

# Smart managers reduce motion and delay

*The fifth and final Do of welding control combines the first four Do's and leads to realistic, obtainable improvements.*

*By Jack R. Barckhoff*

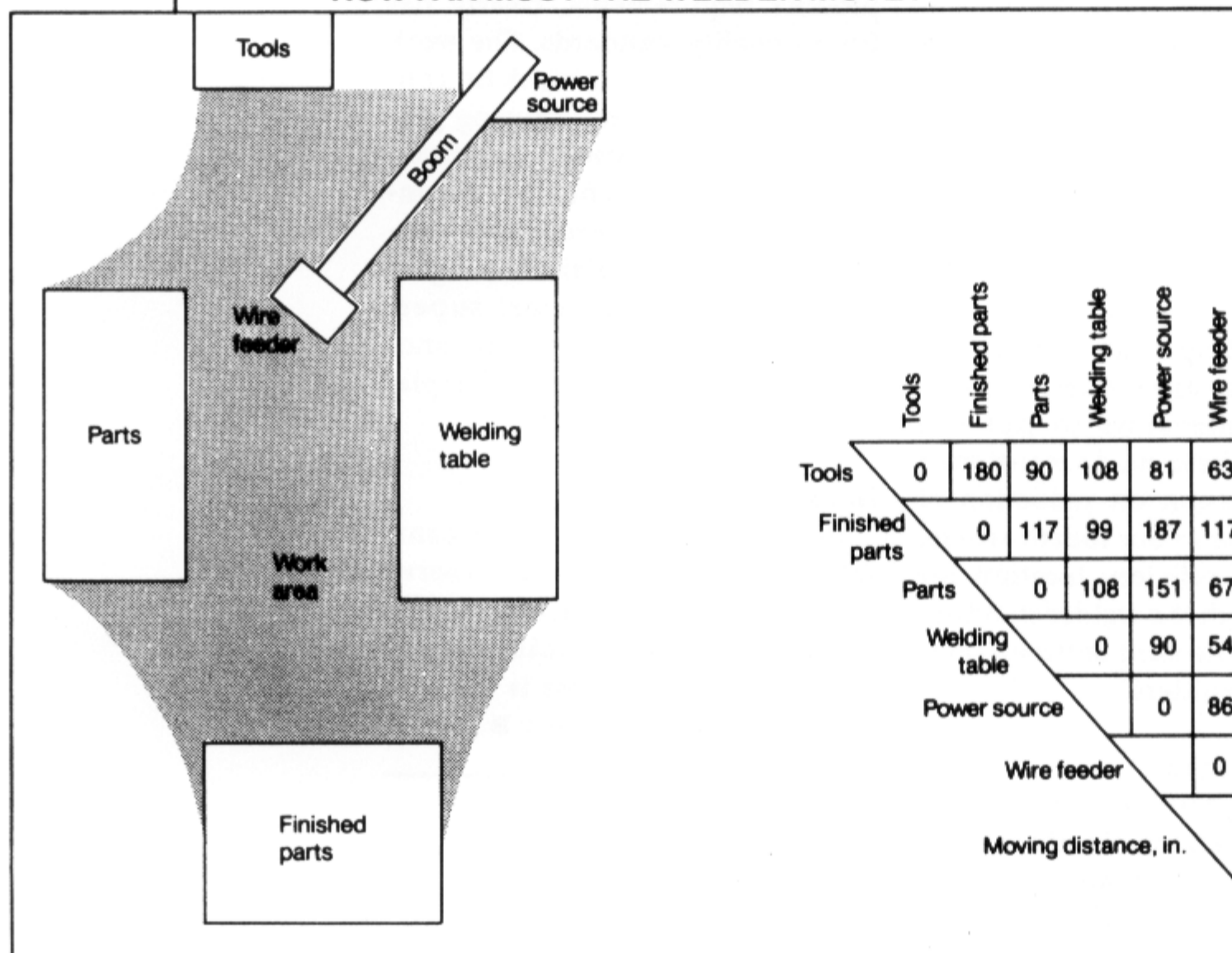
**T**he logical final step to control your welding operations is to reduce motion and delay time. This includes elimination of wasted motion at the welding station and of time spent away from the welding station. The idea is to maximize operating factor, the fraction of time spent welding (arc-on time).

Motion reduction calls for planned parts throughput for welding operations—just-in-time parts flow through the welding department and through individual work stations. Parts must be suitable for use, meeting quality standards. By coordinating parts and material placement and handling, use of proper fixtures and tooling, control of overall methods, work habits, and work pace, plant managers can realize a 15- to 20-percent reduction in labor.

### Set standards

Also important is establishment of accurate work standards, not necessarily formal time measurement, but any type of time measurement from the start of a job to the end. The goal is to set consistent, repeatable work times for assembly, tack, and

**HOW FAR MUST THE WELDER MOVE?**



weld for a specific component. Introducing a program to set up and control weld sizes, achieve the greatest deposit rate, and minimize rejects does little good if results are inconsistent from welder to welder or from shift to shift. When work is inconsistent, the reason is generally that welders are using poor guidelines from management.

Managers must evaluate parts placement: Are incoming parts located conveniently within the welder's area? Does the welder have to step around or over obstacles to obtain parts? Does he have to walk far? Are parts located so that he can

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*A well-designed station puts parts near the welder and provides a place for finished parts.*

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easily reach and grasp them for placement in welding location? The welder should not have to chase for parts outside his station.

#### **The welder as acrobat**

On large weldments, welders should not have to climb or walk around the assembly to reach weld joints. Fixtures, tooling, jigs, and positioners should mechanically bring joints to print dimensions and bring the weld joint to the welder, placing it in the most advantageous position for welding.

For mechanized welding, use manipulators to position the operator and the welding head to make the weld. On large assemblies, use platforms and elevators to put the welder near the joint. As mentioned in our discussion on reduction of welder fatigue in our fourth article, the safe and efficient location for welding is with the welder standing upright and the joint between mid-thigh and shoulders.

#### **Built-in standards**

Grinding, buffing, spatter removal, and marking of weld lengths are motion and time wasters. Shop-floor personnel should question directives such as "Remove all weld

spatter." They should first ask, Is this operation necessary? Why must we grind all welds? Degree of grinding can significantly affect labor time: grinding welds smooth may take less time than grinding them flush. Go back to the sales, service, and engineering departments to find out what is an acceptable spatter-removal standard.

If grinding, buffing, or spatter removal are necessary, make a workmanship mock-up to show workers how smooth the weld area must be.

#### **Don't blame the welder**

Some wasted time is beyond the control of the welder. Scheduling of parts delivery, accuracy of fabricated and machined parts, clarity of instructions, availability of workmanship standards, maintenance and replacement of equipment, availability of tooling and welding consumables improperly handled, can keep the welder from his work. The welder who has to troubleshoot his own equipment or grind his parts to fit loses valuable time as a result of poor management and supervision. These areas are beyond his control.

Managers should set procedures, document processes, and specify product requirements, clearly defining quality standards. The work center is the building block for control of the total manufacturing process. Given management directives, the welder-operator has the responsibility of implementing that control. A work-center plan should give every worker—operator, supervisor, inspector, and maintenance person—an objective and an explanation of how he is rated.

#### **In summary**

Industry must turn its organization charts upside down, to serve the worker on the floor. If the worker fails, the whole organization fails. His success is the success of his entire company. ■

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*Jack R. Barckhoff, P.E., is President of Barckhoff Welding Management, Minneapolis, (612) 934-6000.*