Hot Metal Gas Forming

What is Hot Metal Gas Forming?

HMGF is an outgrowth of the Super-plastic forming process (as used in the aerospace industry for forming low volume aluminum and titanium structures) and the hot blow forming process (as used in the plastics industry for high-volume commercial products – i.e. beverage containers)
Initial Forming Concept for Forming Multi-Sheet Structures for Complex Tubular Structures

Induction Heating Coils

Wedge In

Gas Pressure Heating and forming

Forming Station

Blank & Pierce

Weld Edges and Around Holes

End Cutoff

Flat Sheet Structures

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The basics of Induction Heating

Induce’s - eddy current flow in tube

Example, a coil wrapped around a tube

Current is applied to the coil

Which induces a current flow in the work-piece

Example of continuous shaft

Example of localized heating – camshaft lobes (area between lobes is not heated)
Typical “Tooling Shell”, tooling construction

Ceramic shell, inductive heating coils are placed in a tooling Box

Then the void areas are filled with a non-magnetic material (inexpensive)

High Temperature ceramic material (Inside of cavity is the forming surface of the tool)

Induction heating coils

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