**Literature Survey**

**1.IOT BASED INDUSTRIAL** **HAZARDOUS AREAMONITORING AND CONTROLLING SYSTEM**

**Author:** **RUPAYAN PASAI**

**GOUTAM REDDYTRA**

**SHASWAT**

The Internet of Things (IoT) in industries has created a new revolution in industries. IoT inindustry has given rise to the term “INDUSTRY 4.0” where systems are connected to eachother over the internet and can communicate with each other to take necessary decisions(also called M2M communication) through artificial intelligence. In this paper, we shalldesign a system which will automatically control and monitor the industrial applications andalso allow the user to control the application from anywhere in the world. Having controlover the applications over the internet is one of the best ways to deal with industrialapplications.Safety from leaking of raw gas and fire are the most important requirements of industriessecurity systems for people. A traditional security system gives the signals in terms of alarm

**2.A Hazardous Area Personal Monitoring System for Operators in Gas Depots and Storage Tanks**

Author: **Elia Landi, Lorenzo Parri\*, Ada Fort, Marco Mugnaini, Valerio Vignoli, Dinesh Tamang, Marco Tani**

**This work describes a smart monitoring system for the detection of flammable gas residues, toxic gases, and reduced oxygen concentrations. The proposed system aims at reducing the risk of fires and explosions, thus increasing the safety of workers engaged in maintenance or inspection of gas storages. The monitoring system is based on compact battery-powered wearable sensor nodes containing sensors for LPG flammable compounds, toxic gases, and oxygen. The designed system can also increase plants safety by incorporating an intrusion detection system, which prevents unauthorized access to safety-critical areas to prevent accidents. The sensor nodes transmit data through a LoRa low power radio channel to a remote server whereas they allow for the identification of the operators for the access to restricted areas exploiting a Bluetooth Low Energy (BLE) proximity technique.**

**3.Smart Industrial IoT Monitoring and Control System Based on UAV and Cloud Computing Applied to a Concrete Plant**

**Author:** **Marouane Salhaoui**

**Unmanned aerial vehicles (UAVs) are now considered one of the best remote sensing techniques for gathering data over large areas. They are now being used in the industry sector as sensing tools for proactively solving or preventing many issues, besides quantifying production and helping to make decisions. UAVs are a highly consistent technological platform for efficient and cost-effective data collection and event monitoring. The industrial Internet of things (IIoT) sends data from systems that monitor and control the physical world to data processing systems that cloud computing has shown to be important tools for meeting processing requirements. In fog computing, the IoT gateway links different objects to the internet. It can operate as a joint interface for different networks and support different communication protocols. A great deal of effort has been put into developing UAVs and multi-UAV systems. This paper introduces a smart IIoT monitoring and control system based on an unmanned aerial vehicle that uses cloud computing services and exploits fog computing as the bridge between IIoT layers. Its novelty lies in the fact that the UAV is automatically integrated into an industrial control system through an IoT gateway platform, while UAV photos are systematically and instantly computed and analyzed in the cloud. Visual supervision of the plant by drones and cloud services is integrated in real-time into the control loop of the industrial control system. As a proof of concept, the platform was used in a case study in an industrial concrete plant. The results obtained clearly illustrate the feasibility of the proposed platform in providing a reliable and efficient system for UAV remote control to improve product quality and reduce waste. For this, we studied the communication latency between the different IIoT layers in different IoT gateways**

# 4. Smart Sensors for Hazardous Areas

# Author: Teijo Karna

**Smart wireless sensors for rotating machines are deployed in thousands of installations worldwide. But producing a cost-effective and easy-to-deploy sensor solution for motors and pumps operating in hazardous areas, is a challenge. These are areas where the presence of flammable vapor or gases requires special precautions to prevent the risk of explosion. The lack of such sensors has limited the range of machinery that could be remotely monitored and has left a huge gap in the ability to gain meaningful information on the health and performance of motors that operate equipment such as pumps, fans, and compressors. It has also resulted in an increased safety risk for operators who need to venture into hazardous areas of plants to carry out condition monitoring of equipment.**

**However, a new generation of smart sensors has been developed by ABB, which are designed especially for rotating equipment operating in explosive atmospheres. This enables operators in industries like chemical, oil, and gas to benefit from cost-effective condition monitoring in a wide variety of demanding applications**.

# 5. Design of an Industrial IoT-Based Monitoring System for Power Substations

# Author: Long Zhao

# The Internet of Things (IoT) concept allows objects to share data through wired or wireless connections for communication purposes. The Industrial Internet of Things (IIoT) is an extended concept of IoT that refers to an integration of data acquisition, communication, and processing on a real-time network. Currently, IIoT has been involved with the development of smart grids in many applications. As the operation of power systems is extremely time-critical, low-latency communication needs to be considered for most control and monitoring applications. Real-time capability of IoT is considered as a key feature for monitoring and control applications of power systems. Therefore, system operators can use the real-time monitoring system to provide better decisions for both technical and financial-related matters. In this paper, a high-speed IIoT-based monitoring system with recording functions is developed and implemented for a power system substation. Due to the high reliability and processing speed of FPGAs, an FPGA-embedded controller is adopted in this system. The IoT platform also provides remote visualization for system operators in real time. This paper mainly aims to provide a practical application that was implemented and tested in a real power substation. The system incorporates the features of an IoT platform with the needs of high-speed real-time applications while using a single high-resolution time source as the reference for both steady-state and transient conditions.