Hybrid welding process developed

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U.S. scientists say they've developed a hybrid process involving the use of a laser in friction-stir welding to extend the application to more materials.

FSW, which has been in development for about 10 years, is a technique for joining small metal alloys using a rotating tool to fasten metal components without melting.

The process is best suited for alloys with low melting points, such as aluminum, and materials that are difficult to weld with conventional methods. However, extending FSW to high-temperature metals and alloys such as steel and titanium has been problematic because of tool wear and material requirements.

Scientists at the Oak Ridge National Laboratory say adding a laser to the FSW process to preheat and soften the metal parts reduces wear on the tool.

The researchers say the hybrid laser-assisted FSW technology will enable the industrial application of FSW to joining high-temperature metals and alloys.

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