Driving the future of smart construction through innovation and technology

推动创新科技应用 引领智慧建筑未来

Adhering to the belief of "Building Homes with Heart", SHKP is committed to developing high-quality properties while continuously innovating to enhance service quality. Under the vertical integration management strategy, the Group's construction division, Sanfield (Management) Limited, has actively pioneered construction research and development over the years, introducing and developing cutting-edge innovative technologies that enhance safety and efficiency, setting a benchmark for smart construction that balances safety, efficiency and sustainability.

- Contribute to the industry by achieving breakthroughs
- Promote automated construction to improve efficiency and quality
- Improve construction safety and reduce accidents
- Boost economic efficiency to create greater value for the Group and society
- Achieve smart site management and spearhead the upgrading and transformation of the industry

Advancing construction technologies to achieve five major goals

As rapid technological advancements reshape various industries, the construction sector faces new challenges. In response, SCIL-Sanfield Construction Innovations Limited and Lighthouse Inno-Lab Limited were established to develop innovative construction technology solutions for achieving five core objectives:

In recent years, Sanfield has achieved continuous success in technological innovation, integrating advanced technologies including the Internet of Things (IoT), artificial intelligence (AI) and big data into its projects. These initiatives have enabled smarter, more convenient and energy-efficient site management, which not only enhances safety and efficiency but also earns recognition from the industry. Sanfield remains committed to collaborating with its industry peers to contribute to transforming Hong Kong into a liveable, smart, and environmentally friendly metropolis.

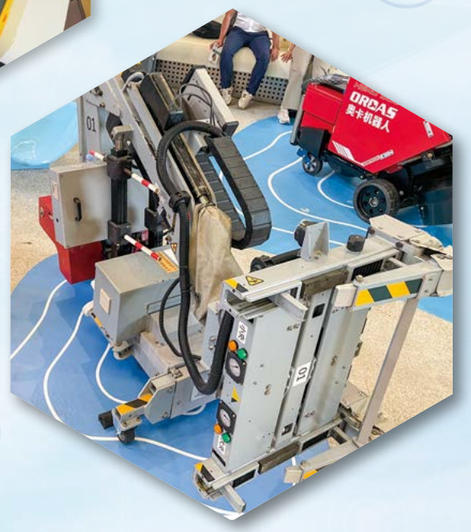
新地秉持“以心建家”的理念，致力发展优质物业，更不断创新以提升服务品质。集团旗下建筑部门新辉（建筑管理）有限公司，多年来配合集团“一条龙”的垂直管理模式，积极开拓建筑研发领域，引入和发展创新科技，全面提升建筑安全与施工效率，为业界树立了一个兼顾安全、高效、环保的智慧工地典范。

- 突破行业界限，为业界作出贡献
- 推动自动化建筑，提升施工效率与品质
- 提升建筑安全，减少工地意外发生
- 提升经济效益，为集团与社会创造更多价值
- 实现智能工地管理，引领行业升级转型

推动建筑创科 实现五大目标

科技急速发展，改变各行各业的生态，建筑行业也迎来不少新挑战。新辉有见及此，特别成立了新辉建筑创科有限公司和Lighthouse Inno-Lab Limited，专门研发建筑创新科技解决方案，力求实现五大目标，分别是：

近年新辉在创科发展不断取得成果，多个研发项目引入物联网(IoT)、人工智能(AI)及大数据等先进技术，并在辖下工地广泛应用，配合安全而严谨的施工系统，实现更智能、更便捷、更节能的工地管理，提升工地安全和施工效率，成效获得业界认可。新辉会持续与同业交流和合作，共同为建设香港成为宜居、智慧和环保之都作出贡献。



Achieving industry breakthroughs: Hong Kong's first smart scaffolding monitoring system, TIE.Ai

突破行业界限　全港首个智能棚架监测系统TIE.Ai

Scaffolding is a critical part of the construction process. But traditional safety inspections rely on manual checks, which are time consuming and labour intensive. Hong Kong's first smart scaffolding monitoring system, TIE.Ai developed by Sanfield Construction Innovations, leverages AI, IoT and precision sensors to enable real-time monitoring, addressing the inefficiencies and delays of traditional manual inspections and significantly improving construction site safety.

TIE.Ai provides real-time monitoring of bamboo, metal and mixed scaffolds, featuring precise tilt detection, tension monitoring, and wall tie tamper-detection sensors. It also comes with a mobile app that provides reports using 3D visualization and Building Information Modelling (BIM). Unaffected by weather or time constraints, the system operates 24/7 and is capable of detecting risks that may go undetected during manual inspections.

TIE.Ai has been piloted at the Group's residential project in Kwu Tung North and has earned recognition from construction professionals, scaffolding experts and trade unions.

棚架是建筑工程的重要一环。过往棚架的安全监察倚赖人手巡查，花费不少时间和人力。由新辉建筑创科自主研发的全港首个智能棚架监测系统TIE.Ai，结合人工智能、物联网与精密传感技术，实时监测棚架，解决传统人工巡查效率低、隐患发现滞后的缺点，显著提升工地安全。

TIE.Ai适用于竹棚、金属棚及混合棚架，通过传感器实时监测并分析棚架的连墙器状态、倾斜度以及受力状况，以及通过手机应用程序，提供具备可视化3D模型数据及建筑信息模型(BIM)整合功能的报告，及时作出预警或发出警报。系统不受天气影响及时间限制，全天候侦测肉眼难以察觉的潜在风险。

TIE.Ai已于集团新界古洞北住宅项目率先试行，获建造业专业人士、棚架专家及工会的广泛认可与高度肯定，进一步推动香港建造业在安全创新上持续迈进。

Promoting automated construction: Precast Partition Installation Robot

推动自动化建筑　预制板安装机器人

The Precast Partition Installation Robot, developed by Sanfield Construction Innovation, leverages advanced technologies from different fields to achieve the smart installation of precast concrete panels.

The robot features a specialized robotic arm and gripper system to achieve multi-axis synchronous control, allowing operators to precisely adjust the arm for grasping and positioning panels at complex angles. This makes lifting and installing precast panels safe, efficient and precise. In addition, the robot is equipped with LiDAR and visual recognition systems, enabling real-time scanning of the construction environment and the generation of 3D spatial models. This ensures safe distances from surrounding structures and helps avoid collisions. The robot is also applicable in high-altitude and confined spaces where manual operations are challenging.

The robot not only facilitates the development of automated construction, but also improves the working environment. This helps encourage young talent to join the profession, thereby enhancing sustainability of the industry.

新辉建筑创科自主研发“预制板安装机器人”，融合多个领域的创新技术，实现了建筑施工中预制混凝土板的智慧化安装。

该机器人核心设计在于特殊的机械臂及抓手系统，实现多轴同步控制。操作员可准确调节机械手臂姿态，完成复杂角度的板材抓取与定位，让提举及安装预制板的工序变得安全、高效及精准。此外，机器人配备光学雷达与视觉辨识系统，能实时扫描施工环境并产生三维空间模型，确保作业过程中与周边结构保持安全距离，避免碰撞风险，更可应用在高空、狭窄空间等人工难以操作的场景。

该机器人不仅推动自动化建筑发展，而且有助改善工作环境，对吸引更多年轻人入行、提升行业的可持续性也有所帮助。

The Precast Partition Installation Robot wins a merit award at the Construction Robot Competition and Exhibition
预制板安装机器人在建筑机械人比赛暨展览中荣获优异奖

Enhancing operational safety: Unmanned Tower Crane System
提升作业安全　遥控智能天秤系统

Cabin Monitor
驾舱屏幕
Enables operators to clearly view the lifting area and receive warnings
驾舱配置屏幕，操作人员可清晰看见吊运区情况，并收到警示

AI-powered hook monitoring camera
AI驱动吊运监控镜头
Provides clear images of lifting zone, identifies ground workers and automatically generates virtual danger zones
提供清晰的吊运区影像，识别地面工作人员，并自动生成危险区域

AI Lift Smart Hook
AI Lift智能吊钩
Utilizes LiDAR and high-precision positioning to detect the contours of lifted objects and monitor their height above ground; Triggers audible and visual warnings to alert ground workers
利用激光雷达和高精度定位，识别吊运重物轮廓及侦测离地高度，并配备声光警示地面工作人员

Lighthouse Inno-Lab has developed its flagship product—the Unmanned Tower Crane (UMTC) System—transforming traditional on-site crane operations by enabling remote and smart control. The system provides operators with optimal lifting routes and precise lifting angles, significantly improving operational efficiency.

The most advanced component in the entire system is the “AI Lift” Tower Crane Lifting Monitoring System. Integrating an AI-powered hook-monitoring camera, smart hooks and a cabin monitor, AI Lift delivers automated pre-emptive warnings, accurate hazardous zone detection and timely notifications. When personnel are detected within the hoisting zone during lifting operations, AI Lift triggers audible and visual warnings. Operators in the cabin can view ground conditions and receive warnings via the monitor, effectively preventing accidents.

The UMTC system shone at the inaugural Construction Robot Competition and Exhibition organized by the Construction Industry Council, winning a Champion of Innovation award. In addition, as an approved solution under the Construction Innovation and Technology Fund, AI Lift has enabled numerous project sites to secure the Safe Smart Site System (4S) Label, raising the bar for safety and operational excellence in tower crane lifting.

由Lighthouse Inno-Lab自主研发的旗舰产品 — 遥控智能天秤系统，将传统的天秤现场驾驶转为遥距智能操控，为操作员提供最佳吊运路线建议及精准吊运角度控制功能，大大提升工作效益。

整套系统中，以“AI Lift”智能吊钩部分发展最为成熟。AI Lift通过整合AI驱动吊运监控镜头、智能吊钩及驾舱屏幕，提供自动预警、危险区域侦测及多重警报功能。起吊重物时当有人处于吊运区内，智能吊钩会产生声光警示，驾舱内的操作人员也能通过屏幕上看见地面状况及收到警示，有效预防吊运期间的人为意外。

遥控智能天秤系统在建造业议会举办的“建筑机械人比赛暨展览”中脱颖而出，荣获“创新之星”大奖。此外，AI Lift获建造业创科基金纳入预先批核名单项目，成功协助多个工地取得安全智能工地系统(4S)标签，显著提升吊运作业安全。

Boosting economic efficiency: temporary steel structure aerial work platform
提升经济效益　临时钢结构高空工作台

Exceptional high-altitude construction capabilities are essential for creating a vibrant city skyline. During the construction of the Group's residential project Cullinan Sky in the city centre of Kai Tak, the construction team was required to build work platforms to support the building of residential units on higher floors, sky gardens and refuge floors. The platforms were suspended above lower-floor units at a height of approximately 28 storeys and in between five buildings. Traditional methods for constructing these platforms were time-consuming and costly, often offering limited support for subsequent exterior wall construction. Moreover, they posed safety risks for personnel working at height.

In light of these challenges, Sanfield adopted a safer, more efficient and practical "temporary steel structure aerial work platform". To set up this platform, the team utilised a precise lifting system to hoist large, pre-fabricated steel components to the designated floors. The system featured a segmented cantilever beam design, facilitating installation and safe dismantling in confined high-altitude spaces. This solution saved a significant amount of time and costs, reduced the risks associated with high-altitude operations, and facilitated subsequent exterior wall installations, achieving a win-win outcome in terms of both technical and cost benefits.

要筑起繁华的天际线，建筑团队需要拥有高水平的高空施工能力。新辉在兴建启德城中心住宅项目天玺 · 天的过程中，为了建造高层住宅单位、空中花园及避难层，团队需在约28层楼的高处、五座楼宇的夹缝之间建造工作台。但传统方法不仅耗时且成本高，难以配合建造后续外墙工程的需要，工人在高空作业时更存在安全风险。

为克服这些挑战，新辉引入更安全、高效且实用性强的"临时钢结构高空工作台"。团队利用精密的吊升系统，将预制的大型钢结构组件吊运至指定楼层，并采用有利于高空狭窄空间作业的分段式悬臂梁设计，方便在高空进行安装与后续安全拆除。这方案节省了大量时间与成本，降低了高空作业的风险，为后续外墙饰面安装提供便利，展现了技术与经济效益上的双赢。

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详情请观看视频

Achieving smart site management: Advanced Confined Space Safety Monitoring System
实现智能工地管理　全功能密闭空间无线监测系统

Confined space operations have long been considered high-risk endeavours. Sanfield Construction Innovation developed the "SCIL CS900", an advanced confined space safety monitoring system, which leverages long-range (LoRa) technology and wireless networks to achieve real-time monitoring and emergency response in confined spaces. The SCIL CS900 system includes a portable station, a gas monitor, a high-definition camera and a smart watch. It is capable of detecting six gases and monitoring temperature, humidity, PM2.5, wind speed and water level. This allows workers inside and outside confined spaces to access gas data and live footage in real time. In an emergency, workers can trigger an audible and visual alarm with a single click and send instant notifications via WhatsApp, enhancing safety during confined space operations.

密闭空间作业长期以来被视为高风险工作。新辉建筑创科研发全功能密闭空间无线监测系统"SCIL CS900"，利用远程(LoRa)技术和无线网络，实现密闭空间的实时监控与应急响应。SCIL CS900系统包括便携机站、气体监测仪、高清镜头与智能手表，支持检测六种气体，并能监控温度、湿度、PM2.5、风速和水位，让在密闭空间内外的工人均可随时查看气体数据与现场影片。在紧急情况下，工人可一键触发声光警报，并通过WhatsApp立即发送通知，加强对密闭空间作业工人的安全保障。