

UNITED STATES PATENT OFFICE

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TREATMENT OF ROTORS

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This invention relates to the treatment of rotors of dynamo electric machines and is specifically directed to a simple, economic and effective process for the treatment of rotors to eliminate the possibility of short circuits on the rotor surfaces.

Considerable difficulty has been experienced in the case of squirrel cage rotors from short circuits on the rotor surfaces which resulted in drastic increase in load loss as well as a reduction of the minimum accelerating torque. Investigation has resulted in the discovery that microscopic particles of aluminum from the squirrel cage winding are dragged across the rotor surfaces during the turning and grinding operations after the rotor is cast. These microscopic particles of aluminum cause the short circuits and attendant objectionable effects.

I have also discovered a simple method for overcoming these difficulties. In accordance with my invention I have discovered a treatment for the rotors which completely removes the microscopic particles of aluminum on the surfaces of the rotors, yet does not affect or injure the windings. My process consists essentially of treating the rotor in an alkaline bath of proper concentration followed by a simple and complete removal of any excess alkali without the use of acid or heat treating apparatus.

Specifically illustrating my invention I proceed as follows:

The cast and machined squirrel cage rotor to be treated is contacted with a dilute alkaline solution, and specifically is subjected to a bath of 10 to 15 per cent sodium hydroxide solution (or equivalent concentration of other suitable alkaline materials), for a period of 10 minutes at a temperature of 75 to 85° C. This treatment is followed by subjecting the rotor to a bath of hot wash water in which steam is directed on the rotor. This wash treatment is carried out for a period of 10 minutes, the wash water being held at a temperature which is sufficiently high to permit the rotor after treatment to dry immediately in air, thus making it unnecessary to use an oven or other heat-treating device for drying purposes.

Instead of subjecting the rotor to a hot wash water in which steam is directed on the rotor, water may be injected into steam nozzles above the surface of the washing bath and projected on the rotor surface for a period of about five to ten seconds after which the rotor is washed in the hot wash water for the remainder of the ten-minute period.

During the alkaline treatment, the aluminum rotor, end rings and fan blades become covered with a black residue which cannot be removed by ordinary washing and can only be removed by a blast of wet steam in accordance with the treatments outlined above.

This simple treatment is effective to eliminate all difficulties due to short circuits on the rotor surfaces. The marked improvement obtained by means of my process is illustrated by the following data on motors before and after treatment.

Single phase motor

	Load loss	Pull out torque
Before treatment.....	Watts 165	Ft. lbs. 21 1/4
After treatment.....	8	24

Polyphase motor

Minimum accelerating torque

Before treatment..... 128% of full load torque
After treatment..... 191% of full load torque

What I claim as new and desire to secure by Letters Patent of the United States is:

1. The process of treating cast and machined rotors to remove microscopic particles of aluminum from the rotor surfaces deposited thereon during the turning and grinding operations incident to the manufacture of the rotor which consists in treating the cast and machined rotor with a 10 to 15 per cent sodium hydroxide solution for 10 minutes at a temperature of 75 to 85° C., then treating the rotor for 10 minutes with steam and hot water and air drying the washed rotor.

2. The process of treating cast and machined rotors to remove from the rotor surfaces microscopic particles of aluminum deposited thereon during the turning and grinding operations incident to its manufacture which consists in contacting the rotor with a dilute alkaline solution at a temperature and for a period of time sufficient to remove said aluminum particles but insufficient otherwise to attack the rotor surfaces, and then removing the excess alkali.

3. The process of treating cast and machined rotors to remove from the rotor surfaces microscopic particles of aluminum deposited thereon during the turning and grinding operations incident to its manufacture which comprises contacting the rotor with a dilute alkaline solution corresponding to a 10 to 15 per cent sodium hy-

droxide solution at a temperature and for a period of time sufficient to remove said aluminum particles but insufficient otherwise to attack the rotor surfaces, and then removing the excess alkali.

4. The process of treating cast and machined rotors having microscopic particles of aluminum deposited on surfaces thereof, said process consisting in immersing the rotor in a dilute alkaline solution corresponding to a 10 to 15 per cent sodium hydroxide solution at a temperature and for a period of time sufficient to dissolve said

aluminum particles but insufficient otherwise to attack the rotor surfaces, and washing the excess alkali and dissolved matter from the thus treated rotor with steam and hot water.

5. The process of preventing short circuits on the surfaces of cast and machined rotors which consists in dissolving microscopic particles of aluminum present on the rotor surfaces in a solvent for aluminum and removing the excess solvent and dissolved matter.

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