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Fuzzy logic addresses turbine vibration on Algerian gas line

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Traditional techniques for addressing vibration in gas turbines are unable to adapt to complex modern operating environments. Uncontrolled dynamic vibration can lead to premature aging of turbine components, or unacceptable noise and vibration. To achieve operational efficiency in gas turbine control, this article proposes new methods based on artificial intelligence tools and applies them to Sonatrach's gas compression station Medjebara SC3 in Djelfa, Algeria, on the Hassi R'mel-Bejaia (GG1) pipeline, part of a 1,400-km natural gas line connecting Algeria to Europe. This article proposes using fuzzy-logic techniques to examine a gas turbine system that includes several interacting components, the failure of which could lead to both lost revenues and lost lives.

This article will first study the contribution of fuzzy techniques to the modeling of different control param-



Sonatrach's SC3 gas compression station is equipped with the Solar Titan 130 gas turbine and auxiliary equipment shown here. The turbine generates roughly 20,000 hp, helping transport gas from Algeria's Hassi R'Mel field to Europe (Fig. 2).