

Parts Magnify The Importance Of Lean Setups

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It was my pleasure to introduce three sessions on lean setups at the May 2003 Precision Machining Technology Show in Columbus, Ohio. Three different presenters, three different approaches — one coherent message.

Lean setups are not “magic.” They are the result of a logical process. Lean setups are neither smoke nor mirrors. But, like the clever handout used by AMT Machine Systems to make the point during its show floor demonstration, lean setups can be a lens to magnify the dollar value of the time saved by implementing lean thinking in your operations.



At Tuesday morning’s show floor demo, “Brown and Sharpe Set Up In Under One Hour,” George Morris, applications engineering manager for AMT Machine Systems, Ltd., followed a logical process to completely change the tooling and produce one of two different parts used to make a hand magnifier (loupe) on a #2 Ultramatic Brown and Sharpe. Each attendee was given a small bag with both machined parts and a lens to be inserted to create the magnifier. Several samples of the retaining ring part were run, before starting the conversion to the other body part.

For just under a half hour, Mr. Morris worked logically in zones — he replaced cycle gears; removed job-specific tooling from turret and cross slides; replaced cross slide

cams; timed cross slides; replaced cross slide tooling in holders; inserted turret tooling; set bar feeder stroke; and adjusted/centered/aligned all tools. Having preset tooling and holders, having parts “kitted” together into specific job boxes and working systematically, made short work of this part of the setup.

With the ServoCam™ controls, it took just a couple of more minutes to bring the machine “on cam,” and dry-run a cycle without bar feedout. Switching on the bar feeder, running the first piece and passing first-piece inspection took a total time — from last retainer ring part to first good body part — of 37 minutes.

I am convinced that this would have been at least a 4- to 6-hour job without the lean approach employed. Mr. Morris’ logical plan, based on a readable layout, preset datum point tooling and systematically working the machine as a grid or zones, eliminated wasted effort and condensed the time needed for changeover. AMT’s two simple “Brownie parts” plus lens focused the audience’s attention on the time saved by their logical approach to setup reduction.

While AMT’s magnifiers demonstrated the reality of a complete machine changeover on a single spindle in under 1 hour, Andrew Egbert of Reynolda Manufacturing Solutions, Lewisville, North Carolina, made the business case that this new lean reality is a “money in the bank” development regardless of machine type or number of spindles.

Using a theoretical shop rate of \$60 per hour, and 15 setups per month on a 7-second cycle time part, Mr. Egbert did the math to document \$54,000 in annual savings, with an additional 462,780 parts produced by using datum line tooling and

lean setup techniques. Using lean methodology, 12-hour setups became 7-hour setups, enabling the savings and additional parts produced with the newly available machine hours.

Mr. Egbert showed changeover kits and layout carts, and purchased and shop-built preset tooling. Boyer Schultz Trilock, New Market Products and Hardinge were among the manufacturers mentioned. According to Mr. Egbert, “The bottom line of lean setups, quick change and preset tooling, and datum line approach, is easy to calculate. Multiply the hours saved by these techniques by your hourly shop rate, times the number of setups performed, to determine the potential contribution to your bottom line; plus the margin dollars on the additional parts you will produce using those former setup hours as production hours.”

Klaus Voos, vice president, technical sales & marketing with Index Werke, GMBH & Co. KG, demonstrated how the elements of organization, planning, preparation and equipment capability come together to ensure changeover efficiency. According to Mr. Voos, “The equipment has to be designed in such a way as to allow the user to take full advantage of the CNC technology and its benefits in shrinking time for adjustments.”

It’s not magic to eliminate hours from setups — last good piece to first good piece. Using preset, datum line tooling can peel hours off your setups, regardless of the type of machines you operate. And those additional hours now can produce parts that will contribute additional margin to your bottom line. Lean thinking: it isn’t magic... it’s a process.

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