

NEXTSENSE

How China's Metros Are Benefitting from Faster, More Reliable Profile Measurements



With its innovative CALIPRI technology, Austrian company NEXTSENSE is the world leader in mobile profile measurement.

Its innovative measurement technology finds use in the wear measurement of wheelsets, rails

and tracks. Its customers include numerous major international railroad companies. China's metro companies is one of the markets where NEXTSENSE has established a leading position over the last few years.

There are 44 Chinese cities that have a metro system, with 237 metro lines all in all. 41 of these 44 metro operators make use of the

CALIPRI measurement devices – making NEXTSENSE one of their top subcontractors. There are only three smaller metro companies with only one line and these still use mechanical gauges. One of the metro operators that is a customer of the Austrian company is the Beijing Metro with 24 lines and a rail network that extends over an area of 727 kilometres. The Beijing Subway offers an average of 10.544



million trips per day and is therefore known as the world's busiest metro system. Another customer is the Wuhan Metro with 9 lines, 240 stations and a total of 360km route length. With 1.22 billion annual passengers in 2019, Wuhan Metro is the sixth-busiest rapid transit system in the world.

Using CALIPRI in Wuhan Metro's Maintenance Workshops

The maintenance workshops for the Wuhan Metro are currently using more than 40 sets of CALIPRI portable measurement equipment, which perform measurements of wheel parameters such as wheel profile, wheel diameter and defects for rolling stock. According to **Mr Si Chen, Wuhan Metro Workshop Manager**, one of the reasons for using CALIPRI is the high measurement accuracy and repeatability of CALIPRI, which fully meets the requirements of the Wuhan Metro.

"The fast and easy-to-use measurement process as well as the simple and intuitive handling of measurement data help to improve work efficiency. At the moment

the raw data are saved on a server and are printed out in PDF format for archival purposes. We are still discussing the implementation of a central database and hope to organise and analyse historical data to have a predictive evaluation on the wear and tear of the wheels which will greatly improve the intelligence level of our company's operation and maintenance," states the Workshop Manager.

NEXTSENSE is working on such a solution at the moment and will be able to offer this customer a tailor-made solution in the near future. Given that there are various exchange programmes within the industry with other major metro companies in China – in cities such as Beijing, Shanghai, Nanjing, Chengdu and Guangzhou – that were already using CALIPRI as the main equipment for wheel and rail measurements made the decision for Wuhan Metro easier.

Before using the unique CALIPRI with its laser light section technology for non-contact profile measurements most metro companies used mechanical gauges to measure and record data manually. Manual

measurements can often result in operator errors, inaccurate measurements and an inefficient workflow. Furthermore, the process of reading and transcribing the results manually requires several checks and is very demanding for the operator; it further relies heavily on experience. The non-contact measurements performed by CALIPRI, which automatically corrects tilts and rotations of the measurement device, provides reliable measurement data and fast measurement processes.

"Working with mechanical gauges, the changeover can be challenging at first," states Mr Si Chen, Wuhan Metro Workshop Manager. "But after a short adaption period, engineers found CALIPRI easier to use and also less time-consuming than conventional measurement equipment. The graphic display is easy to understand, and the modular design allows an uncomplicated expanding of functions such as radial/axial runout, defects and more, which can be measured by the same device. The equipment supplier NEXTSENSE provides timely and good training, technical support and other services which also helps new purchasers."

Mr Si Chen, Wuhan Metro Workshop Manager, concluded: *"CALIPRI has now been used for almost six years as the main equipment for wheel and rail measurements at Wuhan Metro and there are several benefits for the company. CALIPRI provides reliable measurement data, and also a very fast measurement process. Overall, CALIPRI is a great tool to help keep the vehicles safe!"*

NEXTSENSE
part of Hexagon