

Presentation Abstract
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The Use of the ElectroGas Welding Process in the
Construction of Storage Tanks and Pressure Vessels

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In the construction of large carbon steel storage tanks and field erected pressure vessels, the electrogas welding (EGW) process is often used to achieve maximum productivity while maintaining acceptable quality. The EGW process can be used to make in-position vertical welds in materials over one inch (25 mm) thick in a single pass with productivity factors of better than 5 to 1 when compared to conventional hand welding processes. The trade-off for using the EGW process, however, is a reduction in notch toughness, which is a result of the high welding heat input. Typical applications are often limited to design metal temperatures of 0°F (-18°C).

In an effort to expand process utilization, CB&I has developed and field-tested a new EGW technique based on improved joint details, electrode oscillation and better materials. Electrode oscillation and changes in joint design result in lower heat input in the completed weld. Improved welding consumables and proper selection of base materials results in better impact properties in the weld metal and HAZ. The new approach allows this highly productive and high quality process to be used in locations and on products with design metal temperatures down to -40°F (-40°C).

Outline for Presentation:

- A. EGW Process Background
 - 1) EGW Process History
 - 2) EGW Process Description
 - 3) EGW Process Application
- B. EGW Process Benefits
 - 1) Productivity
 - 2) Quality
- C. EGW Process Limitations
 - 1) High Heat Input
 - 2) Impact Properties
 - 3) Hardness Considerations
- D. EGW Process Developments
 - 1) Joint Design
 - 2) Equipment and Techniques
 - 3) Material and Consumables