Study Of The Abrasion Phenomenon Of A Pump For The Drinking Water Supply In The Great Algerian South

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Abstract: The drinking water supply in the Saharan cities of the Great Algerian South knows a constant disturbance, which is not related to the availability of water resources but rather to the quality of water. The pumping of subsoil water charged with suspended fine sand particles causes a premature wear of pumps by abrasive erosion in a short time which creates serious disturbances in the distribution of drinking water. To study the phenomenon, a test bench was designed at the laboratory, making it possible to identify the progression of wear by abrasive erosion of the body of an Algerian standard pump. Natural conditions were established; the drinking water used included particles of fine sand (a mixture of silica and quartz, diameter 0.6-1.4 mm), which is a frequent characteristic of water in this area. The tests showed, after an operating time of 60 hours, a palpable wear with a loss of the main body mass of the pump which is the wheel, confirming the studies carried out all over the world in this field. The mechanical effect of sandy water on the most exposed body was obvious. Premature wear was done away from the point of splashing.

Keywords: Wear; erosion; abrasion; performances; characteristics.