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Tue-Af-Po2.16-08 [22]: Characteristics of a Stationary Flux Pump using Linear Moving Magnetic Fields for an HTS Jointless Coil in Persistent Current Mode

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Though an HTS jointless coil can conduct a persistent current without decay, it needs an external power source for the excitation. We have magnetized the HTS jointless coils by field cooling and also have excited by flux pumps with rotating permanent magnets. A stationary flux pump has several comparative advantages over the field cooling or the rotary flux pump.

In this paper, we designed and fabricated the stationary flux pump without mechanical moving parts. The flux pump was made of copper coils and iron cores. The copper coils were excited by an AC power source. The iron core had an air gap and an extended turn from the jointless coil was inserted into the air gap. We excited the HTS jointless coil with the flux pump by changing the width of the air gap and the frequency of AC power source for the copper coils. The results from the charging and discharging tests were compared with the ones of the rotary flux pump.

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