GEOTHERMAL TURBINES
(UP TO 160MW)

Fuji Electric

Fuji Electric's geothermal turbine products provide the industry's most reliable and efficient steam solutions for geothermal applications.

Features

– **Low steam velocity.** It is known that the rate at which water droplets and the solid particles contained in geothermal steam erode turbine blades is proportional to the 3rd power of the steam velocity. The steam velocity of reaction stage is approximately one-half of that of impulse stage. Thus a reaction type turbine promises a longer life that an impulse turbine without replacement of blades.

– **Low nozzle passing excitation.** The nozzle passing excitation directly related to the strength of the cyclic stress imposed on moving blades is considerably lower with the reaction stage compared to the impulse stage. This is because the gap between nozzles (stationary blades) and moving blades in an impulse turbine must be as small as possible, to maintain an acceptable level of turbine efficiency. Such a gap has no adverse effect on turbine efficiency with a reaction type design.

– **Round head blade and wide throat blade row.** Compared to conventional thin profile blades, a round head blade is less sensitive to the attack of corrosive and erosive geothermal steam. It has also a higher natural frequency, which means safer operation. A wide throat at the blade row outlet eliminates the possibility of choking due deposition of impurities contained in the geothermal steam.

– **High pressure moving blades with integral shroud and self-standing low pressure moving blades.** The integral shroud portion of individual blades taken together forms one rigid shroud ring, after completion of blade insertion and machining of the outer circumference of shroud. The frictional force at the shroud portion of adjacent blades has a considerable damping effect on blade vibration, which makes other means of fixing, such as riveting unnecessary. Our self-standing long blades stand completely independent, without lacing wire. This makes the mode of blade vibration simple and accurate tuning to avoid resonance caused by excitation forces is also made easier. The leading edge of the low pressure blades is protected by stellite shields to increase resistance to corrosion. Inner structure of geothermal steam turbine must be as simple as possible to keep trouble caused by the surrounding corrosive atmosphere to minimum. This makes riveting or lacing undesirable.

Turbine Technology

A drum type solid rotor with high efficiency reaction type blades.

Turbine Type

– Single exhaust condensing turbine
– Double exhaust condensing turbine
– Admission condensing turbine
– Single exhaust back pressure turbine

Speed

3,000 and **3600 rpm**

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