

Reese's

P I E C E S

RTS specializes in providing weld inspections, mappings, and condition assessment services to the tower & pole industries

Welding Defects - Porosity

Continuing our series on welding defects, this issue we'll discuss porosity. AWS D1.1 Structural Welding Code – Steel (2015), Table 6.1 – Visual Inspection Acceptance Criteria guides an inspector's weld inspection activities and details post welding inspection activities.

What is Porosity?

AWS B1.10 defines porosity as a cavity type discontinuity formed by gas entrapment during weld solidification. Porosity is in the weld metal zone and is generally spherical, but it may also be elongated. Porosity is not considered to be as detrimental as cracks or incomplete fusion; the rounded shape does not concentrate stress as much.

Why Does Porosity Occur?

Porosity is an indication that welding parameters, welding technique, welding

consumables, gas-shielding, or joint fit-up are not being properly controlled for the welding process selected or that the base metal is contaminated or of a composition incompatible with the weld filler metal being used. In the modification world, porosity could be from improper surface preparation and contamination from welding over the galvanized coating.

Are there Different Types of Porosity?

Scattered – uniformly distributed throughout the weld metal

Cluster – localized array having a random geometric distribution

Piping – has length greater than its width that lies approximately perpendicular to the weld face

Aligned – is a localized array oriented in a line; spherical or elongated

(— continued on second page)



Left to right: Cody Reese, Jeremy Klapac, Shelby Reese, and Brian Reese

Merry Christmas and Happy New Year

As you celebrate the holidays with family and friends, we hope you remember the reason for the season. Merry Christmas and Happy New Year from RTS! □

Business View
OCT/NOV 2018
magazine

VIRGINIA TECH
CORPORATE RESEARCH CENTER

ACHIEVING INNOVATION THROUGH COLLABORATION

CORE PROGRESSION
COLUMBIA COUNTY, GA

CATALINA INDUSTRIES
ALUMINUM EXTRUDERS COUNCIL

Reese Tower Services

SERVING THE INDUSTRY'S NEEDS

Reese Tower Services (RTS), based in Drums, Pennsylvania, specializes in providing comprehensive mapping and inspection services to the tower and pole industries, and their communications, sports lighting, electric utility, high mast lighting, traffic, and wind energy assets, whose structural integrity is constantly under attack by the elements, corrosion, and fatigue.

These assets include steel poles, which are free-standing structures varying in height to 250 feet, and which have been utilized as support structures in the communications, utility, sports lighting, and transportation industries for over a half century; self-support towers, which are used extensively in the communications industry and can vary in height, guyed towers, which are used by the communications and broadcast industries, and can be some of the largest structures in the world at heights up to 2,000 feet; roof-top structures

AT A GLANCE REESE TOWER SERVICES

WHAT: A provider of mapping and inspection services to the tower and pole industries

WHERE: Drums, Pennsylvania

WEBSITE: www.reesetowerservices.com

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RTS Featured in Business View Magazine

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can vary to 500 feet in height; guyed towers, which are used by the communications and broadcast industries, and can be some of the largest structures in the world at heights ... (for the entire article, visit: <https://business-viewmagazine.com/digital-magazines/oct-2018/HTML/66-67/>). □

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Elongated – has length greater than its width that lies approximately parallel to the weld axis

Is there Allowable Porosity?

For statically loaded nontubular connections, CJP groove welds in butt joints transverse to the direction of tensile stress shall have no visible piping porosity. For all other groove and fillet welds, the sum of the visible piping porosity $1/32''$ or greater in diameter shall not exceed $3/8''$ in any linear inch of weld and shall not exceed $3/4''$ in any 12" length of weld.

In cyclically loaded nontubular connections, CJP groove welds in butt joints transverse to the direction of tensile stress shall have no piping porosity. For all other groove welds, the frequency of piping porosity shall not exceed one in 4" of length and the maximum diameter shall not exceed $3/32''$. The frequency of piping



Tower modification weld with example of elongated porosity.

porosity in fillet welds shall not exceed one in each 4" of weld length and the maximum diameter shall not exceed $3/32''$.

Despite AWS allowable(s), most weld inspectors will require porosity be repaired due to cosmetics. □

Reese's MINIATURES IN MONOPINES



PRESENTED BY BRIAN REESE

T'WAS THE WEEK BEFORE CHRISTMAS,
ALL TOWERS WERE FINE.
MONOPOLES, LATTICE, GUYED AND NOW PINE.



THE WELDS WERE INSPECTED
BY AN EXPERT WITH CARE,
CAUSE REESE TOWER SERVICES
HAD JUST BEEN THERE.



A BUNDLE OF TOOLS
BRIAN HAD FLUNG ON HIS BACK,
HIS EYES HOW THEY NARROWED
HE'D FOUND A TOE CRACK.



A WINK OF HIS EYE
AND A TWIST OF HIS HEAD,
SITE OWNERS RELIEF
THERE WAS NOTHING TO DREAD.
HE SAID NOT A WORD
AND WITHDREW FROM OUR SITE
MERRY CHRISTMAS TO ALL
AND TO ALL A GOOD NIGHT.

WE INSPECT MONOPINES!

Reese Tower Services
advocates safe welding practices.
For more information on welding
procedures and the the expert
services RTS offers,
weld inspections, mappings,
and condition assessments
visit us at:
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