

TECH OFFER

Real-Time Stability Monitoring of Temporary Support System



KEY INFORMATION

TECHNOLOGY CATEGORY:

Infocomm - Smart Cities

Electronics - Sensors & Instrumentation

TECHNOLOGY READINESS LEVEL (TRL): **TRL9**

COUNTRY: **HONG KONG**

ID NUMBER: **TO175448**

OVERVIEW

Every high-rise building construction requires the installation and maintenance of temporary support system, like falsework and scaffolds, to ensure work can be carried out effectively and safely. Due to the long project and deployment periods, these tall falsework systems might be subjected to various dynamic mechanical impacts, such as prolonged vibration from machineries and piling works overloading, which might lead in displacement and tilting of such structure which are not visible. Overtime, this affects the structural integrity of the support system, potentially result in buckling or catastrophic failure.

The technology owner has developed a patented IOT-based solution for providing immediate visibility on the status of the temporary support system by measuring the load and inclination of vertical members in addition to detection uneven load distributions. This enables the solution to detect early and prevent potential overloading and deviations, which can lead to buckling and collapse. Upon detection of abnormalities, the solution transmits critical data instantly to the cloud platform, enabling the safety team to take precautions to ensure that the support frames remain secure for upcoming site work. The battery-based solution is easy to install and is designed for outdoor, rugged construction sites to ensure continuous operation.

For more information, contact techscout@ipi-singapore.org

www.ipi-singapore.org

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TECHNOLOGY FEATURES & SPECIFICATIONS

This technology solution, in a compact device, can be deployed and utilised quickly at any temporary support system using typical scaffolding equipment with other functionalities such as:

- Real-time wireless monitoring utilising integrated force sensors and inclination sensors
- Quantitative real-time loading and inclination update in real-time via cloud dashboard for remote visibility
- Battery operated with a full charge lasting for up to 4 weeks and charging is via USB type-C
- IP-rated enclosure suitable for rugged outdoor environment and resistant to dust, water, fire and impact
- Plug-and-play deployment with no technical expertise required for installation
- Scalable for large scale and complex work site

POTENTIAL APPLICATIONS

The technology solution is purpose-built for typical temporary support systems, such as scaffolds, whereby these temporary support structures are critical to safety and project stability. Hence, any application requiring the installation of temporary support systems will greatly benefit from the deployment of such solution at site.

The technology solution has been successfully tested and deployed in various construction sites in Hong Kong. The owner is currently seeking industrial players who utilises temporary support system, such as contractors, developers and scaffolding suppliers, looking to enhance site safety, improve operational visibility and reduce risk.

UNIQUE VALUE PROPOSITION

This patented device solution provides continuous real-time monitoring capability for both load and inclination of temporary support structures, enabling early detection of uneven load distribution, tilt deviations that potentially leads to buckling and collapse. By automating an existing manual visual process within construction sites, it provides scalability while having immediate visibility remotely. With its compact and durable form factor, it ensures normal operation when in rugged outdoor environments while it's plug-and-play setup makes it quick to deploy by anyone. With this solution, it empowers teams at site by transforming current reactive checks on temporary support system to a proactive, preventive management for safety.