

CASE STUDY

CompoTech carbon composite tubes give Soma Engineering a competitive edge in the flexo print industry

In 2004, when leading flexo printer manufacturer Soma Engineering was researching alternative solutions to the steel rollers used in its printers, it discovered CompoTech, a Czech-based company that has established a solid reputation for providing rigid and strong carbon fibre composite tubes to a range of industrial applications. Whilst other companies claimed to provide high performance carbon tubes suitable for printer rollers, none could match the performance of CompoTech's tubes, custom designed and manufactured using its bespoke zero degree axial fibre laying process.

Vibration is a common problem in the printing industry - the greater the vibration, the lower the final print quality. And the extent of vibration experienced is highly dependent on the elastic modulus (or stiffness) of the tube used in the rollers. CompoTech was able to supply Soma with carbon tubes with a material modulus greater than 400 gpa - considerably stiffer than their current steel rollers. The stiffer the roller, the less vibration, and the faster the machine can operate. Whilst other carbon composite parts can achieve a similar stiffness, it is only CompoTech's manufacturing process, which has been well researched, developed and optimised over the past ten years, that can achieve this in a tubular shaped component.

From the outset, CompoTech has worked in partnership with Soma to create a solution that fits the manufacturer's exact requirements - an approach CompoTech takes with all of its projects, and which is of great value to its customers, as Pavel Černohous, R&D Manager at Soma, attests: "We have found it easy to work with CompoTech on the development of our new components, and we know that they will use only the latest materials and technologies in doing this. In addition, their versatility during the testing period has filled us with confidence that we are

getting exactly what we require to make our printers stand out in the market place.”

The first step in this collaborative process was a site visit by CompoTech to



investigate Soma’s current operation and to define the outcomes required by the client. CompoTech’s engineers then set to work to design the new carbon fibre tube.

CompoTech’s proprietary software was used to optimise the design according to working conditions, such as working speed and temperature of the machines and anticipated tube loads. This included analysis of: bending, shear and transverse stiffness, thermal and fatigue properties, end bonding suitability and surface definition - all of which interact to contribute to the overall performance of the tube. Of particular importance was the bending stiffness of the tube. This was analysed using a three point bending test, and, in conjunction with the Czech Technical University in Prague, Finite Element Analysis software, which had recently been upgraded to include vibration analysis. Following this optimisation, CompoTech manufactured a prototype, which was delivered to Soma in August 2004.

This first prototype was tested for suitability and performance, and, with Soma’s feedback, a number of refinements were made, leading to the manufacture of a second prototype, which was delivered in November 2004. The vibration test for the machines’ rollers involves setting the machine to print a solid colour except for one thin band of no colour. If a defect is present (such as a vibration), the thin colourless band will be curved. If no defect is present, then the band remains perfectly straight. The speed of the machine is increased until a defect appears, thereby determining the maximum speed at which the machine can run. The higher the speed, the more productive the machine is. When tests were carried out using CompoTech’s carbon tube, the maximum speed achieved was far greater than

achieved with standard steel tubes, and the eventual defect was less critical. "CompoTech's carbon tubes have allowed us to offer our own customers a higher final print quality and at a greater speed," states Černohous. "And this has certainly given us an advantage in the marketplace."

Following the success of this test, Soma placed an order with CompoTech for the supply of carbon tubes for the Soma Flex MIDI 127-8-EG printing press. Currently these new tubes are an option for customers, but as the benefits of using this new



technology is seen by the market place, CompoTech is confident that its carbon tubes will become a standard feature. In the meantime, CompoTech continues to develop and optimise its processes and designs to ensure that it can offer its clients the most cost effective option for high performance production tubes.

About CompoTech

CompoTech designs, develops and manufactures structural composite tubes for a range of industrial and marine applications. Established ten years ago, CompoTech has a design office and manufacturing plant in the Czech Republic and a sales office in the UK, but supports customers around the world. CompoTech has developed an unrivalled Zero degree axial fibre laying process for manufacturing components of the highest standard on their custom-built machines. The company supplies a range of rigid and strong composite tubes to industrial sectors for use in industrial rollers, drive shafts, hydraulics and pneumatics, robot frames, and high voltage insulation; and supplies tubes to the marine sector for applications such as headfoils, masts, spars, hydraulic cylinders and other structural components.



For more information, please contact:

Sian Raynor

Rory Carter

Plus Integrated Marketing

CompoTech Plus s r.o.

T: +44 (0) 1983 240475

T: +44 (0) 1983 290323

E: sian@plus-im.com

E: rory@compotech.com

Or visit our website www.compotech.com