Welding in the Food Industry

Jay Petter – Quality Tank Solutions
Larry Hanson - CIP Concepts, LLC
Welding is Fundamental Process of Industry and the Economy
Welding in Food industry
Welding is a fabrication process used to join metals together using the heat of an electrical arc. The melting point of stainless steels is between 2417 and 2786 °F (1325 to 1530 °C) depend on the type of stainless.
Welding Circuit

- Welding Machine
- Power Cable
- Ground Cable
- Electrode Holder
- Electrode
- Workpiece
- Arc
GTAW- Gas Tungsten Arc Welding
TIG Welding Machine

Controls
• Voltage
• Current (amperage)
TIG Welding Torch (electrode holder)

- Tungsten Electrode
- Shield Gas (Pure Argon)
Argon Gas for Shield Gas and Purge Gas

- Pressure Regulator
- Dual Flowmeters
Hygienic Tubing
Manual and Orbital Tube Welding
Argon Purge of Tubing
TIG Tube Welding
Documentation & Inspection
No Cracks, Crevices or Pits

• Standards
  • AWS D18.1 -
  • AWS D18.2 – Guide to Weld Discoloration of Sanitary Tubing
  • AWS D18.3 – Welding of Tanks, Vessels and other Equipment is Sanitary Applications

• PQR – Procedure Qualification Record
• WPS – Welding Procedure Specification
• WOP – Welder Operator Performance Record
• Weld Coupons
• Boroscope
Good Orbital Weld

- Good Purge
- Proper ID Weld Oxidation Color
- Full Penetration
- Proper Convexity
- Proper Concavity
- Optimal Uniformity
Good Manual Weld

• Good Purge
• Proper ID Weld
Oxidation Color
• Full Penetration
• Proper Convexity
• Proper Concavity
High Hygienic Purged Tack

- Good Purge
- Proper ID Weld
- Oxidation (Color)
Good Non-Purged Tack
Tack not consumed
No Backup Gas Purge
ID Concave Weld
ID Concave Weld
Incomplete Penetration
Off-center
Incomplete Penetration
Inconsistent Width
Incomplete Penetration
Narrow Weld Bead
Pit in weld
Abrupt Tail-off
Sanitary Tank Welding
Tank Weld in Process
Dye Penetrant Inspection
GMAW - Gas Metal Arc Welding Wirefeed (MIG) Welding Machine
GMAW Wirefeed Torch

- Wire Electrode
- Shield Gas (Argon Mixture)
MIG Welding
Laser Welding
Summary

• Written PQR, WPS and WOR’s
• Certified Welders
• Inspection for Cleanability
Questions