



香港城市大學
City University of Hong Kong

Collaborative Student Project: Solving MMM (Men-Material-Machinery) Problems by Application of RFID in Construction Sites

Project Number: 6000545

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Abstract:

Radio frequency identification (RFID) technology is currently being used in such areas as agriculture, athletics, manufacturing, security and law enforcement, and transportation, but few applications have been developed that are related to fully coverage of the civil and building construction sites in Hong Kong. Especially no application considered for underground construction (deep tunnel/ confined space, etc.), where mostly having no or with only very weak signal by proper communication technology. Together with the problems of intensive labour and material logistics, construction site safety, lack of standardisation, additional costs of implementation, slow technology development and deployment risks, and the lack of skilled labour are all contributors currently preventing the adoption of new RFID technologies in the construction industry in Hong Kong.

This TDG project with ACE student collaboration propose to, innovatively, integrate some main construction processes for applying RFID in proposed Total Project Management (TPM) at construction site area. A large number of scenarios (e.g. working in confined spaces) will be formulated but for better utilize, they will be distilled into representative ones including management of Materials, Men (labour and other personnel), and Machinery (MMM). It is known that that up to 70% of the overall construction cost is direct cost relating to materials, men, and machinery. The student project also, with supported by our TDG project team, can equip with innovative senses (e.g. using Genetic Algorithm-based Model to optimize the multi-level layout planning of material logistics) and matched with Near Field Communication technology, NFC is to manage materials, men, and machinery in more effective, safe, fast manner and with higher productivity by one single platform. And together to bring about better creativity and competitiveness to ACE students!

The final collaborative report submission should be validated by real projects with the helps of several construction companies (e.g. Shui On Construction Co. Ltd.) for test, seek improvements and maintain its sustainability to next stage.