Autonomous vehicle power supply system design and development

As a natural next step in the development of AUV power supply systems, FFI built a fuel cell system for AUVs in the period 2005-2014 [34]. This system builds on our experience with hydrogen peroxide from the Al/H 2 O 2 semi fuel cell. The development culminated with a 24 h demonstration in a sealed container under water.

Architecture design is one of the most important problems for an intelligent system. In this paper, a practical framework of hardware and software is proposed to reveal the external configuration and internal mechanism of an autonomous vehicle-a typical intelligent system. The main contributions of this paper are as follows. First, we compare the advantages and ...

This article reviews the state-of-the-art inductive wireless power transfer (IWPT) solutions for underwater applications and discusses the engineering challenges of the IWPT system design. Autonomous underwater vehicles (AUVs) are increasingly used for undersea exploration. The endurance of AUVs is limited by the onboard energy storage among which ...

Underwater Systems Design Section, Naval Ship & Maritime Systems Engineering Department, Naval Ship & Maritime Systems Division, Integrated Defense & Space Systems, Mitsubishi Heavy Industries, Ltd, Isahaya, Japan ... As its name implies, AUV is an autonomous underwater vehicle that does not have a tether cable for power supply and ...

System Design of Autonomous Systems for Vehicles -- Part 2 In the second installment of this series, we delve into the communication dynamics between the components outlined in Part 1. In the second

Autonomous mobile robots are a special class of robotic systems that can move a payload from one location to the other or perform a specific task. They allow efficient, precise, ...

Energy Efficiency: The vehicle considers the energy consumption of different routes and selects the route that minimizes energy usage. The routing process in autonomous vehicles is typically performed by algorithms running on the vehicle"s onboard computer.

[Show full abstract] system equipped with module by which prompt regeneration control could be executed toward load changes and inverter for driving the electric vehicle can be utilized as power ...

System Design Center, Hangzhou Electric Power Design Institute Co. Ltd, Hangzhou, China ... Matsuki, H and Sato, T (2004) Automatic power supply system to underwater vehicles utilizing non-contacting technology. OCEANS "04. MTTS/IEEE TECHNO-OCEAN "04. 2004, 4:2341-2345. ... A wireless power transfer system for an autonomous underwater ...

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This paper presents the design and development of an autonomous amphibious unmanned aerial vehicle (AAUAV) system with hybrid version of a multicopter and a hovercraft that can vertically take-off and land as well as travel on water and smooth earth surfaces for water-based applications like water quality assessment, water sampling, remote sensing, ...

Based on recent reports, in 2030, the share of electrified vehicles could range from 40 to 50% of new-vehicle sales [4-6], up to 15% of new cars sold could be fully autonomous, and 10% of the new cars sold may likely be a shared vehicle . The design and development of a safe and cost-effective autonomous vehicle is an enormous technological ...

The new generations HAD 3 (Highly Autonomous DRIVE) cars level 2 and 3 will allow a driving mode where the driver is not any more in the flow but the car uses sensor fusion and environment data to ...

Inclusion of security design reviews in development process. Emphasizing secure connections ... All fail operational cars will have two board nets to prevent from common-cause power supply failures. ... Messnarz, R., Macher, G., Stolfa, J., Stolfa, S. (2019). Highly Autonomous Vehicle (System) Design Patterns - Achieving Fail Operational and ...

The main contribution of this research is the use of systems engineering as a methodology or tool in the development of an autonomous guided vehicle for the industry. This AGV was developed to reduce the developmental gap of mobile robots applied to the industry in Colombia.

This chapter discusses various technical obstacles encountered in the development of autonomous vehicles. The design of the autonomous vehicles has developed to a great extent, from being basic robotic cars to much ...

Design and Development of an Autonomous Underwater Vehicle for Underwater Target Navigation Mission Module. ... the power supply is an important issue where supply of each component and equipment are sometimes insufficient. This can be solved by the addition of power supply and port for charging to facilitate power supply against the AUV to be ...

can supply two motors with up to 25A each. Communication is performed by RS232. Isolation between motors and other device is used to guarantee the safety of the other components. Fig.8 shows the power supply system of DaryaBird. Power Source Unit convert voltage level. As shown in Fig.3, sensor and motor driver communication

As China"s urbanization process and economic level continue to improve, the existing transportation system faces increasing pressure[1].The fundamental solution to meeting the high-density transportation needs of cities lies in prioritizing the development of urban public transportation systems based on rail transit[2].Rail transit, as a high-capacity, fast, safe and ...

with low risk requirements (aerospace, power supply systems, automated production systems, etc.), other methods have to be used to prove the safety performance of auto-mated vehicles [3]. System design for such systems relies on redundant subsystems with well understood, logic-based safety arguments. But functional safety (based on robust

FUEL CELL POWER SYSTEMS FOR AUTONOMOUS UNDERWATER VEHICLES: STATE OF THE ART . Alejandro Mendez ... Urashima was an experimental AUV powered by PEFC and lithium ion cells as an auxiliary power source. It started development in 1998 by the Japan Agency for Maritime Earth Science and ... demands that the fuel cell can"t ...

Autonomous Underwater Vehicles (AUV"s) are vehicles that are primarily used to accomplish oceanographic research data collection and auxiliary offshore tasks. At the present time they are usually powered by lithium-ion secondary batteries, which have insufficient specific energy. In order for this technology to achieve a mature state increased endurance is required. Fuel cell ...

The vision system of autonomous vehicles can also use fuzzy logic. In this instance, the vehicle uses cameras and LiDAR as sensors to learn more about its surroundings . The control system of autonomous vehicles uses fuzzy logic as well. The vehicle"s steering, accelerating, and braking are all under the control of the control system .

Introduction to Vehicle Electrical Systems. With the inclusion of advanced electrical systems, the sector of modern vehicles has transformed. The functionality of a vehicle relies heavily on these systems, as they drive fundamental operations ranging from essential lighting and ignition to advanced safety features and infotainment.

Systems Engineering Methodology An autonomous guided vehicle (AGV) is a complex system; therefore, every part of its design must be planned in detail. A roadmap allows for a clear understanding of the system life cycle and a final product that meets defined user requirements.

Momentum around the term autonomy has been picking up in the last years in the scientific circles but also as topic of broad societal discussions due to the latest technical developments around autonomous vehicles [1, 2] tonomy is researched in other domains, such as robotics [3], [4], [5] autonomic computing [6] and others. Latest advancements of artificial ...

This paper presents a multi-objective design method of underwater wireless power transfer (UWPT) system for autonomous underwater vehicles (AUV) based on the cooperative design of compensation network and a DC/DC converter, considering seawater eddy current loss. Firstly, the electromagnetic field model of the underwater coil is established based on the non ...

Autonomous vehicle power supply system design and development

The paper focuses on the development of hybrid battery charging systems for autonomous electric passenger vehicles. Aspects of elaboration and design methodology of the battery ...

Each OEM has its own individual power grid infrastructure and system design. [4] ... under all conditions, all safety components will receive sufficient energy during a fault of one energy supply. Autonomous Drive Safety Switches (ADSSs) provide a cost-optimized and compact solution for highly reliable power grids. ... K., Wandres, S. et al ...