LICENSING OPPORTUNITY: SMART FIRE HOSE FLOW MONITORING SYSTEM

DESCRIPTION

Problem

Firefighters often rely on pump pressure readings to assess water flow, which may not reveal hose blockages or damage. Traditional monitoring methods require manual inspections or additional equipment, slowing response times. This invention provides accurate, real-time flow measurements without disrupting firefighting operations. By identifying flow issues early, it enhances firefighter safety and efficiency. It also helps optimize water usage, ensuring resources are effectively deployed during emergencies.

Invention

This invention introduces a wireless sensor network to measure water flow rate in fire hoses, enhancing firefighting efficiency. It uses piezoelectric accelerometers attached externally to detect vibrations caused by flowing water. These signals are wirelessly transmitted to a base station, where they are analyzed to determine real-time flow rates. The system provides instant feedback without requiring pressure gauges or manual checks. It improves situational awareness for firefighters, helping them detect hose blockages, damage, or low flow conditions.

BENEFITS

Commercial Application

Fire departments can integrate this system into their equipment to improve firefighting operations. Industrial sectors using flexible hoses, such as chemical processing and irrigation, can adopt this technology for better flow monitoring. Emergency response units can leverage it to ensure reliable water distribution during disaster relief efforts. Utility companies might use it to detect leaks or inefficiencies in municipal water systems. Additionally, military and maritime industries could find value in its ability to monitor hose integrity in demanding environments.

Competitive Advantage

This system offers wireless, real-time monitoring without requiring physical access to the hose interior. It provides instant data transmission, reducing reliance on manual checks. The use of non-intrusive accelerometers ensures easy installation without altering hose design. It enhances firefighter safety by quickly identifying flow disruptions, preventing delays in emergency situations. Compared to existing solutions, it is cost-effective, lightweight, and adaptable to different hose types.

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