

A "PSEUDO ISOSTATIC" MANUFACTURING METHOD
 controlled by
 A COMPUTER AIDED MANUFACTURING (CAM) SYSTEM
 by:

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The Ceracon Process is a near-net-shape production method of consolidating porous preforms to full density under what we term "pseudo isostatic" conditions. During the process of causing the powder preform to densify, a ceramic particulate material is used to transfer the pressure exerted by an advancing press ram to the P/M preform. Both the ceramic and the preform are heated to a temperature determined by deformation studies, thus, the combination of high temperatures and pressures causes the powdered material to consolidate to the desired density while maintaining the desired shape. This process is controlled by a sophisticated computer system and requires minimum manpower to operate. This paper describes the process briefly and the CAM approach used in this state-of-the-art technology.

Figure 1 is a block diagram of the prototype system which is currently in operation. Other configurations may be produced - depending on the part material, size and other variables. The preform may be prepared by any of the standard P/M methods. This is essentially the point at which the Ceracon process deviates from other processes. The preform is now fed into a controlled atmosphere heating system and heated to the predetermined temperature. A ceramic material is heated in a separate furnace to the same approximate temperature of the preform and is fed to a simple pot die assembly. The preform(s) is/are charged into the ceramic material. All steps to this point are performed in a controlled atmosphere.

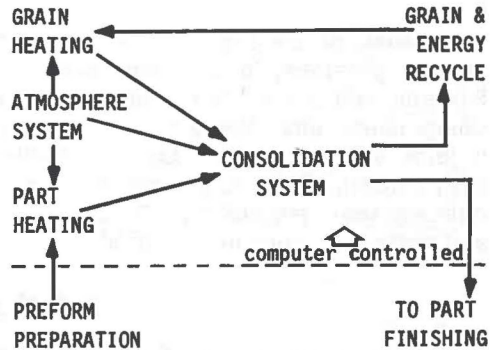


Figure 1: Block diagram of the prototype Ceracon Consolidation System.