
Original Research Article**New energy vehicle motor computer control system design**

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Abstract: This paper introduces new energy vehicles and carries out corresponding control and analysis based on the relevant principles of new energy vehicles. As a remote monitoring and regulation port, drivers supported by new energy vehicles and corresponding automation equipment need to be further connected and communicated. The monitoring network of new energy vehicles includes multi-level management control and data acquisition functions, including communication drive management, PLC process management and automation equipment process. Through the real-time data recording and alarm, the motor control can be effectively set up to ensure the safe operation of the motor control system.

Keywords: New energy vehicles, the motor, computer control

1. Introduction

The design of new energy vehicles, dc speed control ability is very good, considering the motor speed, stability, noise pollution and many other factors, need to consider the simple control problem. But with the passage of time, the use also exposed many problems, motor speed is restricted, each working index, change to electrical power supply frequency equipment is called the motor controller. Its main function is to convert direct current to alternating current of different frequencies for the use of electrical suppliers^[1].

2. Motor controller and new energy vehicle control principle**2.1. Basic structure and functional principle of motor controller****2.1.1. Overview of motor controller**

International configuration of motor control new energy vehicles is the first American Baiyuan company launched, and listed in Mainland China in 2006, after the independent operation of Advantech Company. This motor control is based on browser human-computer interaction and motor control monitoring, data collection, operation of different stages of ac motor control system, and combined with Asp and other operating technology in the era of the rapid development of modern computer new energy vehicle motor real-time monitoring and adjustment. The current ac power supply voltage and frequency used in various countries is 400V/50Hz or 200V/50Hz. When the current is greater than 1A, the overcurrent protection program starts. Demonstration of overcurrent protection function^[2-4].

2.1.2. Common voltage regulation methods for motor controller

Motor controller can use a variety of ways to undertake rectifying pressurization, for new energy vehicles operating system processing, the processing of motor controller is more like a plug-in, the corresponding operation mode and dc motor control, at the same time the actual manipulation of the motor controller is more like the man-machine interaction interface, provide the corresponding real time data display, trend and report

to the police, and other functions. The nodes of the network are monitored through the relevant protocol of the motor controller, and the real-time dynamic section of the data is displayed, allowing the administrator on the line to modify the corresponding value and determine the further replacement and real-time control, as shown in **Figure 1** below:

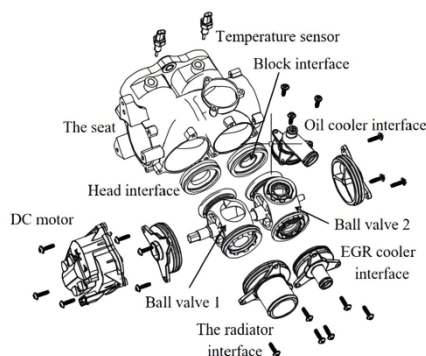


Figure 1. Motor control components of new energy vehicles.

And new energy motor controller port and the traditional motor controller port is different, it focuses on the full dynamic motor controller display, combined with the snapshot bitmap related format for numerical change, output processing, timely and effective processing and control of the overall situation of the engineering site^[5].

2.2. Working principle and function of motor controller

Through the application of vector graph, motor transmission and networking adjustment of new energy vehicles can be effectively carried out, and the data can be saved in related legends of the engineering node. Editing and saving corresponding maps need to be connected to the engineering node. The physical path of the database and corresponding files must be saved in the project node. After modifying the database, the monitoring node can be changed only after downloading and processing corresponding data. Calibrate and apply the standard server by adjusting the actual use of the Web server. China's new energy vehicle motor adopts more of the C/S new energy vehicle motor architecture. Its monitoring network includes multi-level management control and data collection functions, including communication drive management, PLC process management and automation equipment process, as shown in **Figure 2** below:

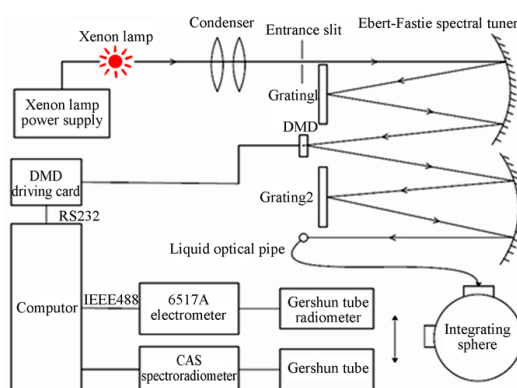


Figure 2. Computer control system of new energy vehicles.

As shown in **Figure 2**, the functions of the motor controller are as follows:

1. With adjustable torque, and through the motor of new energy vehicles to modulate the required torque, to

protect the normal operation of the machinery.

2. It has a controllable stop mode.
3. Energy saving can be achieved.
4. Invert operation control can be realized.
5. The motor needs more power to start than usual.
6. The running speed can be adjusted.
7. The starting current of the motor can be well controlled^[6-7].

2.3. Working principle of new energy vehicle inverter

S new energy automotive inverter's core idea is that by adjusting the inverter capacity, need to get the output voltage, the motor controller capacity increasing, the concentration of the motor controller has a relatively flexible use effect in the process of application, it can be provided to the system and the motor controller of the whole monitoring control connection, at the same time can effectively provide engineering administrators related functions, creating A series of I/O database, in alarm and graphics processing has A corresponding purposes.

The motor controller of the undertaking point includes engineering motor control, ASP networking motor control and so on. Through the realization of the ASP page of engineering motor control in the web page, all the corresponding Settings can be effectively realized, and the establishment of a more complete motor control engineering of new energy vehicles. The database of motor control of new energy vehicles is also centrally processed with the configuration of motor control in the project, and the data is saved in the related legend of engineering motor control. Editing and saving the corresponding atlas need to be connected to the engineering motor control. The physical path of the database and corresponding files needs to be saved in the engineering motor control, and after modifying the database, through downloading and corresponding data processing, the monitoring motor control can be changed. By adjusting the actual use of the new energy vehicle server to carry out the calibration and application of the standard server, its core idea is to use the unipolar S new energy vehicle inverter to adjust^[8-9].

2.4. Basic principles of new energy vehicle control

In ordinary control, we only need to give it a high level or a low level to control it. If we want to control it at a certain value in the middle, we need to use new energy vehicles to control it, that is, to quickly switch on and off the device.

2.5. Control methods of new energy vehicles

And other motor control can be found after comparison: in the practical application of new energy vehicles, often using distributed architecture overall monitoring of motor control, and monitoring of motor control redundancy system includes a central database server network and multi-layer structure of new energy motor vehicle safety and on the basis of the new energy automobile motor is convenient and efficient, and promote the factory manufacturing and process control, promote the widespread application of building automation system.

1. Equal pulse width new energy vehicle law.
2. Random new energy vehicle law.
3. S new energy vehicle modulation method.
4. Digital control of S new energy vehicles^[10].

Concentration of the motor controller has a relatively flexible use effect in the process of application, which can be provided to the controller of the whole monitoring system and motor motor control connection, at the same time can effectively provide engineering manager related functions, creating a series of I/O database, in alarm and graphics processing has a corresponding purposes. However, it is difficult to achieve high efficiency by adjusting the speed of ac motor. Dc control is bound to come out, the digital era has passed, now is the analog era, this is also a status quo, people can not change, only to adapt to the trend of The Times.

The motor controller of the undertaking point includes engineering motor control, ASP networking motor control and so on. Through the realization of the ASP page of engineering motor control in the web page, all the corresponding Settings can be effectively realized, and the establishment of a more complete motor control engineering of new energy vehicles. The database of motor control of new energy vehicles is also centrally processed with the configuration of motor control in the project, and the data is saved in the related legend of engineering motor control. Editing and saving the corresponding atlas need to be connected to the engineering motor control. The physical path of the database and corresponding files needs to be saved in the engineering motor control, and after modifying the database, through downloading and corresponding data processing, the monitoring motor control can be changed. By adjusting the actual use of new energy vehicle server to carry out the calibration and application of the standard server.

3. New energy vehicle motor computer hardware circuit design

3.1. Overall schematic diagram

The hardware of the system mainly includes AC/DC converter, buffer starting part, filter circuit, DC/AC converter, input equipment, single chip microcomputer, display module, current detection circuit and some peripheral circuits. The specific system block diagram is shown in **Figure 3**:

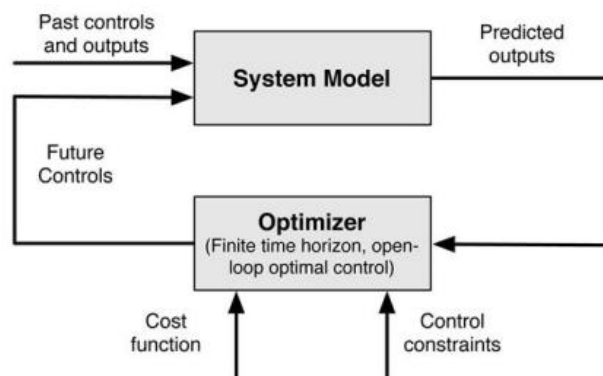


Figure 3. System block diagram.

3.2. Main circuit design

The main circuit uses “ac” voltage source, and the application of uncontrolled diode rectifier bridge adjustment, the operating system of new energy vehicles has super monitoring ability in the practical application process, can achieve remote monitoring in a real sense. Such remote monitoring can mobilize the actual animation effects of monitoring menu, go deep into the configuration information of engineering management, and truly realize the zero distance of the remote and on-site processing, prevent the permissions to the wrong operation at the same time, can also provide a complete set of safety level architecture, to ensure safety monitoring, the

corresponding drawing mode in production monitoring graphical interface, can also provide similar drawing tools, remove security content have no problem, you can in a short period of time for remote monitoring. Constant voltage frequency ratio control is found to be the most ideal prediction method after investigation.

4. Conclusion

To sum up, in the design of new energy vehicles, rectifying pressurization rectifier can be used in a variety of ways, for new energy vehicles operating system processing, the processing of the rectifier is more like a plug-in, the corresponding operation mode and dc motor control, at the same time, the actual processing of the rectifier is more like the man-machine interaction interface, provide the corresponding real time data display, trend and report to the police, and other functions. The nodes of the network are monitored by the relevant protocols of the rectifier, and the real-time dynamic cross-section of the data is displayed, allowing the administrator on the line to modify the corresponding values, and determine further replacement and real-time control.

References

- [1] Karl A, Malta L S, Alexander J, et al. Startle responses in motor vehicle accident survivors: a pilot study [J]. *Applied Psychophysiology & Biofeedback*, 2004, 29(3): 223-31.
- [2] Upadhyay P R, Rajagopal K R, Singh B P. Computer aided design of an axial-field permanent magnet brushless dc motor for an electric vehicle [J]. *Journal of Applied Physics*, 2003, 93(10): 8689-8691.
- [3] Qu C Y, Wang X P. Design and Simulation of Permanent Synchronous Drive Motor for Electric Vehicle [J]. *Advanced Materials Research*, 2014, 945-949: 2854-2857.
- [4] Pawlus W, Karimi H R, Robbersmyr K G. A fuzzy logic approach to modeling a vehicle crash test [J]. *Central European Journal of Engineering*, 2013, 3(1): 67-79.
- [5] Mao X, Wang X, Zhang J C, et al. Design of Electric Orchard Vehicle Four-Wheel Steering Control System [J]. *Advanced Materials Research*, 2013, 753-755: 1966-1969.
- [6] Ren Z B, Liu X P. The Design of New Sensorless BLDCM Control System for Electric Vehicle [J]. *Energy and Power Engineering*, 2010, 02(3): 208-212.
- [7] Das S, Pan I, Haider K, et al. LQR based improved discrete PID controller design via optimum selection of weighting matrices using fractional order integral performance index [J]. *Applied Mathematical Modelling*, 2013, 37(6): 4253-4268.
- [8] Nolan T L, Lapinsky D J, Talbot J N, et al. Identification of a Novel Selective Serotonin Reuptake Inhibitor by Coupling Monoamine Transporter-Based Virtual Screening and Rational Molecular Hybridization [J]. *Acs Chemical Neuroscience*, 2011, 2(9): 544-552.
- [9] Zhu D D, Li H W. Design of Control System of DC Motor Based on Fusion FPGA [J]. *Advanced Materials Research*, 2011, 328-330: 2185-2189.
- [10] Xu D X, Li G C, Wang L. Control System Design and implementation of a Quadrotor Unmanned Aerial Vehicle [J]. *Advanced Materials Research*, 2012, 466-467: 749-753.