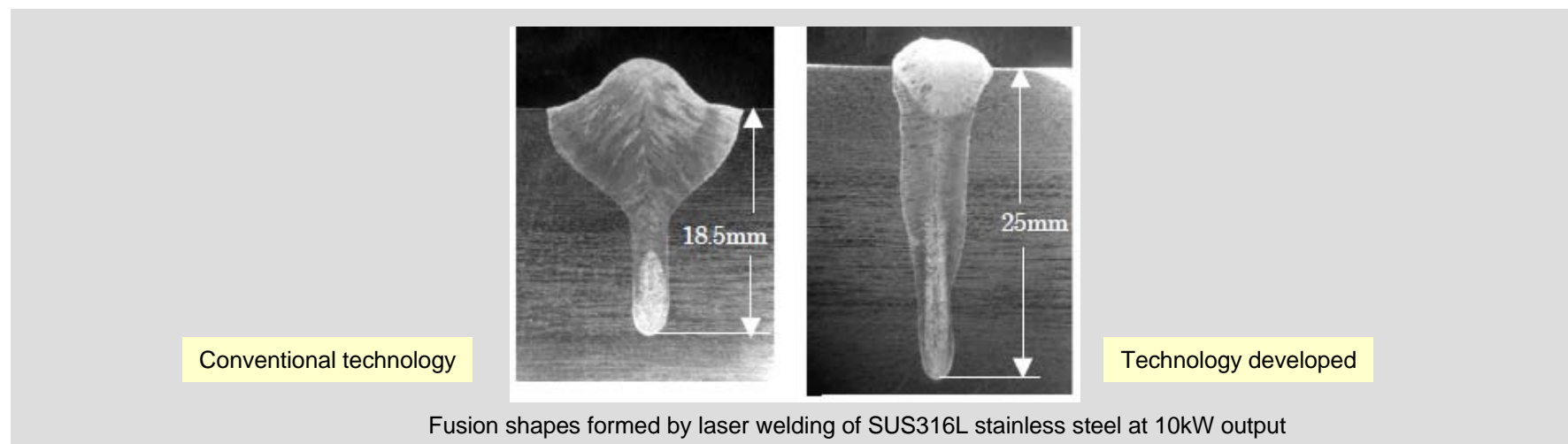


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Power conservation technology for laser welding of thick plate materials used in energy equipment

40% increase in fusion depth of joints compared with existing technology without changing laser power



Hitachi, Ltd. Have developed an energy-efficient technology, which increases the fusion depth of laser welded joints by 40% compared with conventional technology, in welding of thick plate materials used in thermal and nuclear plants. The technology was developed jointly with the research team of Professor Seiji KATAYAMA of the Joining and Welding Research Institute (JWRI) of Osaka University. The laser power is reduced by a maximum of 50% to obtain the same fusion depth, thus contributing to power conservation in the formation of joints.

Laser welding is receiving attention as a technique which provides high-quality and high-productivity joints as the high energy intensity of the laser beam enables deep fusion depth to be formed at high speed. Hitachi and JWRI co-developed “gas jet laser welding technology,” in which the shield gas for protecting the melted section is injected at a high speed to increase the fusion depth of the joints. By applying this “gas jet”, a “plume repression technique” which controls plume (metallic vapour) formation during welding was also developed to enable stable welding. The technology developed provides a high-productivity and low-power consuming technique for welding thick plates, required in energy or industrial equipment.