

### 33-45 NUMERICAL ANALYSIS ON UNDERWATER EXPLOSIVE WELDING

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The underwater explosive welding method is especially suitable to weld such materials as the tin metal and brittle materials. In welding those materials, the shock pressure on the flyer plate and the moving velocity of shock wave should be precisely controlled to achieve an optimum welding conditions. In this method, the welding conditions can be changed by variation of the space distance between the explosive and the flyer plate or by inclination of the explosive charge with the flyer plate. We made the experiment to weld the amorphous film with the steel plate. A satisfactory result was gained. At the same time, the numerical analysis was performed to investigate the welding conditions. The deformation of flyer plated by the action of under water shock wave was calculated and compared with the experimental observations by the high speed camera under the same conditions. The comparison shows that the numerical analysis is of good reliability on the prediction of the experimental results. Furthermore, the numerical analysis also gives the deformations of the flyer and the base plates, and the pressure and its variation during the collision process.

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