

立管偵察機
Smart Quadcopter

團隊背景 Background of the Team

	團隊名稱 Team Name	立管偵察機 Smart Quadcopter
	成立日期 Date of Formation	2014年1月 January 2014
	業務單位 Business Unit	客戶維修服務部 Customer Maintenance Services Department
	部門促進員 Team Facilitator	楊培正 Kenny Yeung
	隊長 Team Leader	鄧志浩 David Tang
	團隊 Team Members	陳志成 郭子卓 黃永忠 鄭建松 陳紹基 陳鎮陞 梁俊喬 Chan Chi Shing Kwok Tsz Cheuk Wong Wing Chung Cheng Kin Chung Chan Siu Kei Chan Chun Sing Leung Chun Kiu

背景 Background

煤氣立管是安裝於大廈外牆的喉管，用以供應煤氣給每一位客戶。煤氣公司自2010年開始使用立管機械人檢查外牆喉管，但截至2013年，全年只有55幢目標大廈利用了機械人檢查立管，而其它大廈仍需要配合其大維修和利用棚架進行檢查。

Gas service risers are gas pipes installed outside the façade of a building supplying gas to our customers. Since 2010, Riser Inspection Robot has been used to inspect risers. However, in 2013, the Robot was applied to only 55 targeted buildings. For other buildings under renovation, bamboo scaffolding is still used for service riser inspection.

問題成因 Cause of the Problem

- 組裝立管檢查機械人及作業時間較長；
- 操作前需註冊專業工程師檢測立管檢查機械人之吊架；
- 大廈一般相隔20至30年才搭建棚架進行大維修，未能配合每18個月一次之煤氣定期安全檢查。

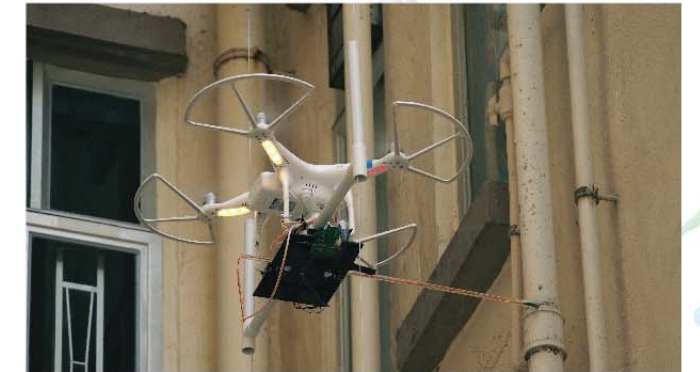
- Long set up and operating time for the Riser Inspection Robot;
- A Registered Professional Engineer for inspection on the hanger for the Riser Inspection Robot is required before works;
- Building renovation normally takes places once every 20 to 30 years; it does not suit our 18-month Regular Safety Inspection cycle.

解決方法 Solution

- 1.) 在大廈使用遙控錄像直升機並加裝氣體探測儀替代以竹搭棚架或立管機械人進行銹蝕立管及分支喉管檢查。
- 1.) Using a quadcopter equipped with a video camera and a gas detector instead of using scaffolding or the Riser Inspection Robot for inspection of corroded service main and lateral pipes of buildings.
- 2.) 在大廈天台安裝一個方便和靈活的支架，並利用一組鋼索引導遙控直升機沿立管垂直上落。
- 2.) Installing a flexible supporting frame at the rooftop and using a pair of wires to guide the quadcopter moving upward and downward.

成果及效益 Achievement & Benefit

- 每年額外更換銹蝕喉管得益HK\$660,660
- Annual additional profit for corroded service pipe replacement is HK\$660,660
- 減少非煤氣客戶漏氣風險
- Reduce the risk of gas leakage at non-towngas users.
- 減少於棚架高空工作的風險
- Lessen the risk of working at height on scaffolding
- 降低耗電量及碳排放
- Reduce the power consumption and carbon emission
- 提升公司安全及專業形象
- Promote Company safety and professional image


 活動支架
Different types of Hanger

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