**LETTERS**

**SLIP OF THE PEN**

SIR—I refer to Sam Tulip's last (parting) Editorial written as Senior Editor (Ref: Production Engineer, July/August 1988) just before he moved to pastures new. In the very first line itself, this Institution is referred to as the 'Institute of Production Engineers' whereas the Institution's official name, as specified in the Royal Charter, appears prominently under the Institution's insignia in the top left corner of the same page.

With no intention of indulging in petty fault-finding, I wish to ask if it does not create unnecessary and avoidable confusion as well as set an undesirable precedent, particularly among younger members, and probably also diminish the Institution's image as compared with the other engineering institutions such as the IMechE and ICE if the word 'Institute' is used interchangeably with 'Institution' especially in pace-setting editorial articles.

I feel the mis-use took place in the above instance almost certainly due to an oversight and had escaped even the hawk eyes of Mr. Tulip who had edited Production Engineer admirably for several years. But I feel that the matter is important enough to be pointed out to our colleagues and readers, making use of the opportunity provided by Sam Tulip's last Editorial.

Professor Kopan Mahadeva, FIProdE, Birmingham Polytechnic

**SIMPLIFY THE SHOPFLOOR**

SIR—As an independent consulting engineer and practising manager of manufacturing of long standing, I greatly enjoyed the article on finite resource scheduling written so well by Mr Nicholas Norton. He described the problems of running a complex shop floor environment in terms that allowed me to instantly recognise them and I was impressed by his obviously deep understanding of the mechanisms of MRP systems.

Unfortunately I was less happy about the fact that the article seemed to suggest that the only way to gain control of a complex shop floor was to commit considerable resources to simulating it on a computer using finite capacity planning techniques. Many MRP and LP systems in current use do not provide facilities that enable this to be done adequately anyway, as Mr Norton suggests, but even if they did it is my strongly held view that the correct way to approach a scheduling problem in a complex environment is to leave no stone unturned in the quest to make it simpler. In fact, simple enough not to need finite capacity scheduling.

This is not an unattainable objective and the actions that need to be taken to realise it are nearly always valuable in terms of beneficial effects in other areas too.

The two keys to success are to reduce the number of decision points (occasions on which a judgement of relative priority is required) as far as possible, and to make a single individual responsible as far as possible for the complete production (on the shop floor) of a range of parts. Fertile ground for actions to support these two key points is to be found in the product design, the manufacturing methods and the physical layout of the shop floor itself.

Products are often over complex and product ranges much too wide for reasons that range from lack of control at senior management level to failure to implement even simple rules for standardisation within products. The fewer the number of different parts that have to be made, however, the fewer the decision points on the shop and the easier control will be.

Manufacturing methods can frequently be simplified if they are defined with careful attention to the maxim 'the fewer the operations the better'. Modern machines and tooling contributing to this, of course, and again the fewer the operations the fewer the decision points.

With a reduction in the number of parts that need to be made and the number of operations on the ones that are left, the position on the shop floor already seems much simpler. However in many factories the physical path taken by components as they proceed from one operation to the next is tortuous — and it is normally necessary to complete the whole batch at one operation then send all the parts in the batch to the next operation. It is usually possible to segregate parts into groups that are similar in characteristics and establish a number of lines or cells that can cope with the manufacture of all the parts in a group entirely within one cell.

If this is possible — and I have never personally observed a batch manufacture operation in which it is not — then parts can be passed individually from one machine to the next as though it were a flow manufacturing shop. This reduces still further the number of decision points to only one (which part do we want to make next?) and allows one supervisor of the cell to control the whole manufacture of the parts on his cell. He quickly becomes very expert in the problems of those parts and solves them whether they relate to method, tooling or scheduling. He is all too well aware of where the bottlenecks are too, hence pinpointing exactly where the best opportunities for engineering action or capital investment are. Having located the bottleneck there are few worries about what the real capacity of the plant is — it's the capacity of the bottleneck. And of course this man will be really happy doing a real job.

I have ignored the spin-off benefits of the actions outlined above: benefits that include greatly increased responsiveness to demand, reduced inventory, reduced lost time, reduced tooling expenditure and so forth.

In summary then, I suggest that although I have no doubt that Mr Norton has quite correctly defined what is required to make finite capacity scheduling a valuable tool, I believe that the effort that would have to be expended making it so would be better spent improving fundamental aspects of the business that would actually make finite capacity scheduling unnecessary. I have some regard for the adage 'if you want to make a mess into a disaster — computerise it!' With a simplified shop floor operation the priorities would be driven by the requirement schedule at part level with all aspects of the MRP system in full use to that level of detail.

In these matters there is more room for opinion than rights and wrongs. I have expressed mine but would be most interested to hear the opinions of others on this important subject.

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**LASER POWER**

SIR—First of all, many thanks for including Lumonics in your article in the July/August issue of Production Engineer and for putting the picture of our JK704 on the front cover. However, I feel that I should clarify a few points which may be misinterpreted by your readers: I believe there may be some confusion between average power and peak power of YAG and CO₂ lasers. A CW CO₂ laser supplies radiation continuously, i.e. peak power = average power, for example 2kW for the CO₂ laser at the Walsall College Open Day: A pulsed YAG laser however has very much higher peak powers, e.g. the standard JK704 laser (shown at Walsall College Open Day) delivers average powers of 0.4kW but actually delivers peak powers of 20kW.

This should also be considered when looking at the comparison of YAG vs CO₂ under the Eureka scheme. Kilowatt pulsed YAG lasers (under investigation by Lumonics) will have peak powers far in excess of 25kW and so will be more 'glamorous' for many applications particularly when combined with fibre optic beam deliveries (unavailable for CO₂ laser technology).

I appreciate that it is difficult when pulling together several inputs from relatively new and not particularly well documented technology and please do not feel that I am being overly critical, I just felt that you would appreciate the feedback.

T J Auty (Mrs)
Marketing Manager, Industrial Products

**MUST TRY HARDER**

SIR—Mr Doody (September issue) is alas making the age-old argument — I 'have something I believe in, they are not interested: they are wrong.' He must realise that the large and prestigious consultancies to which he refers get many, many letters from people claiming unique experience.

He may well have something good to offer, but his selling must be far more thorough than making claims by correspondence. But getting his letter in your publication was a clever move. Good luck to him.

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