# WELDED-JOINT COMPLETION EQUIPMENT FOR GAS CAVERNS

*by*

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## SUMMARY

In the past, the subsurface completion equipment used by gas cavern operators in Germany had traditionally employed threaded tubular connections. Now, however, requirements include welding of the production string rather than the use of threaded connections.

This paper will discuss the joint engineering effort between a well-servicing company and an engineering company that resulted in the development of welding procedures that could be used in field locations and could provide weld integrity in high-flow-rate environments.

These proven welding techniques had been used successfully for over twenty years by the engineering company, and the purpose of the cooperative effort was to adapt these processes for use in field environments so that equipment in local inventories could be properly prepared and welded at the field sites. Of particular importance were:

1. The proper handling of welded tubulars/equipment during welding procedures.
2. The proper handling of the welded production strings during the completion stage.
3. Adjustments for conversions of German and British standards.
4. Preparation of parts for welding and handling in the field.

In addition to the in-depth presentation of the newly-developed welding procedures, the paper will discuss use of new subsurface equipment designs that have particular application to "Tubingless Completions."

The paper will also provide a summary of the case history data from the completions that were designed both with and without expansion joints.

The case histories verify the enhanced safety and leak protection that are provided through use of these newly-developed welding processes.