

Optimizing Robotic Welding to Reduce Defects

- William Johnson -
Springfield-Clark Career
Technology Center



Effects of Voltage, Travel Speed, and Wire Feed Speed on Weld Quality in GMAW Automation

In robotic welding, small changes in parameters can cause defects such as porosity, lack of fusion, and excessive spatter, reducing weld quality and consistency.

RESULTS



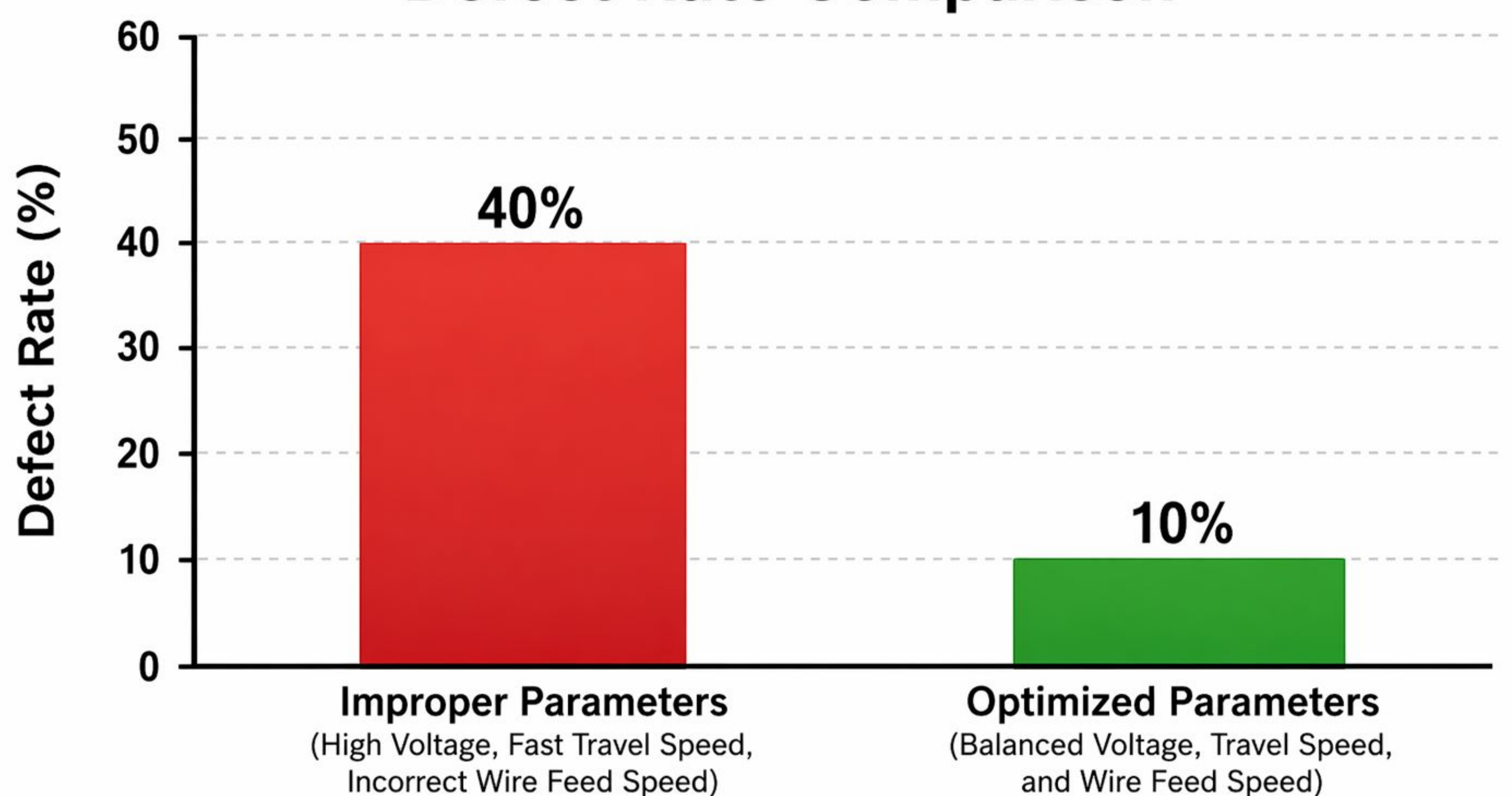
Defective Weld (Improper Parameters)



Optimized Weld (Balanced Parameters)

RESULTS

Defect Rate Comparison



Defect rate decreases significantly with optimized welding parameters.

Weld quality varies when voltage, travel speed, and wire feed speed are not properly balanced, leading to unstable heat input and inconsistent material deposition.

- Optimized parameters reduce weld defects
- Weld consistency improves with proper settings
- Robotic welding requires precise calibration



INSTRUCTOR: MATT GRIGSBY
SCHOOL: SPRINGFIELD-CLARK CAREER TECHNOLOGY CENTER