APPLICATION OF CERAMIC MATERIALS TO HIGH-PRESSURE FUEL SYSTEMS

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To achieve the lowest possible life-cycle emissions for a diesel engine powerplant, all critical systems mos operate as designed for as long as possible. The fuel system is arguably the most important of these critical systems. The successful development and application of ceramic materials to high-pressure diesel fuel systems has resulted in increased durability and reliability. In the future, higher fuel system pressures and the continuing reduction of sulfur in diesel fuel will place additional demands on close-clearance, highly loaded components as unit loading increases and the lubricity of diesel fuel decreases. The ever-present problem of water and debris contamination in diesel fuel adds to the problems faced by fuel system suppliers. Ceramic components provide increased capability to achieve higher pressures in lower lubricity fluids and can better withstand contaminated fuel. This can help achieve lower emission levels over the life of the engine. The successful application of ceramic components to fuel systems will be illustrated by several production applications.