

Limitations of ASME Post Weld Heat Treatment
Bruce Levan, Levan Engineering Ltd.

ASME heat treatment requirements are intended to reduce the residual stress, the heat affected zone hardness and improve the impact toughness. The ASME code allows the owner to heat a band around the outside diameter of the vessel to the specified temperature. These local heat treatments have failed due to stress corrosion cracking or hydrogen embrittlement. This has been attributed to a narrow heating band width which did not reduce the hardness or residual stress to an acceptable value. In all the failures the heating band width exceeded the ASME requirements. ASME codes only contain minimum requirements and in some situations it is necessary for the owner to do more than ASME specifies. This presentation will discuss some of the vessel and piping failures after a local heat treatment and the recommendations that are provided in WRC bulletin 452 for local heat treatment.