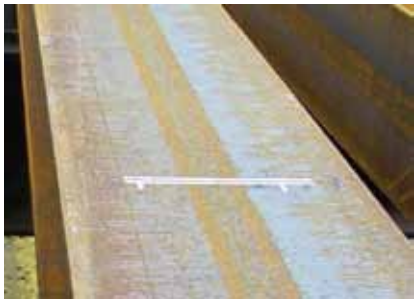
First UK Structural Steel Fabricator to announce the incorporation of scribing technology into routine production.

- Billington Structures Ltd

Billington Structures Limited has been designing, fabricating, and erecting structural steelwork for the construction industry since 1947.

Their experienced workforce tackles projects from simple building frames to the most complex of structures in excess of 5,000 tonnes. With plants in Barnsley and Bristol the company services clients throughout the UK and currently employs over 260 employees with an annual sales turnover of £50 million.



'The business has always been an innovator and was an early adopter of CNC machinery and 3D modelling technology via StruCad (from AceCad Software), enabling appropriate CAM data for our machines', states Kevin Campbell, Production Director for Billington's He continues, 'the quantum leap provided by this technology was substantial and is now a fundamental and natural part of the production process of any serious steelwork contractor'. The subsequent recent investment in leading edge scribing technology was therefore an extremely straight forward commercial decision for Billington's. 'Structural steel fabrication is an extremely competitive business and all new advances in fabrication technology are looked at very seriously' comments Mr Campbell. 'We are happy to lead the way with new technology advances and adopt a first mover advantage position within the industry'.

When Billington's learned of scribing technology late in 2005 the Company was immediately interested in the technology. 'We believe that we may be able to accomplish the same kind of production efficiency gains as was achieved a decade ago in the automation of our cutting and drilling processes via CAM data from the StruCad 3D model' states Mr Campbell. Following discussions with fabrication machinery suppliers, Billington's decided to purchase a Ficep Enterprise 12, with drilling, cutting and scribing functions. The machine is capable of processing 1200mm beams, with 3-axis multi directional 15KW drilling motors operating at 3000 rpm, combined with a state of the art band saw and carbide tipped scribing tool that deflects to facilitate a constant scribe depth to take account of rolling mill tolerances. To house this substantial piece of machinery and significant commercial investment, Billington's constructed a brand new building on their site in Yate, Bristol.

'The involvement of AceCad Software our 3D steel detailing vendor was critical from an early stage', insists Mr Campbell. He continues 'whilst the approach of

the machine manufacturer was to focus on a specific link with a modelling system, to facilitate the scribing process, we were amongst the first to consult with AceCad to explore the possibility of an enhanced DSTV standard format'. Billington's detailing function uses StruCad detailing stations and accordingly their CNC machinery has been run successfully along DSTV standards for some time. Mr Campbell comments,

"The output from StruCad has always been fundamental to this automation and the experience of our Drawing Office and AceCad Software's development team resulted in the provision of a quick solution through the DSTV organisation."

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Following successful tests on small lots Billington's were quickly convinced that the technology was working well and as Mr Campbell comments 'that we can confidently take our marking processes downstream into the workshop, where we anticipate significant production time savings, 100% repeatability and minimal chance of human error'. He continues, 'we are a learning organisation and the implementation of this new technology will not be accomplished overnight on our shop floor. There has been an education process that we have needed to implement to move on from the old marking out processes. We still intend to continue to conduct some location checking following the scribing process, purely as a means of quality control, but our tests showed 100% accuracy with a datum and laser positioning technology within the machinery. However there is a trade-off to be achieved as the more detail added to scribe, the steel spends a little more time in the machine. But of course, with more detail, when the steel is out of the machine we then complete the fabrication process much faster. There is an important equation to balance in order to retain a good continuity of work into and through the fabrication workshop.'

A suggested example of the efficiency gains are the time savings potentially to be realised with base plate production. Mr Campbell confirms that 'the marking process for base plates prior to welding could take several minutes manually, whilst a few seconds are all that would be required within the machine. The resultant scribed base plate will facilitate immediate and accurate location enabling immediate welding to the column'. In fact, it is generally acknowledged that marking out manually does take a significant amount of time, which is naturally, dependent on the complexity and type of member or connection. Mr Campbell states 'early signs point to significant production improvements with the automated scribing process and it is envisaged that productivity can be significantly improved.' Mr Campbell reinforces this aim, 'the scribing technology facilitated by this machinery and the output from StruCad means that we have at last begun to automate the 'fabrication' process.

What lies ahead? With 3D modelling technology from StruCad and the advances of some of the leading machinery manufacturers, there are some significant future possibilities with regards to further automation. Already, some of these manufacturers are offering robotic welding functionality. Mr Campbell comments; 'with refinement this practice may become feasible for some steelwork components although the benefits proposed may involve some level of compromise'. The huge variability of typical parts processed by UK structural steelwork contractors will remain the most significant hurdle, combined with the potential size of the equipment required. Whilst the StruCad 3D model would enable the creation of a torch path and a physical probing would facilitate inclusion of tolerance data, set up time required when combined with variability of parts may yet be a significant hurdle. In any case, Billington Structures will be at the forefront of any new technology advance and are certain to be supported by their key software vendor in the achievement of superior productivity leading to significant competitive advantages.