



Eight Ways to Improve Welding Productivity Using a Weld Camera



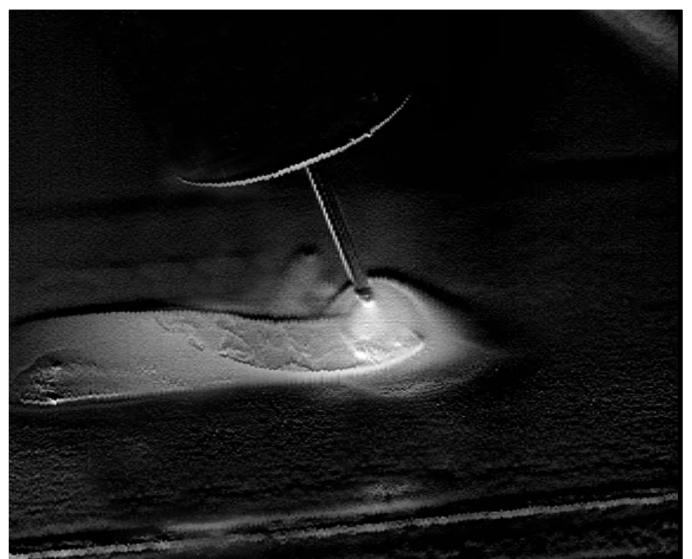
How Manufacturers Can Improve Their Productivity Using a Xiris Weld Camera

It's essential that operators who control and adjust automatic welding processes see all the elements of the environment around a weld. These processes can present a problem for operators. An automatic welding environment is often too congested or too dangerous to have operators directly monitor the weld process while under operation (think scaffolding on the side of a pressure vessel, or small pinch points around a robotic welding station).

How can you, as a fabricator, have your operators properly monitor the welding process remotely?



Six sigma lean manufacturing

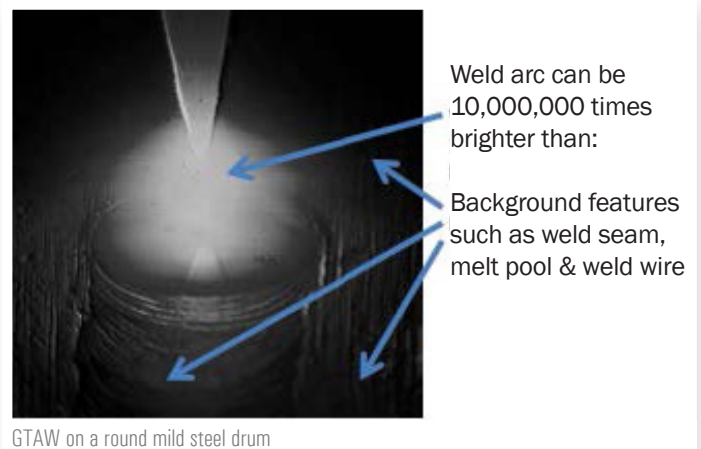


GMAW (MIG) on cold rolled steel

The effective solution is to use a camera, but not just any type of camera. What you need is a weld camera that can see the very bright light source of a weld arc, as well as the neighboring dark areas of the background such as the parent material, melt pool and torch tip. So, how can a weld camera help your business?

The eight points below establish a clear link between the overall goals of quality, safety and productivity and the benefits of a weld camera:

- 1 Health and Safety
- 2 Better Monitoring
- 3 Reduced Setup Time
- 4 Run-Time Productivity
- 5 Operational Productivity
- 6 Troubleshooting
- 7 Real-Time Verification
- 8 Video Recording



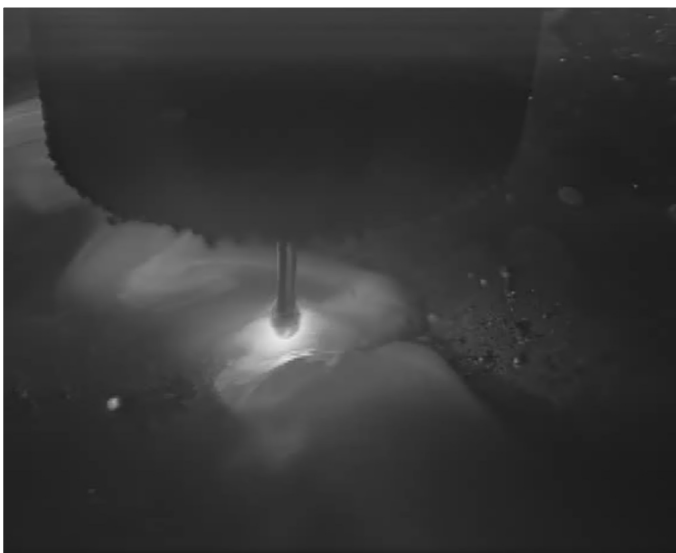
1 Health and Safety

Using a weld camera to monitor the welding process means you don't need an operator in the direct weld area. This is a significant occupational health and safety advantage.

Common on-the-job risks that can be eliminated by removing the operator from the work area include:

- electrical shock
- welding fume inhalation
- "welding eye" (direct exposure of the weld arc to the human eye)
- contact with weld spatter
- injuries from moving or falling objects

Adding a weld camera means fewer sick days, less risk of workers' compensation claims, reduced legal liabilities and a healthier, happier operator.



GMAW short circuit on cold rolled steel

2 Better Monitoring

By adding a weld camera to the process, the operator has a clear view of the welding tip and its surrounding area. Some of the many parameters that can be monitored visually with this camera are:

- the position of the weld tip relative to the seam
- position of filler wire
- height of weld tip
- size of weld arc
- condition of the melt pool

Weld cameras with High Dynamic Range color imaging improves the operator's ability to monitor the weld environment for certain weld processes such as TIG. Color provides extra information to the user such as:

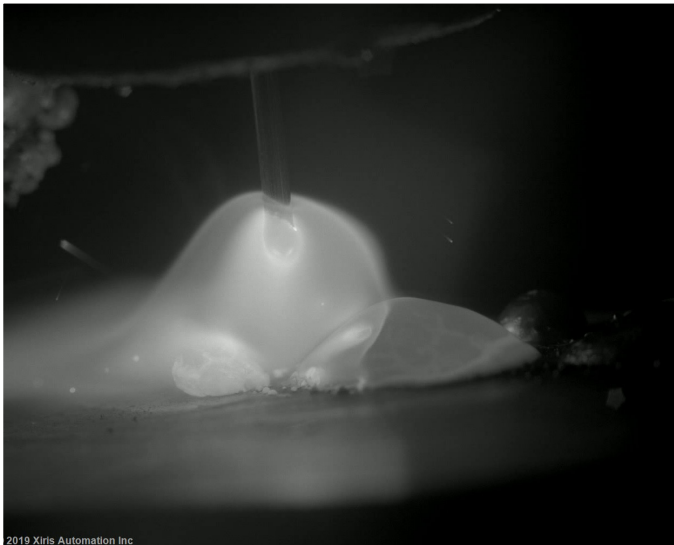
- the boundary of the Heat Affected Zone
- oxidation of the melt pool and tip
- shielding gas presence



GTAW process on carbon steel tube mill in color

3 Reduced Setup Time

Using a weld camera reduces the time required to set up the weld tool and materials. By looking at the weld area remotely, operators do not have to start and stop their welding process to inspect a weld segment for correct parameter settings during set-up. Instead, they can make adjustments “on the fly”. Additionally, by monitoring the weld area remotely from where the welding controls are located, the operator can control and monitor the process from one place, and not have to move back and forth.



2019 Xiris Automation Inc

GMAW Process on carbon steel

4 Run-Time Productivity

A weld camera increases the “arc on-time” during the welding processes, with less need for the operator to stop during the process to make adjustments, such as setting wire length and torch position.

In traditional welding processes, the operator typically has to stop the welding process, monitor the welding wire with the arc off, and then restart the welding process, wasting valuable time. With a weld camera, this can be done in real-time.

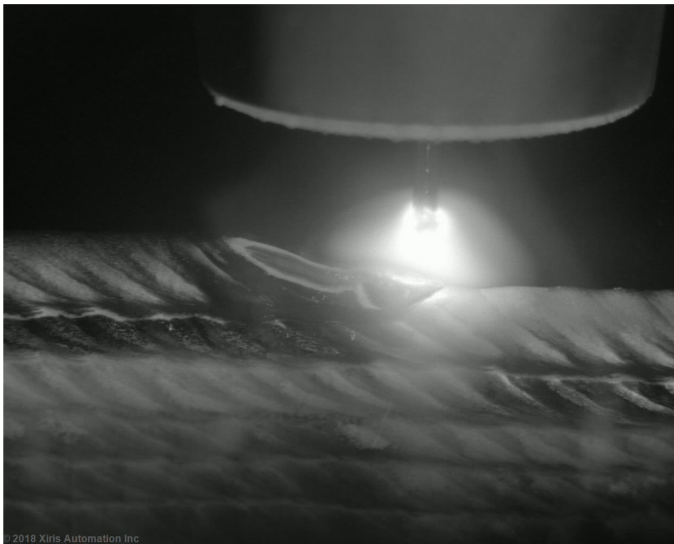


Plasma arc cladding with wire feed in color

5 Operational Productivity

Using a weld camera reduces scrap, as well as losses that cut into profits, from weld failures in the field. On-line monitoring of the weld can detect defects as they happen, allowing the operator to make immediate adjustments to the process that will minimize bad welds and rework.

This will vastly reduce the number of defective finished products which don't meet quality specifications.



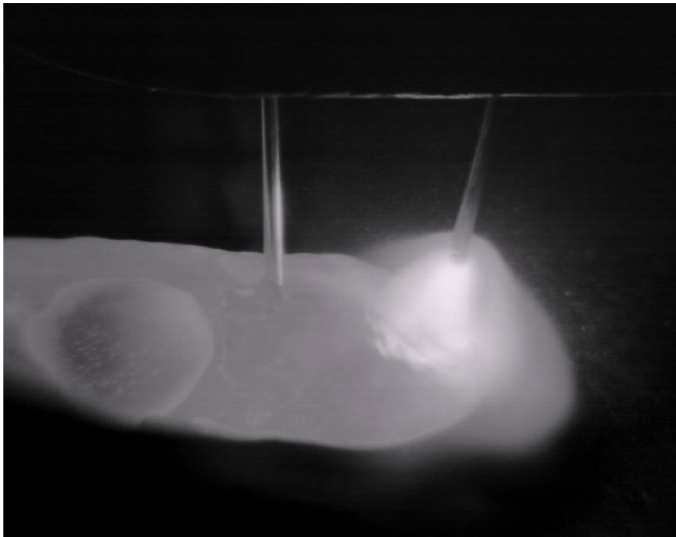
© 2018 Xiris Automation Inc

Additive manufacturing of aluminum using GMAW process

6 Troubleshooting

A weld camera allows an operator to identify the source of problems during the weld process, whether they are impurities in the parent material, component misalignment, improper amount of shielding gas, or improper geometry of the keyhole or weld pool.

The weld camera will help to identify what might be the most likely cause of the problems, ensuring that the solutions are effective at restoring the welding process to its ideal state.



Tandem GMAW welding: GMAW spray (1st wire) & cold wire (2nd wire)

7 Real-Time Verification

A weld camera provides a direct view of the welding arc and the work environment, with enough detail for immediate adjustment.

The operator can make adjustments such as:

- aligning the weld head to the seam or the filler material
- modifying wire length or shielding gas flow rates
- detecting impurities or porosity in the weld pool
- optimizing the weld process by keeping the shape of the molten metal as ideal as possible



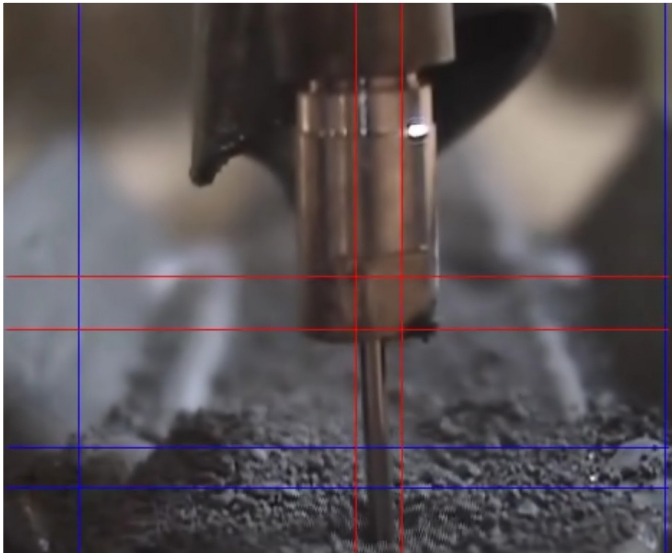
2019 Xiris Automation Inc

Short Circuit GMAW at point of expulsion

8 Video Recording

Video recording is one of the most important benefits of a Weld Camera. By adding the camera and capturing a live video of the welding operation, the process can be recorded, stored and reviewed off-line for quality assurance monitoring, while also verifying that 100% of production was welded correctly.

The recording is also essential for process verification and improvement, which means analyzing off-line what was working and what was not working properly during the welding process. A video recording is also ideal for training to observe an operator's activity while playing it back for classroom review and analysis.

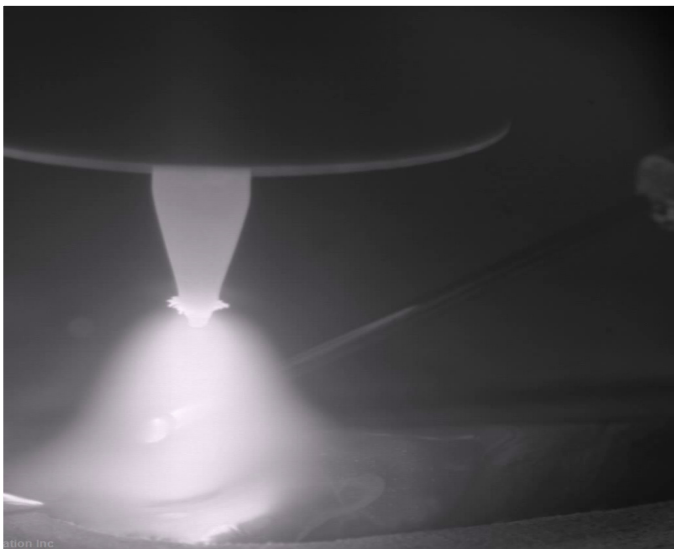


Sub arc welding (SAW) on mild steel

Improving Productivity with a Xiris Weld Camera

While the use of a weld camera to monitor welding processes is not a new concept, the development of a High Dynamic Range weld camera provides far more detail that can be monitored in a welding process than ever before.

The innovative Xiris weld camera eliminates pixel saturation that previously masked the weld process details. The result is a clear definition of the weld arc as well as making its darker environment clearly visible, allowing for improved productivity of the welding process.



GTAW cladding with wire on stainless steel

Would you like more information?

sales@xiris.com

+1 866 GO XIRIS

+1 905 331 6660

www.xiris.com

