

The installation of one or more new kiln support rollers is a significant investment, and the continuous process nature of the industry means that it is vital to purchase from a supplier of certain track record. SFAR has a well-defined process route for the manufacture of these rollers, and is able to offer very competitive prices.

Conclusion

Over the last five years, a significant part of SFAR's output has been turned over to producing strategic products for cement and mineral companies. SFAR's favoured formula of supplying medium and large machined forgings and castings directly to users has found a willing audience amongst cement and mineral plants who are ambitious to find a risk-free way of reducing their purchasing costs.

Three other products which have excited interest are fan shafts, kiln tyres and roller press rollers. All of these products require access to large scale metal processing plants, and are not always available in some parts of the world.

SFAR machined more than 500 shafts in 2008, including shafts for fans, motors, and support rollers. It also offers cast kiln tyres up to 150t finish-machined weight.

All sizes of roller press roll are available. SFAR can offer conventional titanium carbide or niobium carbide hard facings, or other materials based on the customer's needs. In the event that a customer wishes to replace a roller tyre, but wants to use the original shaft, then SFAR can offer a very cost-effective replacement service.