by virtue of the added boundary condition at the inside surface of the wafer hole. Some of the practical advantages to be gained from the analysis of a hollow wafer are: (1) an understanding of the influence of a plastic containing ring on an elastic, plastic, or hydrostatic medium; (2) A feasibility study of a high-pressure generating device consisting of a hollow, plastically deformable compression gasket (or wafer), located within an elastic containing ring, and filled with a hydrostatic fluid. The high-strength containing ring will force the compressively loaded wafer to extrude into the central cavity with an accompanying increase in the fluid pressure. The wafer design that exhibits the largest gradient of radial stress, from outer to inner surface, for a given press capacity, will result in the highest cavity pressure.

The boundary condition previously used to assess the effect of anvil deflections will be eliminated in favor of having the radial stress at the surface of the hole be equivalent to the cavity fluid pressure. Since the cavity contains a pressure sensing element, as well as the fluid medium, the compressibility of each substance must be utilized in order to predict the cavity pressure as a function of cavity volume. Denoting the radius of the wafer hole (at the top surface) by R_{it}, the applied force on the wafer is found by integrating the axial stress from R_{it} to R_t, and then adding the force created by the cavity pressure, acting over a circular area of radius R_{it}.