IPG Photonics Applications Lab

PROBLEM STATEMENT SCRIPT

IPG Photonics Applications Engineers Joseph Roy and Steve Wirta are discussing a request by a prospective customer to improve their welding process for metal trusses.

Joe: So Steve, we had a customer come in who wants to do some welding for roof trusses for long span buildings. Their present process is to use a MIG torch all along the connection points of the truss. It takes the welder about two minutes to accomplish this. What they want is to get rid of all the spatter around the weld joints and increase strength because this is a working part that goes into buildings. They'd also like to decrease cycle time.

Steve: What's their target for cycle time?

Joe: They want to go from two minutes to under 30 seconds. How do you think we should approach this?

Steve: To reduce cycle time we can use the robot and do one spot for each connection point. But the laser spot is likely to be smaller than the MIG torch and might not give us the surface area and strength we need on these.

Joe: Let's try it on a sample. We can start with the focused beam and 3000 Watts of power for one second.

Steve: There's penetration but that's way too small an area for this application. What do you suggest?

Joe: My first thought is to defocus the beam to get a bigger spot. Maybe start out with the focused spot then raise the focusing lens by 20 mm or so. That will increase the spot diameter. Hopefully we'll get a spot big enough to cover both pieces and still have enough fluence to do the weld.

Steve: That might work. Let's give it a try.