Cheatography

Introduction

To maintain weld positions and weld in the same place every time, the MIG gun neck used in a robotic welding system must stay in its expected position as an accurate tool center point (TCP) that provides consistent repeatability from part to part. A weak neck that easily bends during routine welding can lead to problems with system accuracy over time. Here are some ways to protect, setup and maintain the neck and help ensure that your system maintains optimal TCP with minimal downtime.

Credit: Jeff Wells

http://www.fabricatingandmetalworking.com/2017/07/maintaining-tcp-how-does-your-robotic-mig-gun-neck-factor-in/

Tips: Getting the best performance

Some key best practices can help protect the neck and provide consistent TCP:

1. All robotic welding systems require a form of collision detection to prevent damage to both the robotic MIG gun and the robot arm in the event of an impact. Some robotic systems incorporate robot collision detection software. Systems that do not have built-in collision detection should always be paired with a clutch: an electronic component that attaches to the gun to protect it and the robot from heavy damage in the event of a collision.

2. Another key peripheral is a neck inspection fixture that verifies the gun's neck is set to the intended TCP and allows the neck to be readjusted after a collision or if it becomes bent during routine welding. If neck adjustment is needed, the welding operator simply adjusts the neck to meet the proper specifications. This prevents costly rework due to missed weld joints and can reduce downtime involved in having to reprogram the robot to meet the welding specifications with a bent neck.

3. Having spare necks ready helps gets the system back online quickly. The welding operator need only remove the bent neck in the event of a crash and exchange it with a spare one. The damaged neck can be set aside for inspection later, minimizing interruption to the weld cycle.

4. Choose a high quality reamer to avoid potential damage to the gun or neck. A reamer, or nozzle cleaning station, removes spatter from the nozzle and clears away the debris that accumulates in the diffuser during welding. A high quality reamer securely holds the gun in place during the ream cycle to reduce the risk of bending the neck and compromising TCP.

5. Proper neck and consumable installation and ongoing maintenance are important. Make sure to tighten these components to factory specifications. When changing consumables, remove them with the right tools to avoid bending the gun neck.

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