

Intelligent Communication Power Supply System for Oil Pipeline Monitoring

Article Overview

Intelligent communication power supply systems integrate IoT, SCADA, and hybrid power solutions to enable real-time monitoring, predictive maintenance, and reliable operation of oil pipelines.

Overview

Oil pipelines require continuous monitoring to ensure safety, operational efficiency, and environmental protection. Traditional monitoring methods, relying on manual inspections and periodic SCADA checks, often face limitations such as delayed leak detection, high operational costs, and limited coverage in remote areas (). Intelligent communication power supply systems address these challenges by combining low-power, redundant energy sources with real-time data communication networks to support sensors, controllers, and remote monitoring devices ().

Key Components

- Power Supply Systems
- Hybrid Power Sources: Systems often use solar, wind, or battery backups to ensure uninterrupted operation in remote locations ().
- Redundant Power Design: Independent redundant power supplies maintain continuous operation even if one source fails ().
- Low Power Consumption: Devices are optimized for minimal energy use, extending battery life and reducing maintenance ()....

Article Content

Jun 10, 2026

Smart Pipeline Monitoring Systems for Oil & Gas

With the surge in oil and gas demand, companies must ensure that transportation is efficient, cost-effective, and above all, safe.

Jun 20, 2026

Intelligent Methods for Pipeline Operation and Integrity

Abstract As an important part of the energy transportation system, oil and gas pipelines are developing toward

Jan 08, 2026

Petroleum pipeline monitoring using an internet of things (IoT ...

In this study, we present the use of an internet of things (IoT) analytics platform service to mimic real-time pipeline

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Review on intelligent pipeline technologies: A life cycle perspective

Nowadays, the intelligent transformation of pipeline is still in the initial stage. To accelerate this process, this paper

Jan 19, 2026

Zigbee and Long-Range Architecture Based Monitoring System for Oil ...

Causes of oil pipeline failure. Hybrid Architecture of LoRa and Zigbee modem for pipeline parameters monitoring in

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DEVELOPMENT OF AN INTERNET OF THINGS PIPELINE MONITORING SYSTEM

This paper presents an Internet of Things Pipeline Monitoring System (IoTPMS) for onshore crude oil pipelines. The IoTPMS

Feb 04, 2026

Oil pipeline monitoring using Internet of Things technology

The oil export industry dominates the world's economy and it is highly dependent on oil pipelines. Due to malicious or

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Pipeline Integrity Monitoring and Leak Detection | SLB

Using the latest fiber-optic sensing technology for pinpoint accuracy and continuous 24/7 real-time monitoring, our pipeline integrity

Sep 22, 2025

Artificial Intelligence in Energy Pipelines: Opportunities and Risks

Artificial intelligence (AI) is reshaping the operation and management of energy pipelines that transport oil, natural gas,

Apr 26, 2026

Cyber-Physical System for Pipeline Monitoring as a Component

In order to prevent such situations, it is useful to create a cyber-physical system for pipeline monitoring as part of a

May 30, 2026

Pipeline Integrity Monitoring and Leak Detection | SLB

Pipeline integrity monitoring systems SLB's pipeline integrity monitoring systems—part of the Optiq™ fiber-optic solutions

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The smart pipeline

Our solution delivers seamless connectivity to multiple systems across your pipeline, including pumping stations and/or compressor

Apr 01, 2026

Studying and Realizing the Based-Intelligent IoT System for Pipeline ...

This study investigation into presents a comprehensive the research, design, and implementation of an automated measurement,

Dec 28, 2025

A comprehensive survey on pipeline monitoring technologies ...

Zemenkova et al. (2022) introduced an intelligent monitoring and safety control system for monitoring hydrocarbon

Nov 24, 2025

A framework of smart pipeline system and its application on ...

Here, a framework of a smart pipeline system and its application on multiproduct pipeline network are proposed where

Oct 09, 2025

Oil & Gas Pipeline Monitoring and SCADA Communication Network

The primary objective is to ensure that all communication devices seamlessly connect with field instruments and maintain stable,

Jul 20, 2026

Integrated Oil and Gas (Pipeline) Network Solution-Integrated Pipeline ...

The Integrated Oil and Gas (Pipeline) Network Solution, which integrates optical, IP, and wireless technologies, offers a flexible and

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Smart IoT SCADA System for Hybrid Power Monitoring in Remote

A pipeline network is the most efficient and rapid way to transmit natural gas from source to destination. The smooth

Jul 05, 2026

Petroleum pipeline monitoring using an internet of things ...

Methods of monitoring of pipelines include intermittent appraisal of pipelines, use of pipeline integrity management systems, on-the

Oct 20, 2025

High-precision outdoor integrated power supply for oil pipeline monitoring

High-durability industrial solar power system designed for remote oil & gas, mining, pipelines, and infrastructure monitoring. Supports

Mar 05, 2026

Operation of off-grid power supply system using IoT monitoring

Abstract: An oil and gas pipeline monitoring platform uses internet of things (IoT) to ensure safe operation in remote

Mar 05, 2026

Pipeline Storage and Transportation | Huawei Enterprise

The solution delivers a high recognition rate and works with our intelligent video security system. Together,

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(PDF) Monitoring Oil Pipelines with IoT Technology

Oil pipelines are critical infrastructure for the transportation of petroleum products, and ensuring their safety and

Mar 11, 2026

Smart Pipeline Monitoring System: A Review

Oil pipeline monitoring is having a significant role in minimizing the impact on the environment and humans during

Jul 19, 2026

Oil & Gas Pipeline Monitoring and SCADA Communication Network

Because oil & gas pipelines are one of the ways that both oil and gas are transported, automation systems play an important role.

Aug 28, 2025

Implementing IoT Solutions for Pipeline Monitoring

Discover how IoT solutions revolutionize pipeline monitoring in the oil and gas industry. This detailed case

Feb 25, 2026

Oil and Gas Pipeline Automation

Using intuitive engineering tools and modern industrial technology, we design and implement solutions that

Apr 28, 2026

The smart pipeline

In pipeline transportation, it's critical that system operators have access to information about motor status and health. Intelligent

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