EIT Opto-Routing

Energy-efficient solar-powered communication system for oil pipeline monitoring

-Powered by EIT Opto-Routing

Overview

This study introduces an innovative hybrid energy harvester that combines solar and flow energy sources to power Internet of Things enabled pipeline monitoring systems. These solar-powered solutions provide reliable energy for sensors, communication. Solar-powered CCTV monitoring systems emerge as the ideal solution to ensure 24/7 protection in off-grid, remote, and high-risk environments.

Solar-Powered Pipeline Monitoring: Siemens Solar's Oil

In 2020, Siemens Solar installed 50 solar-powered monitoring stations along a 500-mile pipeline in Saudi Arabia's Eastern Province. Each 10 kW

Energy-efficient routing protocol for reliable low-latency Internet of

In OGI monitoring, IoT devices are linearly deployed with no alternative communication mechanism available along OGI pipelines. Thus, the absence of both communication routes can disrupt crucial

Developing an IoT-Based System for Real-Time Monitoring and

The research into developing an IoT-based system for real-time monitoring and maintenance of energy and oil pipeline networks has provided significant insights into the potential of this technology to

An Analytical Framework for Optimizing the Renewable Energy

This paper presents an analytical and experimental framework for designing energy-efficient, self-sustaining pipeline monitoring systems that leverage renewable energy harvesting and low-power

An energy-aware and Q-learning-based area coverage for oil pipeline

In this paper, we propose a reinforcement learning-based area coverage technique called CoWSN to intelligently monitor oil and gas pipelines.

Solar-powered CCTV deployment in remote oil pipeline site

Every project teaches us something new. This solar-powered CCTV deployment in a remote oil pipeline site reminded me how vital reliable energy is to data integrity and safety.

International Journal of Applied Power Engineering (IJAPE)

This paper introduces a remote system monitoring approach for an efficient solar-powered pump designed as a solution for abandoned oil and gas well. The proposed method utilizes LoRa

Solar-powered Surveillance Systems for Oil Pipeline

Deploy off-grid solar-powered surveillance systems for oil pipeline protection. Discover hybrid solar-wind kits, PTZ cameras, and OEM-ready monitoring

Upgrading Sustainable Pipeline Monitoring with

The findings underscore the ability of piezoelectric power harvesting structures to revolutionize pipeline monitoring, supplying a sustainable and self

Review of energy harvesting techniques in wireless sensor-based

In this paper, we provided a comprehensive review of WSN-based energy harvesting (EH) technologies geared for pipeline monitoring systems in important applications pertaining mainly to

A wireless sensor network based pipeline monitoring system

A performance metric based comparative analysis of the experimental protocols is presented giving rise to a high performance and energy efficient Cross-Layered Protocol Stack. This

An Analytical Framework for Optimizing the Renewable

This paper presents an analytical and experimental framework for designing energy-efficient, self-sustaining pipeline monitoring systems that

Enhancing Security and Efficiency in IoT-Based Oil

This study presents a novel framework for IoT-based oil and gas pipeline monitoring, designed to bolster security, data accuracy, and operational

(PDF) Energy-efficient routing protocol for reliable low-latency

In pipeline integrity management, the Internet of Things (IoT) has revolutionized the area by providing innovative methods for monitoring, maintenance, and operating efficiency.

A Hybrid Flow Energy Harvester to Power an IoT-Based

This study presents a novel energy harvesting device that combines piezoelectric and electromagnetic transduction to extract energy from fluid flow

Energy-efficient routing protocol for reliable low-latency Internet of

The energy model and congestion control mechanism optimize data packets for an energy-efficient and congestion-free network. In PO-IMRP, nodes are aware of their energy status and communicate

A Theoretical Approach to Optimize the Pipeline Data Communication

Overall, data communication and transmission are critical for the oil and gas industry's goals of increasing production efficiency and enhancing safety. This work provides a brief overview of

Developing an IoT-Based System for Real-Time Monitoring and

Adopting an IoT-based system for pipeline monitoring and maintenance offers a range of significant benefits that can drastically improve operational efficiency, enhance safety, and reduce overall

Real-time monitoring and data acquisition using LoRa

This study proposes a wireless communication-based approach that allows for data acquisition and system monitoring of the entire solar system of a

Upgrading Sustainable Pipeline Monitoring with

This study presents the design and implementation of a piezoelectric power harvesting device to capture vibrational energy from pipelines to self

An efficient oil and gas pipeline monitoring systems

Request PDF , An efficient oil and gas pipeline monitoring systems based on wireless sensor networks , Wireless sensor networks (WSN) is considered an effective technique to collect oil

A wireless sensor network based pipeline monitoring system

This paper proposes a Pipeline Monitoring system using the technology of Wireless Sensor Networks. This research involves the development of a Remote Condition Based Monitoring application for Oil

An integrated fluid flow and solar hybrid energy

This study presents a novel hybrid solar and flow energy harvesters (FEHs) designed to power IoT-based wireless sensor systems for digitizing and

Zigbee and Long-Range Architecture Based Monitoring

The Internet of Things (IoT) provides an opportunity for realizing the real-time monitoring system by deploying the IoT-enabled end devices on the oil

Modeling the Performance of a Multi-Hop LoRaWAN

Scenarios of oil pipeline monitoring systems in Saudi Arabia are specified for studying

the proposed multi-hop system's performance. The

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