

A NEW EXPERIENCE

by Dr Tom Iseley and Saleh Behbahani, TTC at LA Tech

As part of a new partnership with *Trenchless International*, the TTC at LA Tech will now provide updates of its activities in each edition of the quarterly magazine. The first article in this series focuses on TTC's establishment of a Trenchless Technology Centre in Tianjin, China – known as TTC-TJ-EC – with the objective of identifying first class technical solutions and transferring them to the global market.

The Trenchless Technology Center-Tianjin-Experience Center (TTC-TJ-EC) was established in 2016 with the signing of a Memorandum of Understanding (MoU) by Tianjin Qingcheng Waterworks Company (TQCW) Chairman Ma Qing in Tianjin, China and Louisiana Tech University (LA Tech) President Dr Les Guice.

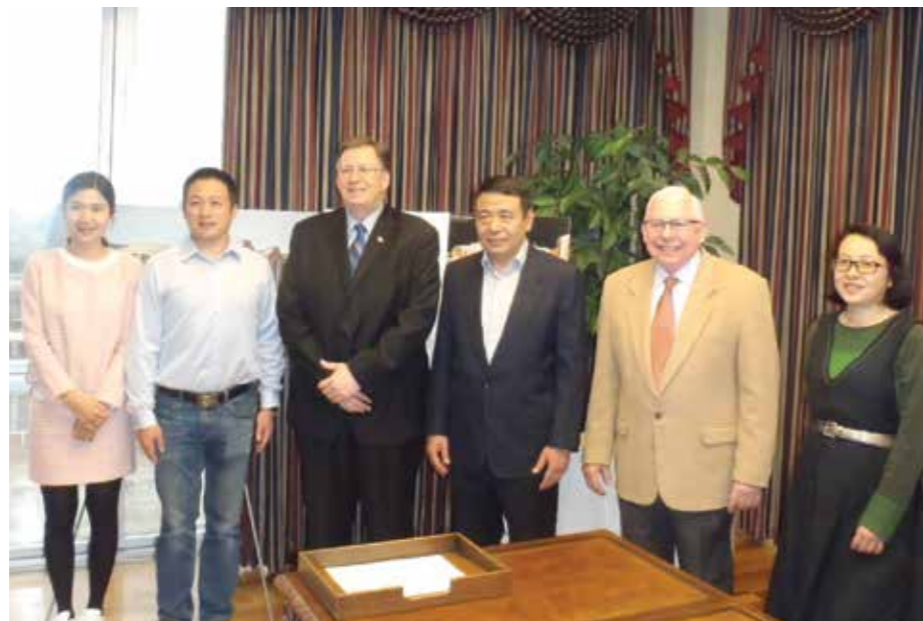
The main objective of the MoU was to form a working agreement for the Trenchless Technology Center (TTC), based at LA Tech, to assist with identifying, validating, transferring and commercialising trenchless technical solutions into China, as well as transferring technologies from China into the global market.

ESTABLISHMENT

TQCW established TTC-TJ-EC in the heart of the financial business district in Tianjin, located roughly 100 km southeast of Beijing. The centre, an impressive resource for the trenchless industry, accommodates approximately 1,133 m² of mixed use space that includes meeting rooms, a fully equipped conference room, a private dining room and a high-tech exhibit room.

The centre will serve multiple purposes, such as being available for utilities throughout China to visit and experience more about specific solutions that could be used to meet their precise challenges. It will also be a resource to transfer research into practice, and to assist technology providers in overcoming the barriers of market entry.

The exhibits are intended to provide a multimedia experience for potential users through animations, videos, simulations, and more, as well as provide a virtual application of the technical solution. Technology providers are already taking advantage of this opportunity to generate awareness of their



ANYUE Trenchless Engineering's Karly Wu and Dr Leo Liao, Louisiana Tech President Dr Les Guice, TQCW Chairman Ma Qing, TTC Associate Director of International Operations Tom Iseley and Southwest Petroleum University's Professor Xiaonan Wu



The opening ceremony of the TTC-TJ-EC.

technologies with potential users; eight technologies currently occupy the exhibit space.

During 2017, TTC-TJ-EC reviewed a wide range of trenchless technical solutions. A short list of possible candidates was developed and from the shortlist four were selected to move forward with developing a comprehensive business development strategy.

TQCW hydro-pneumatic water main cleaning process

This technology was designed for cleaning large diameter long distance pressure water mains. It is commercially available and is currently being used by TQCW, a large utility that provides drinking water and is an integral part of Tianjin Water which serves over 21 million people.

Tomahawk System

This technology is a dry water main cleaning and lining process utilising a vacuum system to create a negative pressure airflow, allowing 3 gradations of stone to be used to clean the inside of water mains in the 4 to 12 inch (100 to 300 mm) diameter range. The same airflow and equipment is used to provide a polymeric barrier coating to the inside surface of the host pipe; this technology has been used in Canada, and the US and UK.

Link-Pipe Mechanical Seals

This technology has been in use for more than 30 years throughout the world. In addition to its main product line of standard mechanical seals, Link-Pipe has developed many innovative customised applications for large circular and non-circular pressure and non-pressure pipelines.

SippTech System

This is an emerging technology, which is in its final stage of development. It is being developed to meet the demands for a fully structural spray-in-place pipe (SIPP).

It uses highly sophisticated robotics and sensors to ensure that the thickness of the polymeric liners is controlled, uniform and documented. It has been designed for pressure pipe 8 inch (200 mm) in diameter and higher, using a thread of carbon fibre winding to provide the tensile strength to the



Participants of the 2017 Technology Business Development Summit visiting the dynamic simulator of the TQCW hydro-pneumatic Water Main Cleaning technology at the TQCW laboratory.

SIPP liner to accomplish high internal pressure applications.

TECHNOLOGY BUSINESS DEVELOPMENT SUMMIT

On 11 October 2017, TQCW conducted its first Technology Business Development Summit at the TTC-TJ-EC. The owner representatives of the selected technical solutions were invited to the one-day event, which consisted of two parts.

Taking place in the morning, the main objective of the first part was for each technology provider to present an overview of its technologies, describing manufacturing processes and application envelopes.

Part two was conducted after a working lunch session hosted by TQCW in the TTC-TJ-EC private dining room. The main objective was to discuss the options for forming business agreements to work together to transfer the technologies, protect intellectual properties, consider various manufacturing options, etc.

The summit concluded with a visit to the TQCW lab for all participants to see a live demonstration of the TQCW hydro-pneumatic water main cleaning simulator and concluded with celebration banquet sponsored by TQCW.

The summit was moderated by Mr Ma Qing and LA Tech Associate Director of International Operations for TTC Dr Tom Iseley. TTC Director Dr John Matthews provided technical support and

oversight throughout the discussions relating to developing a pathway forward.

“OVERWHELMING SUCCESS”

Dr Iseley says the outcome of the summit was an overwhelming success. An MoU is in the process of being executed to formalise the cooperative working relationship, which was agreed to as a result of the summit.

Dr Iseley adds that the outcome is consistent with the vision that Mr Ma Qing had with the establishment of the TTC-TJ-EC and also in-line with the commitment the TTC has made over the past 28 years: to be an international leader for advancing the science and practice of Trenchless Technology through research, education and technology transfer.

As a result of the commitment that TTC made in China, Dr Iseley has established an operating base in Chengdu to continue to work with a wide range of organisations, such as research institutes, universities and private companies to support China's expanding and challenging underground infrastructure industry.

At the TTC at LA Tech, Dr Iseley is supported by three visiting scholars from three separate educational institutions in China, as well as PhD and Master Degree students from China. Currently, he is the instructor for a graduate course at LA Tech focused on advanced asset management principles and practices relating to buried assets. 