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(21) International Application Number: PCT/BR99/00093 (22) International Filing Date: 11 November 1999 (11.11.99) (30) Priority Data: PI 9804608.0 12 November 1998 (12.11.98) BR (71) Applicant (for all designated States except US): EMPRESA BRASILEIRA DE COMPRESSORES S.A. - EMBRACO [BR/BR]; Rua Rui Barbosa, 1020, CEP-89219-901 Joinville, SC (BR). (72) Inventors; and (75) Inventors/Applicants (for US only): SCHWARZ, Marcos, Guilherme [BR/BR]; Rua General Osório, Conjunto Belvedere, 2, Joinville, SC (BR). DAINÉZ, Paulo, Sérgio [BR/BR]; Bloco I, Apartment 302, Rua Rui Barbosa, 1431, Joinville, SC (BR). (74) Agent: DANNEMANN, SIEMSEN, BIGLER & IPANEMA MOREIRA; Rua Marquês de Olinda, 70, Caixa Postal 2142, Botafogo, CEP-22251-040 Rio de Janeiro, RJ (BR).		(81) Designated States: CN, JP, KR, SG, TR, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published Without international search report and to be republished upon receipt of that report.

(54) Title: A SYSTEM AND A METHOD FOR PROTECTING AN ELECTRIC MOTOR AND ITS CONTROL CIRCUIT, AND AN ELECTRIC MOTOR

(57) Abstract

A system and a method for protecting electric motors and their respective control circuits are described, wherein it is possible to distinguish whether a situation of surge current results from an overload or from a short-circuit on the motor (1). This is achieved by means of a system for protecting an electric motor (1) and its control circuit (2), the motor speed control being carried out by means of a set of switches (Ch), the system comprising a control central (7) capable of measuring the electricity conduction time (T_c) of each of the switches (Ch) and to measure the time (T_d) passed between the beginning of conduction of one of the switches (Ch) and the occurrence of a surge current, the central (7) making a comparison of said times (T_d , T_c) and being capable of determining whether said surge current results from an overload or a short-circuit of the electric motor (1) or on one of the switches (Ch). The invention also refers to a method for protecting an electric motor (1) and its control circuit (2), the speed control of which is carried out by means of a set of switches (Ch), wherein the method comprises a step of measuring the electricity conduction time (T_c) of each of the switches (Ch), a step of measuring the time (T_d) passed between the beginning of conduction of one of the switches (Ch) and the occurrence of a surge current, and a step of comparing said times (T_d , T_c) and consequently determining whether said surge current results from an overload or from a short-circuit of the motor (1). In addition, the present invention refers to an electric motor (1) that is controlled by a set of switches (Ch), the control of the switches (Ch) being carried out by a control central (7) capable of measuring and comparing said times (T_d , T_c).

