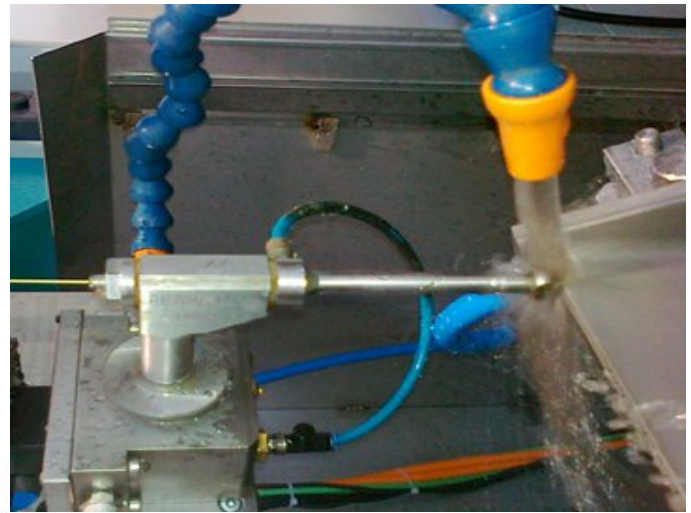


Application story



EDM Machining of Turbine Components

Location	Hungary	Hydra-Cell model	G03EMBTHHSHA x 12
Type of application	Spark Erosion - Machining Deep Holes in Turbine Components	Flow rate	2-5 l/min (0.55-1.30 gpm)
Liquid	Recycled Water	Pressure	80 bar (1160 psi)
Application details	Delivering abrasive dielectric liquid at high pressure caused a triplex piston pump to wear rapidly during prototyping of EDM drilling machinery at an engineering plant in Hungary. System performance degenerated, tolerances were not held, product quality was threatened. A Hydra-Cell G03 Monobloc pump replaced the piston pump. Following a test period, with sustained performance and no premature pump wear, the customer bought the trial pump. Further orders followed. The facility is operated by the specialised manufacturing division of a Hungarian industrial group, expert in machining hard metal alloys. On this project the components produced were turbine blades. Their intricate narrow-bore cooling channels are created by spark erosion, using an electrode as cutting tool. Dielectric fluid (deionised water) is pumped to the work face through the hollow electrode wire. To reach its target while flushing out debris, the liquid must be delivered at constant high pressure. Stated performance specs of the piston pump met requirements, but conditions here exposed the vulnerability of pumps reliant on mechanical seals. DI water is a thin non-lubricant of viscosity >5 cps. Moreover it is recycled. Even after filtration it carries up to 5% content of hard, micronically sized metallic particles from the flushing operation. Internal wear within two weeks of the pump going into service meant flow/pressure performance could not be sustained or held constant - interfering with debris removal and causing inconsistent machining. The seal-less Hydra-Cell pump performed consistently from the outset and had no difficulty with the conditions. During 2009/2010 eleven more G03 Mono-Block pumps and two G10 pumps were installed on production lines at the plant. No problems reported.		
Advantages of Hydra-Cell pump on this application	Sustained consistent performance at high pressure, with non-lubricating recycled liquid containing abrasive hard metal particles.		

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