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- (71) 申请人: 浙江鑫可传动科技有限公司 (ZHE JIANG SIEKON TRANSMISSION TECHNOLOGY CO., LTD) [CN/CN]; 中国浙江省嘉兴市桐乡市桐乡经济开发区高新东一路 176 号, Zhejiang 314500 (CN)。
- (72) 发明人: 於文勇 (YU, Wenyong); 中国浙江省嘉兴市桐乡市桐乡经济开发区高新东一路 176 号, Zhejiang 314500 (CN)。王长江 (WANG, Zhangjiang); 中国浙江省嘉兴市桐乡市桐乡经济开发区高新东

一路 176 号, Zhejiang 314500 (US)。金建华 (JIN, Jianhua); 中国浙江省嘉兴市桐乡市桐乡经济开发区高新东一路 176 号, Zhejiang 314500 (CN)。杨超 (YANG, Chao); 中国浙江省嘉兴市桐乡市桐乡经济开发区高新东一路 176 号, Zhejiang 314500 (CN)。黄凤立 (HUANG, Fengli); 中国浙江省嘉兴市桐乡市桐乡经济开发区高新东一路 176 号, Zhejiang 314500 (CN)。

- (74) 代理人: 嘉兴启帆专利代理事务所 (普通合伙) (JIAXING QIFAN PATENT AGENCY (GENERAL PARTNERSHIP)); 中国浙江省嘉兴市经济技术开发区昌盛南路 36 号 15 幢 301 室, Zhejiang 314001 (CN)。
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(54) Title: CONTROL METHOD FOR ELECTRIC MOTORS IN SERIES CONNECTION

(54) 发明名称: 一种串联电机的控制方法

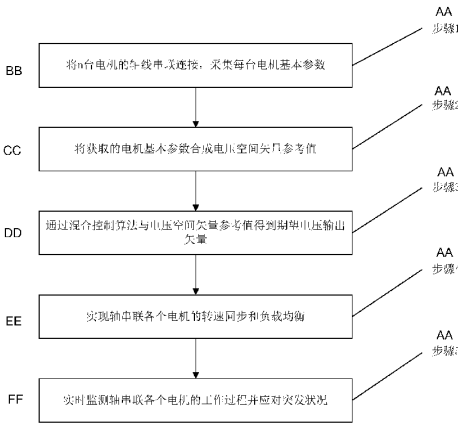


图 1

AA Step
BB Connect axes of n electric motors in series, and collect basic parameters of each electric motor
CC Synthesize the acquired basic parameters of the electric motors into a voltage space vector reference value
DD Obtain a desired voltage output vector by means of a hybrid control algorithm and the voltage space vector reference value
EE Implement rotation speed synchronization and load balancing of the electric motors with axes in series connection
FF Monitor, in real time, operating processes of the electric motors with axes in series connection, and respond to an emergency situation

(57) Abstract: The present invention relates to the technical field of electric motor control. Disclosed is a control method for electric motors in series connection, which control method solves the problems of rotation speed synchronization, energy consumption and fault protection of electric motors with axes in series connection. The control method comprises: connecting axes of n electric motors in series, and collecting basic parameters of each electric motor; obtaining a voltage space vector reference value by means of synthesis; acquiring a desired voltage output vector; implementing rotation speed synchronization and load balancing of the electric motors with axes in series connection; and monitoring, in real time, operating processes of the electric motors with axes in series connection, and resolving a fault. In the present invention, the desired voltage output vector is retained by means of a hybrid control algorithm, the rotation speed synchronization of the electric motors with axes in series connection is implemented by means of a counter closed-loop rotation speed algorithm, the load and energy consumption of the electric motors with axes in series connection are kept balanced by means of an energy consumption balancing algorithm, and a fault resolution processing scheme is selected in a combined manner by means of a rights-and-interests selection algorithm, thus greatly improving the collaboration capability of the electric motors, improving the fault detection and response capabilities, and reducing the resource consumption costs.

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MU, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW。

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本国际公布:
— 包括国际检索报告(条约第21条(3))。

(57) 摘要: 本发明公开一种串联电机的控制方法, 涉及电机控制技术领域, 解决的是轴串联电机的转速同步、耗能和故障防护问题。控制方法包括, 将n台电机的轴线串联连接, 采集每台电机基本参数; 合成电压空间矢量参考值; 获取期望电压输出矢量; 实现轴串联各个电机的转速同步和负载均衡; 实时监测轴串联各个电机的工作过程并解决故障; 本发明通过混合控制算法保持期望电压输出矢量, 通过反闭环转速算法实现轴串联的各个电机转速同步, 通过能耗均衡算法使轴串联各个电机的负载和能耗保持均衡, 通过权益选择算法组合选取故障解决处理方案, 大大提高了电机协作能力, 提高了故障的检测和应对能力, 降低了资源消耗成本。