

東涌新市鎮擴展 Tung Chung New Town Extension

歡迎參閱第二十五期東涌新市鎮擴展工程通訊，本通訊將介紹鋼管焊接機械人，並提供工程進度及相關資訊。

Welcome to our twenty fifth issue of the newsletter of Tung Chung New Town Extension. This issue will introduce Robotic Steel Pipe Welding Machine, the progress of works and relevant information.

鋼管焊接機械人－工程界的得力助手

"Robotic Steel Pipe Welding Machine - A Valuable Assistant in the Construction Industry"

東涌新市鎮擴展計劃預期將會容納約184,000人口，工程包括鋪設食水管道，連接東涌新市鎮擴展填海範圍及小蠔灣食水配水庫，為新市鎮的居民提供食水。

Watermains are to be laid under the Tung Chung New Town Extension (TCNTE) project, a new town development with an anticipated population of about 184,000. The watermains will be connecting TCNTE water supply system to Siu Ho Wan Fresh Water Service Reservoir, supplying freshwater for the population at the new town.

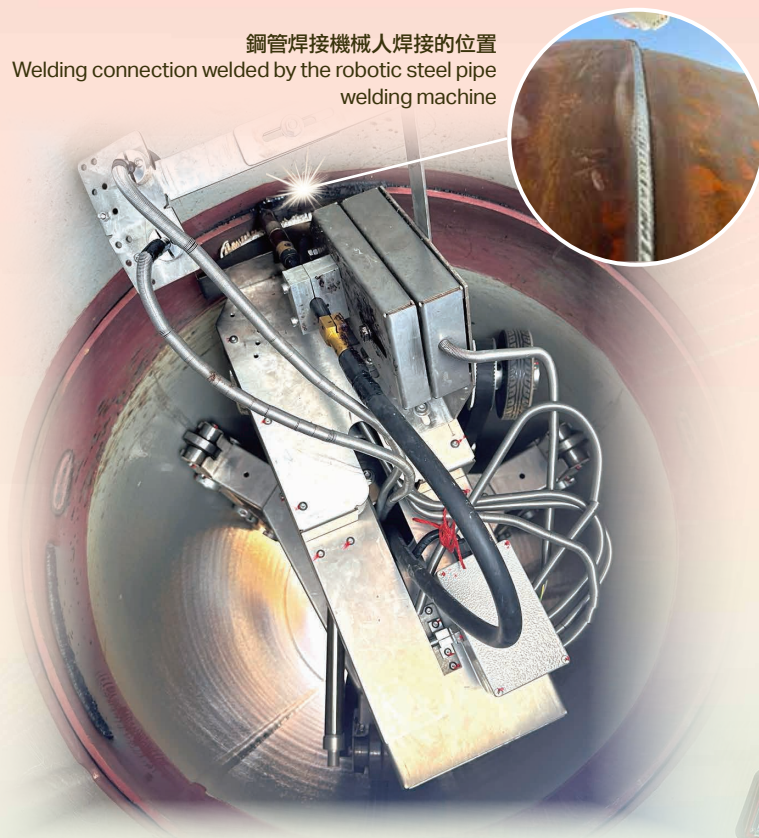


傳統上，用作鋪設食水管道的鋼管會由焊接工人焊接起來。除了外部焊接，直徑0.7米或以上的鋼管額外需要內部焊接。當進行內部焊接工序時，焊接工人需要進入通風較差的管道內工作。管道內空間狹窄，焊接令管道內溫度提升，並存在火警和光輻射的危害，對工人帶來一定的風險。

Traditionally, steel pipes used for these watermains are welded manually by welders. In addition to external welding, internal welding is also required for pipes with diameter larger than 0.7m. During internal welding, the workers need to enter into the pipe with relatively poor air circulation. The limited working space inside the pipes with high temperature due to welding, coupled with risks of fire and radiation, imposes certain risks to the workers.

為改善工人的工作環境及提升工地安全，東涌新市鎮擴展計劃工程團隊研發了新型鋼管焊接機械人。該機械人取代人手燒焊，大大減少工人在水管內工作的時間。鋼管焊接機械人利用磁輪的附著和牽引作用來沿著水管金屬表面的指定軌道自動移動，並進行焊接，大大提高水管焊接工序的效率、安全性和品質及藉此提升工地安全。

To improve the working environment of workers and enhance the site safety, TCNTE project team has developed the novel robotic steel pipe welding machine. This machine can replace manual welding and thus reducing the time of the workers staying inside the water pipe. The robotic steel pipe welding machine uses the adhesion and traction of magnetic wheels to automatically move along the specified path on the steel pipe's metal surface and perform the welding process. This greatly enhances the efficiency, safety and quality of the welding process, and thus enhance the safety of the works site.



鋼管焊接機械人焊接的位置
Welding connection welded by the robotic steel pipe welding machine

提升作業安全 Enhanced Operation Safety

燒焊作業一直是建造業中其中一項高危工序，存在著灼傷、火警等各種安全隱患。然而，鋼管焊接機械人可讓燒焊工人遠離高危的作業現場，大幅降低工人受傷的機會。

Welding operation has always been one of the high risk processes in the construction industry, with various safety risks such as burns and fire hazards. Robotic welding, however, keeps the welder away from the high-risk works area and hence can greatly reduce the risk of injury.

鋼管焊接機械人沿著指定軌道自動行駛進行焊接工序
The robotic steel pipe welding machine travels automatically along designated track to perform the welding works

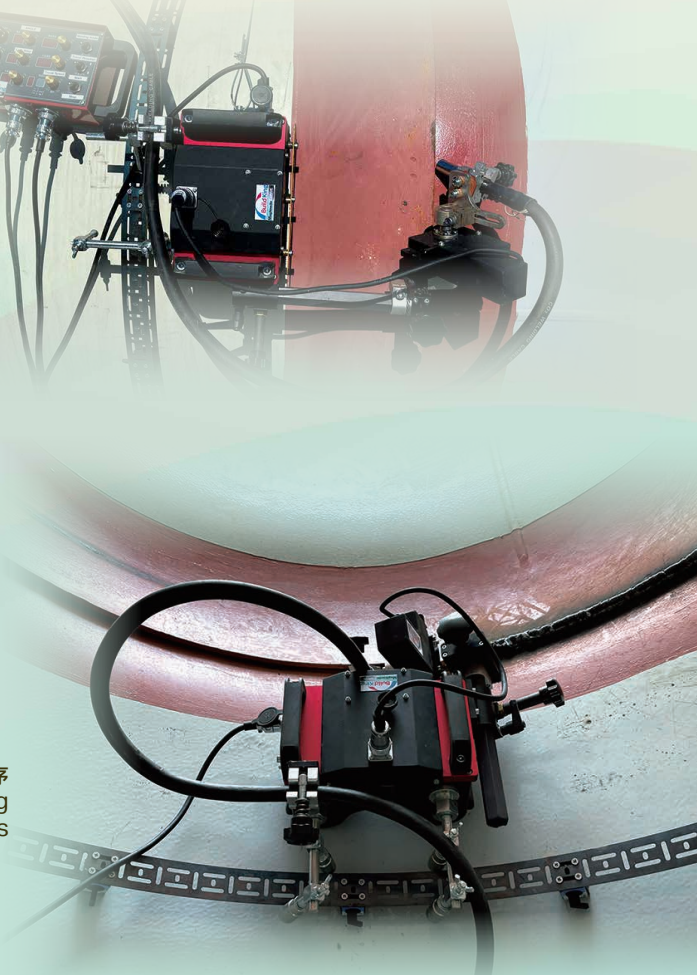
提升焊接品質 Enhanced Welding Quality

鋼管焊接機械人能嚴格按照預先制定的焊接程序作業，大幅降低因人為操作失誤而造成的質素問題。焊接機械人可以精確控制焊接電流、電壓、速度等參數，以確保每一道焊縫的一致性和穩定性。此外，焊接機械人配備實時監察系統，監測整個焊接過程。此舉不但提升了焊接質素，亦減少所需的補救工作，讓焊接工序能更順利進行。

提升作業效率 Enhanced Operation Efficiency




燒焊工人於鋼管內進行內部焊接時，因受到工作空間的限制，人手焊接的效率比機械化遜色。鋼管焊接機械人配備快速、高度精確的特點，能顯著提升焊接效率及縮短施工周期。鋼管焊接機械人大大提高鋼管焊接工序的效率、安全性和品質，成為工程界焊接工序的得力助手。

When welders carry out manual welding works inside steel pipe, the productivity is hindered by the limited working space as compared to robotic welding. Robotic welding's high-speed and high precision characteristics, can enhance welding efficiency and shorten the working time. The use of robotic steel pipe welding machine greatly enhances the efficiency, safety and quality of the welding works, becoming a valuable assistant for welding works in the construction industry.



Robotic machine can strictly follow pre-defined welding procedures, greatly eliminating problem caused by human operation errors. They can precisely control welding current, voltage, speed, and other parameters to ensure the consistency and stability of welding. Additionally, they are equipped with real time monitoring systems to monitor the welding process. This not only significantly improves welding quality, but also reduces the need for remedial works and ensures the welding works can continue smoothly.

鋼管焊接機械人冷知識 Robotic Steel Pipe Welding Machine Trivia

-  鋼管焊接機械人已於東涌東新市鎮擴展工程中為逾4公里長的鋼管完成焊接工序。
The robotic steel pipe welding machine has completed welding works for over 4km of steel pipe at the Tung Chung East New Town Extension Project.
-  鋼管焊接機械人可以替代焊接工人，於管道內爬上因應現場限制和設計要求而傾斜擺放的鋼管進行焊接。
The robotic steel pipe welding machines can replace welders to climb up inside pipes that are placed at an inclination due to site constraint and design requirement, to perform the welding process.
-  鋼管焊接機械人採用活性氣體金屬電弧銲配合藥芯焊絲的焊接方法。焊接過程中，焊槍會自動供給金屬焊絲，同時注入二氧化碳作為保護氣體到焊接區域，形成氣體罩防止熔化金屬氧化和污染。透過電弧高達5000至8300℃的加熱作用，焊絲會熔化將鋼管焊接起來。
The robotic steel pipe welding machines adopts metal active gas (MAG) welding method combined with flux-cored metal wire for the welding process. During welding process, metal wire is automatically fed by the machine, and at the same time injects carbon dioxide as shielding gas into the welding area to form a gas shield to prevent oxidation and contamination of the molten metal. Through the heating effect of electric arc that can reaches 5000 to 8300℃, the wire melts and welds the steel pipes together.

獎項Award



工程團隊獲得「工地安全創意大獎－卓越獎」
Project team was awarded "Innovation Award for Site Safety - Excellence Award"

由工程團隊研發的鋼管焊接機械人，是業界用於鋼管焊接的創新科技。工程團隊的成就得到認同，並在土木工程拓展署工地安全論壇2023暨工地安全頒獎典禮中，榮獲由土木工程拓展署頒發的「工地安全創意大獎－卓越獎」。

Robotic steel pipe welding machine, developed by the project team, is an innovation in the industry for adoption in pipe welding. The achievement of the project team was recognised with the award "Innovation Award for Site Safety - Excellence Award" in the CEDD Site Safety Forum 2023 cum Construction Site Safety Award Presentation Ceremony.

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活動網頁 Event Webpage

月滿升空·一起追夢
東涌海濱花燈節

Flying to the Moon and Chasing our Dreams
Lantern Festival at Tung Chung Promenade

8.9.2024-22.9.2024
19:00-22:00

(9月17日中秋節至12時，9月18日中秋節翌日至11時)
7:00 - midnight on 17 September (Mid-Autumn Festival) and
7:00 - 11:00 p.m. on 18 September (the day after Mid-Autumn Festival)

東涌東海濱長廊
Tung Chung East Promenade

沉浸式「夢影成真」體驗
Immersive "Dreams Come True" experience

6米高火箭連航天航玉兔
6m-tall rocket with space rabbit

免費數碼拍照
攤位遊戲、小食
(17 & 18.9.2024
18:00 - 22:00 供應)
Free Digital Photo Service,
Game Booths, Snack Stalls
(17 & 18.9.2024
18:00 - 22:00)

The volunteer team “Builder” of Tung Chung East and “Loving TC” of Tung Chung West have been actively participating in various community activities. “Builder” and the Hong Kong Sheng Kung Hui Tung Chung Integrated Services actively organize, participate in and devote to different types of volunteer services, and use actions to deliver love and care to the community. Under the theme of “Life Planning for Construction Industry”, “Loving TC” organized a variety of activities to cultivate youth’s interest in the construction industry at an early age.



東涌東義工隊「友建地」及東涌西義工隊「愛·與東涌行」一起開心大合照
The volunteer team “Builder” of Tung Chung East and “Loving TC” of Tung Chung West gathered for a joyful group photo

社區聯繫 Community Engagement

升中模擬面試活動2024 Secondary School Admissions Mock Interview 2024

東涌東義工隊「友建地」聯同社區中心，為小六學生舉辦升中模擬面試活動。除了提升他們面試的技巧，活動中義工隊的工程師分享了他們的工作經驗和介紹了自己的日常工作內容。同時，他們也分享了成為工程師的學習過程和職業發展途徑。學童們亦提出了很多問題，例如如何應對工作壓力、如何實現技術創新等，工程師耐心解答並增進學童對工程行業的了解，也啟發他們投身工程事業的興趣。

通過模擬面試，學童可以提前熟悉升中面試的流程和要求，鍛煉應對面試的技巧。同時，活動也會令他們建立自信，增強面試表現。此外，義工們悉心指導，有助於學童更好地認識自我，規劃未來的學習道路。家長感激義工隊的分享。

The Tung Chung East volunteer team “Builder” collaborated with the community center to organize a mock interview event for Primary Six’s students transitioning to secondary school. In addition to enhancing their interview skills, the volunteer team’s engineers shared their work experiences and introduced the daily responsibilities of their jobs. They also shared their learning and career development paths for becoming engineers. The students asked questions, such as how engineers cope with work stress and how to achieve technological innovations, and the engineers patiently explained to the students, enhancing their understanding of the engineering industry and inspiring them to pursue engineering careers.

Through the mock interview, the students could familiarize themselves with secondary school interview process and requirements, while honing their interview skills. The event also helped building their confidence and improving their interview performance. Furthermore, the volunteers’ attentive guidance assisted the students in better understanding themselves and planning their future education paths. The parents appreciated the volunteer team’s sharing.



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如對東涌新市鎮擴展項目有任何意見及建議，歡迎提出。
Your views and comments on Tung Chung New Town Extension project are welcome.

如欲了解更多資料，請瀏覽東涌新市鎮擴展項目網頁：
For further information, please visit the website of Tung Chung New Town Extension project:
<http://www.tung-chung.hk>



東涌東義工隊「友建地」與當區居民大合照
A group photo of the Tung Chung East volunteer team “Builder” and local residents



東涌東義工隊「友建地」準備了糰子，營養補充品和新鮮水果，親自上門探訪東涌東區內的獨居長者和行動不便的長者
The Tung Chung East volunteer team “Builder” prepared rice dumplings, nutritional supplements, and fresh fruits, and visited the homes of the elderly who live alone and are mobility-handicapped in the Tung Chung East area

STEM工作坊及綠色日活動 STEM Workshops and Green Day Activities

東涌西義工隊「愛·與東涌行」與東涌區內非牟利機構合辦多場不同主題的STEM工作坊，希望透過製作各種有趣的模型，提升小朋友對STEM知識及科技的認識，啟發他們對創新科技的興趣。此外，義工隊亦藉著香港綠色日（2024年6月5日），與小朋友一同製作永生花環保盒，以加深小朋友對環保的概念。

The Tung Chung West volunteer team “Loving TC” has organized several STEM workshops of different themes with Non-Governmental Organization in Tung Chung. By making various interesting models, we hope that it could enhance children’s understanding of STEM knowledge and technology, and also inspire their interest in innovative technology. Besides, in response to Hong Kong Green Day on 5 June 2024, a preserved flower box DIY workshop was organized to enhance children’s environmental protection awareness.



東涌西義工隊「愛·與東涌行」舉辦多場有趣的STEM工作坊，包括製作壓路機、太陽能風扇及螃蟹機械人
The Tung Chung West volunteer team “Loving TC” organized several interesting STEM workshops, e.g. making road roller model, solar fan and crab model







義工們與小朋友一同製作永生花環保盒
Volunteers and children worked together to make preserved flower boxes

東涌河生態導賞暨清潔東涌灣 Tung Chung Stream Eco-tour cum Tung Chung Bay Clean-up

東涌西義工隊「愛·與東涌行」於2024年7月與綠色力量合辦東涌河生態導賞暨清潔東涌灣活動，聯同可譽中學的師生一同清潔東涌灣海岸，為社區出一分力。首先，工程團隊簡介東涌西工程項目，接著綠色力量講解東涌河的自然生態及保育價值。清潔活動後，綠色力量的生態保育專家帶領參加者進行東涌河生態導賞，講解清潔行動對保育生態的重要性。學生們表示在參與有意義的清潔活動同時，亦可以學習有關環境保育的知識，感到相當高興。此外，「愛·與東涌行」於2024年8月15日（全國生態日）亦與綠色力量合辦探索東涌河生態工作坊，讓香港聖公會東涌綜合服務中心的小童軍透過互動遊戲加深對東涌河生態的認識。

The Tung Chung West volunteer team “Loving TC” has jointly organized a Tung Chung Stream Eco-tour cum Tung Chung Bay Clean-up activity with Green Power in July 2024. Students and teachers of Ho Yu College joined to clean up the coastline of Tung Chung Bay for better development of the community. First, the project team introduced the TCW Project and the Green Power explained the natural ecology and ecological value of Tung Chung Stream. After the clean-up activity, Green Power’s ecological conservation experts led the participants to go on ecological tours to learn more about the importance of clean-up in ecological conservation. The students expressed that they were happy to learn about the knowledge of environmental conservation while participating in this meaningful clean-up activity. Besides, “Loving TC” has jointly organized the Tung Chung Stream Ecology Workshop with Green Power on 15 August 2024 (National Ecology Day). Scouts from the Hong Kong Sheng Kung Hui Tung Chung Integrated Services could learn more about the ecology of Tung Chung Stream through interactive games.



學校致送感謝狀予土木工程拓展署代表
School presented certificate of appreciation to the representative of CEDD



東涌河生態導賞
Tung Chung Stream Eco-tour



探索東涌河生態工作坊
Tung Chung Stream Ecology Workshop



清潔東涌灣活動
Tung Chung Bay Clean-up Activity

端午節送糰 Giving Out the Rice Dumpling at The Dragon Boat Festival Visit

東涌東義工隊「友建地」聯同社區中心一起為當區居民送上端午節禮物。
The Tung Chung East volunteer team “Builder” collaborated with community center to present the local residents with Dragon Boat Festival gifts.

東涌東義工隊「友建地」準備了糰子，營養補充品和新鮮水果，親自上門探訪東涌東區內的獨居長者和行動不便的長者
The Tung Chung East volunteer team “Builder” prepared rice dumplings, nutritional supplements, and fresh fruits, and visited the homes of the elderly who live alone and are mobility-handicapped in the Tung Chung East area



工程進度 Works Progress

海水供應系統 (合約編號：NL/2020/02) Salt Water Supply System (Contract No.: NL/2020/02)

海水供應系統工程正於怡東路、文東路鋪設水管，橫向鑽掘工程，海水抽水站及海水配水庫建造工程亦在進行中。

For Salt Water Supply System, watermains laying works at Yi Tung Road, Man Tung Road, Horizontal Directional Drill and construction of the Salt Water Pumping Station and Salt Water Service Reservoir are in progress.

東涌東主要基礎設施工程 (合約編號：NL/2020/03) Tung Chung New Town Extension - Major Infrastructure Works in Tung Chung East (Contract No.: NL/2020/03)

位於新填海區的公用設施共同溝現正進行臨時支撐及混凝土結構工序，其他進行中的工程包括：食水及污水壓力管道、雨水排放管道、區域供冷水管敷設工程、箱型排水暗渠建造工程。

The excavation and lateral support and concreting works for Common Utility Tunnel at the new reclamation area are in progress. Other on-going construction activities include laying of fresh water mains and sewage rising mains, drainage pipes and district cooling mains and construction of the box culverts.



海水配水庫正在建造中
Construction of Salt Water Service Reservoir in progress

小蠔灣食水配水庫 (合約編號：NL/2020/04) Siu Ho Wan Fresh Water Service Reservoir and Associated Mainlaying Works (Contract No.: NL/2020/04)

小蠔灣食水配水庫結構、食水水喉安裝、雨水排放系統及相關擋土牆建造工程正在進行中。

Siu Ho Wan Fresh Water Service Reservoir (FWSR) structure, fresh watermains, stormwater drainage system and associated retaining wall construction are in progress.



小蠔灣食水配水庫正在建造中
Construction of Siu Ho Wan Fresh Water Service Reservoir in progress

馬灣涌工地平整及基礎設施工程 (合約編號：NL/2020/05) Site Formation and Infrastructure Works at Ma Wan Chung (Contract No.: NL/2020/05)

現正於東涌第29A區北岸進行橋墩工程，以興建沿海行人步道。

Bridge column works at north shore of Tung Chung Area 29A are in progress for construction of coastal pedestrian access.



於東涌第29A區北岸進行橋墩工程
Bridge column works at north shore of Tung Chung Area 29A in progress

位於新填海區的公用設施共同溝現正進行臨時支撐及混凝土結構工序，其他進行中的工程包括：食水及污水壓力管道、雨水排放管道、區域供冷水管敷設工程、箱型排水暗渠建造工程。

The excavation and lateral support and concreting works for Common Utility Tunnel at the new reclamation area are in progress. Other on-going construction activities include laying of fresh water mains and sewage rising mains, drainage pipes and district cooling mains and construction of the box culverts.

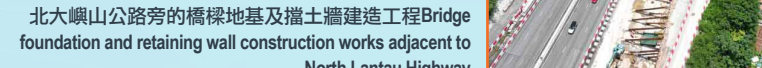


公用設施共同溝現正進行臨時支撐及鋼筋混凝土結構工序
The excavation and lateral support and concreting works at Common Utility Tunnel in progress

大蠔交匯處 (合約編號：NL/2020/07) Tai Ho Interchange (Contract No.: NL/2020/07)

現正於白芒進行白芒橋樑及白芒行人隧道改建工程。其他進行中的工程包括：北大嶼山公路旁的橋樑地基及擋土牆建造工程、翔東路及深水角徑的食水及污水壓力管道敷設工程、擋土牆結構工程。此外，北大嶼山公路近大蠔交匯處快線來回方向將於九月中旬至本年底臨時封閉，以進行相關道路工程。

Structural works for Pak Mong Channel Bridge and modification works for Pak Mong Subway are in progress. Other ongoing construction activities include bridge foundation and retaining wall construction works adjacent to North Lantau Highways, laying of fresh watermains and sewage rising mains along Cheung Tung Road and Sham Shui Kok Drive and structural works for retaining walls. In addition, both bounds of fast lanes of North Lantau Highway near Tai Ho Interchange will be temporarily closed from mid September until end of this year for carrying out related road works.



北大嶼山公路旁的橋樑地基及擋土牆建造工程
Bridge foundation and retaining wall construction works adjacent to North Lantau Highway

東涌谷工地平整及基礎設施工程第一期 (合約編號：NL/2020/06) Site Formation and Infrastructure Works at Tung Chung Valley, Phase 1 (Contract No.: NL/2020/06)



現正於裕東路進行食水及鹹水管道敷設工程。
The fresh and salt watermains laying works at Yu Tung Road are in progress.

裕東路的水管敷設工程
Watermains laying works at Yu Tung Road