What Punch and Laser operators should know

A single day course complete with work problems and hands-on operations.

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Punch operators:

A qualified turret punch operator should be able to identify the different types of materials, their tonnage requirements and to determine if the machine is capable. The punch operator should understand the effects of improper die clearance and the necessity of keeping the tools constantly sharp.

This can only happen if the operator understands the theory-of-hole-punching. Being able to understand punching theory at a level where they can avoid problems with slug pulling and over-tonnages. It is also a necessity for the operator to understand galling and heat build up in the tooling. A working knowledge of specialty tools: number and letter stamps, counter sinks and forming tools are also required.

Operators should also be familiar with the proper maintenance of the press and tooling. They must be able to calculate tonnage requirements of given tool shape and material. Safe and proper operation of secondary operations is also a requirement. Sharpening tools such as surface grinders and tool sharpening grinders, optical locators etc.

Most importantly, a good understanding of G-coding is absolutely necessary! Not only the coding and pattern recognition parts but also they must have the ability to write G-code at the controller to correct programs and make adjustments.

Laser Operation:

A qualified laser operator should have an understanding of the lasing process and the different methods of delivery and focus are essential. A qualified operator must also know about the various gases involved and their uses: piercing, material types etc.

Again a good understanding of G-coding is absolutely necessary! Not only the coding and pattern recognition parts but also they must have the ability to write G-code at the controller to correct programs and make adjustments. It is of far greater importance at the laser than the turret press because there is more to control; Coding is, however, much easier to do on the laser than it is for the turret press as the parameters of the tool do not need to be accounted for.

Of course proper care of the laser, the ability to safely change high-pressure gas tanks and to be able to care for the optics of the machine; how to safely remove, clean and or change lenses. And be able to follow that up with line and focus tests.

A qualified operator also has ability and experience to fill the Laser Safety Officer Position as required by law.

G-coding, both:

Punch or laser, a skilled operator should understand enough about G-coding to step into the programmer's shoes at anytime. With that level of understanding the operator can and does function as a back-up quality control for the programmers. Most importantly to be able to make changes on the fly at the controller; whether at the turret press or the laser, it can make the difference between profit and loss.

- Describe the differences between full spectrum and laser light
- Understand the properties of the laser beam and the control of it.
- Comprehend cutting speed and feed rates
- Gas selection
- Care and selection of the laser optics and focusing
- Complete knowledge of hole punching theory through application.
- The different types of turret presses, their care and maintenance.
- Cause and effects of galling, heat and tool wear.
- The absolutes of die clearance and the necessity of keeping tools sharp.
- The ability to use and apply G-code programming.
- Utilize G-programming tips and tricks to enhance machine and product time.

Requirements:

- A copy of *Lasers, Punches, Press brakes and Shears* ©1999 or *Press Brake Technology* © 1997 SME for each attendee in your engineering and/or design departments or Precision Press Brake 2nd Edition

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- A copy of *Lasers, Punches, Press brakes and Shears* for all other attendees or Precision Press Brake 2nd Edition.

Provided items by instructor:

- Review of press brake department and press brake tooling to improve overall product quality
- No charge for follow-up questions by phone or e-mail