

# AS 9100 QUALITY

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## Special points of interest:

- What can it do? NT 5400

## THE FAR EAST EDITION (SHETTLESTON)

In December 2008 your intrepid editor along with Yan San and our expert on all things Japanese, Skinner San, returned to the land of the rising Yen. By the way, according to the financial wizard "Flash Gordon" we have a strong economy and hence a strong currency. Fortunately every one else seems to have a stronger currency. The state of the pound meant that luxury items such as train tickets and coffee were pretty expensive. During our week in Japan we didn't stop other than to wait for bullet trains. As for accommodation at one hotel, they had no beds, or tables and chairs for that matter. Eating and sleeping were done in close proximity to the floor, which was very useful considering the amount of sake we were being plied with. But the purpose of the visit was to examine the current range of Mori Seiki CNC machine tools. First on the list were the NT range of machines, we ordered the 5400 being the most appropriate to our requirements. These mill

turn machines have a full 5 axis capability, and we hope to incorporate splining and viper grinding in the future. The next plant we visited manufacture the Taiya Koki range of CNC grinders. The main attraction of Taiya Koki is their range of vertical



*You put your ID in; your OD out; in; out; you chamfer all about; you do the Taiya Koki and you turn a part; that's what it's all about!*

grinders as advocated by Skinner San. To quote Skinner San on the advantages of vertical over horizontal grinding, "You grind the ID, OD, chamfer, one chucking, my idea!" Anyway, these machines who's construction bares a passing resemblance to a brick outhouse are ideal for the short shafts which we

manufacture so we ordered an NVG-8T Multi-Process machine. Next on the list were machines that could be viewed at the IGA plant. When we arrived we had our picture taken by Pikachu. The IGA plant at 6,500,000 square feet is just a little smaller than East Kilbride so you get driven from one part of the plant to the next. In the heavy machining area there are machines with pallets that are more than fifty feet long. It was here that we saw the NMV5000 five axis machines. Advertised as the world's strongest, fastest five axis machine we were impressed by the

precision as well as the construction so we ordered two machines. Our thanks to all at Mori Seiki for their wonderful hospitality & to our guide Ito. Our thanks also to Bryden San for his Geisha skills and to Skinner San for his encyclopaedic knowledge of Japanese demographics & the pop. of all towns.

## NEW MORI SEIKIS NMV5000

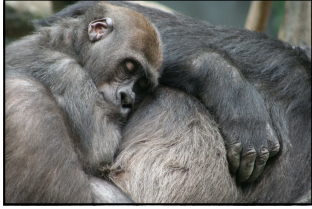
One of the two NMV5000 five axis machines which arrived end June 2009 has been specified with the turning option. With X Y Z travels of 730x510x510, a table diameter of 500 and a 12,000 rev spindle these machines are ideally suited to making complex, intricate

and super accurate components in aluminium. A typical part would be something with a defence application or used in the nuclear industry. Given their advanced five axis plus turning capabilities, training has been arranged for both the projects office & the shop floor.



## WHAT CAN IT DO?

A man with a 500lbs gorilla was asked "where does it sleep?" His answer



"anywhere it bloody wants". So what can our monster NT5400 mill turn do; pretty much anything we want. The machine has high output spindles (45/37kW), 40 tools, Capto C8, programmable steady, and also has a hobbing function. In addition we have requested that the machine be capable of being upgraded to Viper grinding capability if required. If all facilities are available then it

becomes possible to 5 axis mill, drill, turn, bore, spline, and finish grind a component in one operation. What kind of components require this level of sophistication? The primary market for this capability are aero engine components. In addition in a more buoyant market there would be a match with camshafts, and impellers. Until recently the NT 5400

was the largest in the range. However, there is now a NT6600 and we are in the process of procuring a four metre version. Both of these machines should be capable of splining to ANSI class 4. The projects team have been working with full computer models of the machines prior to delivery. As a result they are already some way along the learning curve.



## NEW A77 FMS SYSTEM

For 2009 we have installed a pair of A77 Makinos with a full FMS system. These full 4 axis machines are extremely well specified and capable of hard metal machining. When we were in Tokyo we had dinner with Dr Hiramoto, head of Design for Mori Seiki. He was formally with Makino so he was interested when we told him that we had two A55s and that we had acquired two A77s. The

A55 he told us was the first machine he ever designed and that it went into production with relative ease. The A77 however which he also designed was not just a A55 on steroids but a completely new design which had a much greater capability and an immense degree of structural integrity. Dr Hiramoto visited our factory early in 2009 to discuss design issues with director of engi-

neering Alex Skinner. As a result of the visit Mori are developing some unique capabilities which will be incorporated into our new machines. Meantime the A77 machines are now being brought into production with associated quality and productivity benefits. The new machinery will require new skills and will provide an opportunity and challenge to our most skilled personnel.

*"Done that. Got the T shirt"*

## OTHER MACHINERY DEVELOPMENTS

Our Mori Seiki MH63 with six pallet pull was mechanically refurbished about five years ago. Although no spring chicken this is still a powerful and reasonably accurate machine tool, so it was decided to retrofit the machine with a modern Fanuc 18i-M5 control with a new spindle drive and motor. Once new ball screws are fitted the machine will be returned to service.

Two machines have been acquired purely for use by the new training centre. The first is a Duraturn CNC lathe which we will connect to an external computer running CAD and verification software in addition to MAPPs control software. The other machine is a Duravertial machining centre with MAPPs incorporated. These two modern machines will allow our apprentices to train on representative hardware

before moving onto larger machinery in the various production sections. As well as replicating the production and project engineering capabilities of the factory the training centre will incorporate it's own quality room with a manual CMM inspection capability. It is envisaged that trainees will have access to all aspects of the production process from within the training centre.

## CONTINUOUS IMPROVEMENT

As most of you will be aware Alan Perry has moved from a production role to a job improvement / development role. Given the number of new technical capabilities that the company is adding such as CNC grinding, splining and full five axis machining his time is going to be fully allocated for the foreseeable future. This does not mean that currently running jobs cannot be improved. Every machine operative should be looking for ways to improve the quality and processing time of any operation which they are setting or running. Do not feel restricted to suggestions which require no investment! You can log your suggestions in

the PEP log which are being attended to by the projects office or speak to Alan Perry.

Whilst business is pretty difficult through the credit crunch we have been winning a fair amount of new business from new and existing customers. One contract which will be coming to us soon are parts for the Apache helicopter which require clean room assembly. As a result we are looking to install a class 1000 clean room at the top of the new five axis machining area opposite the inspection. We are working closely with Selex to ensure that the new facility is able to meet

their exacting requirements as well as providing a back up to their own facilities.

We are building another bund at good inwards. The purpose of this bund is to house a recycling unit which will take waste water and extract clean water (utilising heat and low pressure) to be reused in the machines and in the floor cleaners. The remaining contaminants should then be transferred to the waste oil containers for later disposal. Any high pressure cleaning of components should be done inside the bund in order to collect any contaminants as well as the emptying of the floor cleaners

## HEALTH AND SAFETY

The construction of a bund at the rear of the 211 building should allow the company to proceed with it's 14001 application after the summer holidays. The company has been on a journey of improvement across all functions including health and safety. The time has now come to ensure that full attention is given to the 5 S's.

All sections are responsible for cleanliness & tidiness in their own sections. In the past allowance has been made for the lack of working space. Now that we have new additional storage space it is important that a new tidier mindset takes over. In future there will be no excuse for leaving pallets or other items lying about. If we

require additional storage units they will be ordered.

From time to time suppliers send material on old broken and dangerous pallets. If you get a delivery that includes these do not off load the dangerous pallets but also ensure that the supplier is informed of the reason for non delivery.

*"Don't off load dangerous pallets!"*

## NEW TECHNOLOGY & IT

The introduction of multiple five axis machining centres means the adoption of new CAD/CAM and verification software. Having examined the marketplace we feel our existing suppliers have the best products for five axis work.

Development on the new tool tracking continues to progress with the focus moving from machining centres to lathes. With over 2500 ma-

chine centre tools already marked with a 2D barcode work has commenced on marking the Capto tools and other lathe tooling. To automatically keep track of the tools when they are not loaded in a machine tool holder two large carousels have been ordered with the capacity to hold 608 BT50 tools and 528 BT40 tools. Once these have been installed we will investigate if we require a unit to exclu-

sively hold Capto tools. Just as the machine's tool holders have cameras to track the tools as they pass so the carousels will have a bank of cameras to read each row as they circulate. As the tools will already be registered in the database, tracking and retrieval should be automatic. Once established tooling sheets and online logging of off sets will be added and this part of the system will be finished.



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*AS9100 will return as the fickle  
finger of fate!*



*"The Moving Finger writes; and, having writ,*

*Moves on: nor all thy Piety nor Wit*

*Shall lure it back to cancel half a line,*

*Nor all thy Tears wash out a Word of it.*

## THE MAN TIME FORGOT' (ALIAS DORIAN GRAY)

It is with sadness that we said goodbye to Alex Skinner, Director of Engineering who retired after forty years of service at Castle. A superb engineer and a dedicated Castle employee Alex's range of skills will be greatly missed. Alex started his Castle career as a tool design draughtsman and moved on to run the factory at the age of twenty seven. In a career full of incident there are some which will be remembered for their ingenuity and some for their hilarity. My favourite story recalls the day that Julie and myself

returned from a spectacularly unsuccessful auction. Julie decided that she would tell Alex that we had purchased the contents of the first aid room. When she informed him of our fictitious purchase he took the news quite stoically declaring that it could have been worse. Julie then phoned me to say he was taking it too well, so I suggested that she could tell him that I wanted the new first aid room to be located where the first inspection room was. Julie dutifully advised Alex that the lorry was on it's way and that they had

to vacate the inspection area! In the resulting explosion Alex failed to notice the heaving shoulders and tears running down Julie's face. Apparently between rants every alternative office location was checked out. Later as he sat in his office and repeating to himself that it was unbelievable it dawned on him that it truly was not believable. He walked into Julie and declared "this is a wind up, isn't it!" Had Julie been capable of an answer she may well have agreed but she was well past the power of speech by then.

## WHO'S THE DADDY?

Whilst having to detour around the site due to building works the other day I chanced on Jacky Taylor approaching me from the other direction. As I was walking towards him who should I unexpectedly see coming towards me further down Drakemire drive but my daughter Roxanne. I broke into the widest of smiles and threw open my arms in welcome. What happened next was somewhat surreal. Jacky threw himself into my arms. Now I know this is a family business but I

don't recall adopting Jacky and in any case Shandy would probably object.

### NEW CANTEEN

They say that while the English eat to live, the French live to eat and presumably the Scots eat (fried Mars bars) to donate organs. The new canteen has shown that this is not true. Given the option of a healthier menu, contrary to popular opinion, people have chosen to look after their hearts. It would seem that apart from the new menu people like the

abundant natural daylight and ambience of the new canteen. It has also highlighted the need to revamp the old canteen which has now had a total make over. Both canteens are now providing food of a higher standard, and some people are even ordering food to take home in the evening. Our thanks to the new chef for applying the same standards to cooking as the company applies to the quality of it's manufacturing. Signs are being ordered much to the consternation of some!

## THE LAST TESTIMONIALS

I would like to take the opportunity to thank everyone involved in the tasks carried out by Sunderland in connection with Rig Parts - DFW70617 & DFW70612. Through your efforts we are managing to stay on track to deliver these parts to the Test House shortly after Easter and begin Testing mid

May. Thanks J on Kerr Whole Engine Design (TS&O) Rolls Royce.

I have been the editor in chief of this rag for the past four years during which time it has hopefully informed and amused in equal measure and if like queen Victoria you were not amused then I suggest

you go back to reading the Guardian, not amused of Dudley. Anyway it would appear that I have a volunteer to produce the next edition and if that goes well all future editions. So, thanks to all my readers and so long. The Moving Finger types and having tipped, Moves on.....