

# In-Service Welding Guidelines

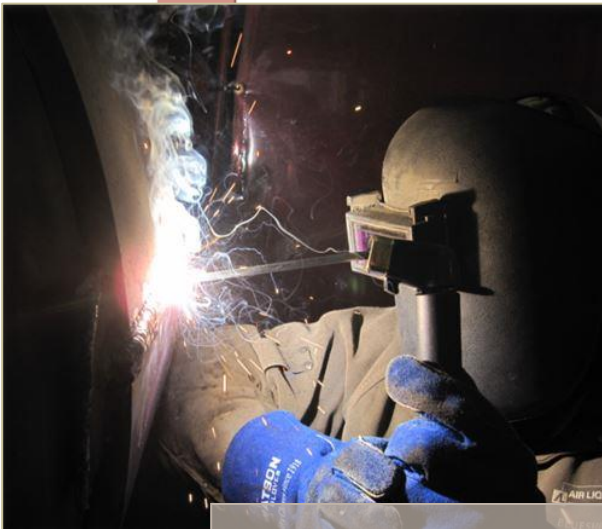
## Procedures for Welding onto In-Service Pipelines and Piping Systems

### OVERVIEW

Because the practice of welding onto in-service pipelines is not uncommon, there is a need to standardize how in-service weld repair procedures are qualified and selected.

The use of properly qualified procedures provides a cost-effective solution while minimizing the risk of hydrogen cracking by eliminating the high costs of unnecessarily complex procedures.

EWI has developed *In-Service Welding Guidelines*, a collection of procedures which are documented by both Welding Procedure Specifications (WPSs) and Procedure Qualification Records (PQRs). These procedures – qualified to the requirements of API 1104, API 1107, ASME Section IX, BS4515, BS6990, and CSA Z662 – were developed using both laboratory mock-ups and full-scale pipes, and validated by making field welds onto live gas pipelines. They apply to both hot tap branch connections and sleeve repairs (both fillet and groove welds).



In-Service Welding Guidelines provides best practices for repairing in-service pipes under a broad variety of conditions and situations.

### BENEFITS

Welding directly onto in-service pipelines is beneficial in saving time, labor, and expense:

- **Uninterrupted Flow:** Maintaining product flow eliminates the income lost through non-delivery. It also eliminates the expense and potential environmental impact of draining liquid pipeline contents and venting gas to the atmosphere.
- **Best Welding Practice:** Employing these procedures can significantly reduce the time required for welding and the potential for failures attributable to poor welding practice.



To ensure the success of the on-line welding procedure, certain issues must be addressed to guarantee public, environmental, and worker safety both during and after welding. ***In-Service Welding Guidelines*** covers the varying situations and conditions that need to be considered when welding on in-service pipelines.

## FEATURES

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Guidelines are provided for:

- **Repair type:** Processes for both hot tap branch connections and sleeve repairs (both fillet and groove welds).
- **Method Selection:** Criteria for choosing the least complicated, least expensive welding procedure required for a particular situation.
- **Differing Conditions:** Procedures for a range of conditions including steel with a carbon equivalent (per IIW) of 0.50 or less; any diameter pipe operating at any flow rate; any combination of pipe, branch or sleeve thickness; gas metal arc welding (GMAW) and shielded metal arc welding (SMAW) using both low hydrogen and cellulosic electrodes; welding uphill or downhill; and any gas or liquid pipeline contents.

## PRICING AND CONTACT INFORMATION

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*In-Service Welding Guidelines* is available to EWI members for \$12,500 and to non-members for \$16,000. For more information, contact Randy Dull at 614.688.5000 or [rdull@ewi.org](mailto:rdull@ewi.org).

