

How Remote Sensors Help Prevent Potentially Dangerous Situations ~

UNITED KINGDOM, December 18, 2024 /EINPresswire.com/ -- Monitoring temperature is crucial in the nuclear industry. If a reactor or fuel rod's temperature rises to a potentially dangerous level, it runs the risk of fires and other catastrophic events. Having unexpected high temperatures can cause environmental and health risks as well as unplanned downtime, preventing essential work being conducted, therefore knowing about a potentially dangerous situation arising before it takes hold is pivotal for both safety and business. Here, Gary Bradshaw, director at [remote monitoring specialist](#) Omniflex, highlights the important role remote monitoring technology plays in the nuclear sector.

A nuclear facility has several applications where temperature monitoring is important. This includes aspects that stem from the reactors and spent fuel rods, dry stores and, even, the reactor core.

It's important that any temperature measurement is accurate as even minor inaccuracies can lead to significant risks, including overheating or mismanagement of a cooling system. Reliability is essential so no anomalies go undetected, especially when potentially hazardous equipment is involved.

The centre of spent fuel rods, for example, can be as hot as 1,000 degrees Celsius when they are removed. They are radioactive and take several years to cool. Though they typically go through a vitrification process to encapsulate them in glass after removal and then stored in concrete, spent fuel rods still need to be monitored for many years given their hazardous nature, as their temperature can still increase to dangerous levels.

This, along with the radiation exposure, highlights the harsh conditions that must be withstood by any technology when monitoring nuclear sites. Some nuclear facilities have a lifespan of over 150 years before radioactive material can be removed, so whatever may have been developed for a nuclear plant in the 1990s needs to last to the 2140s so products supplied to do the monitoring have to last for decades and not become obsolete.

The Reactors, spent fuel rods, dry stores and other facilities requiring temperature monitoring are usually monitored with thermocouple / RTD sensors wired to a remote monitoring system. This remote monitoring system accepts the signal from the temperature sensors, ensuring real time temperature measurements are accurately taken so that any out of limit alarms are

immediately alerted to the operators to act before it reaches a critical stage.

This applies to any facility at a nuclear site. Remote monitoring technology can keep track of any temperature data and feed back into control rooms in real time – ensuring those facilities can stay ahead of any potentially dangerous situation.

The data can feed into alarm annunciators or SCADA PC-based monitoring software, which can flag a potentially dangerously high temperature to the control room at a nuclear facility so any potentially abnormal conditions can be acted upon. In many instances the SCADA monitoring system also provides historical logging for post event analysis and reporting.

For example, Omniflex's Maxiflex IO system has dedicated temperature modules which have been designed specifically for accurate temperature monitoring. Each input is fully isolated and can take data from any type of thermocouple or RTD, they have inbuilt CJC (cold junction compensation) and can generate rate of rise alarm profiles as well as providing four independent trip points. Each trip point can then generate a digital output which can be displayed on an alarm annunciator, or it could be networked via ethernet, CONET, or wirelessly back to the control room to be displayed on a SCADA system. This allows all temperature data to be logged in real time and historically, providing a bigger picture of the environment which can help identify any potential underlying problems.

Omniflex's specialist remote temperature monitoring solutions have been used for reactors, fuel rods and other facilities within the nuclear sector, and are designed for all aspects of temperature monitoring. Its Alarm Annunciator product range has been through the Nuclear SIL process – EMPHASIS – where products are subject to stringent studies and tests as they are assessed through the IEC 61508 Functional Safety Standard.

By implementing advanced remote monitoring solutions, you can ensure real-time data tracking and rapid response to critical temperature changes, safeguarding health, safety and operational efficiency.

Omniflex have been manufacturing remote monitoring and alarm annunciator systems since 1965 and all Omniflex products have a lifetime support policy which ensures it will continue to manufacture and support its products regardless of their age for as long as they are still operational and in service.

[Contact Omniflex](#) today to learn how its innovative solutions can help you stay ahead of potential risks and ensure a safer, more efficient nuclear facility.

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About Omniflex: Omniflex designs and manufactures electronic products and systems for the automation and control industry worldwide, specialising in remote monitoring. This includes industrial networking, remote I/O systems, utilities monitoring, process automation systems, signal conditioning, and alarm and event management.

Omniflex has offices in South Africa, United Kingdom and Australia, and the company's products are sold on five continents through a range of carefully selected solutions partners.

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