

Work Theme B: Structural engineering on modern steel construction

B2 Application of high performance steel materials Q690 to Q960 in super high-rise commercial buildings

Project Title:

b) “Visually guided robot welding system for on-site application”

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Project Outline:

According to a study by the Construction Industry Council (CIC), there is and will be a shortage of 10,000 to 15,000 skilled workers from a range of areas of expertise, over the next four years or more. Currently, the greatest need will be for skilled welders, plasterer terrazzo, granolithic workers, carpenters and E&M mechanics. Hence, there is an urgent need to promote advanced construction technology using smart robotic system.

This project aims to integrate the existing technologies of “Artificial Intelligence”, “Robotic Kinematics”, “Robot Operating System”, and “Gas Shielded Arc Welding” to establish a “Visually guided robot welding system for on-site application”. The major objectives of this project are listed as follows:

1. To increase the productivity –
Once we can let the robot to automatically locate and identify the welding track a lot of time-consuming alignment work can be eliminated;
2. To improve industrial safety –
When the robot takes up the tracking of the welding groove the operator do not need to watch the welding arc and help to reduce any eye injuries;
3. To establish a stable and consistent quality control of welding –
A robot is capable of producing repeatable and steady welding movements that no human operator can match;
4. Raise the welding industry to a higher level of professionalism that people can trust and rely on.