塑造智慧变革

HEXAGON 海克斯康

北京 国家会议中心 2018年 9月10-12日 2018.hexagonchina.com.cn

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XX, September, 2018



- History of first's:
 - TC1 First recording total station WILD Tachymat
 - DISTOMAT DI4 The world's smallest mounted distance meter
 - TC2000 World premiere of the computerized theodolite
 - WM101 First civil high-precision GPS system





- History of first's:
 - First coaxial relflectorless EDM

• First 0.5" total station

- First SmartStation combining total station and GNSS
 - First MultiStation combining total station, scanning, imaging and GNSS



- History of first's:
 - First future proof GNSS system

• The fastest robotic imaging total station

• First self-learning total station

• First GNSS tilt pole - Immune to magnetic disturbances and calibration-free

GN

future proof





- The world's first self-learning total station (TS16 & TS60) and MultiStation (MS60)
 - Incredible automation
 - Featuring ATRplus









- What's self-learning?
 - Environmental conditions are continually monitored and learnt ...
 - Sun
 - Rain
 - Clouds
 - Dust
 - Poor visibility
 - Good visibility





🔅 mergetec

- What's self-learning?
 - Foreign reflections are recognised and ignored ...
 - Shinny surfaces
 - Bright lights
 - Reflective vests





- What's self-learning?
 - The range is learnt...
 - Close to the instrument,
 - Far away,
 - Anywhere in between





- What's self-learning?
 - The dynamics of the target are learnt...
 - Static,
 - Highly dynamic,
 - Anywhere in between





- What's self-learning?
 - It worked great with the correct settings... But!

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TS

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SD

Measure & Target Settings

- What's self-learning?
 - Now with Leica Captivate and self-learning, it always works... with only one setting!

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Absolute constant	-11.3 mm		Absolute constant	-11.3 mm	
Target aiming	Automatic	\sim	Target aiming	Lock	\sim
Measure mode	Continuous	\sim	Measure mode	Continuous	\vee
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• How we created new self-learning automation



• Lots and lots of testing in all conditions!!





• ATRplus – Aiming & Locking cycle





• The world's first Self-learning total stations



GPS/GNSS Development and Milestones





- GNSS modernisation is highly dynamic, which requires a flexible and sustainable strategy.
- In 2006 Leica Geosystems introduced the Future Proof concept.
 - Leica Geosystems is the only manufacturer that provides a drop-in replacement of the GNSS engine if needed.
 - Signal structures are subject to change.
 - A new GNSS engine is required if the signal structure changes.
 - Our GNSS cards always have the same footprint, the same fixing and the same connections.
- In order to take full benefit from GNSS modernisation, a high channel count is needed.



- A high channel count is needed due to
 - Rapidly increasing number of GNSS satellites

About 100 satellites are usable in 2018





- A high channel count is needed due to a large number of available satellites
 - Example of GNSS satellites used for RTK positing





- A high channel count is needed due to
 - Availability and usability of multi-frequency GNSS signals





- The latest generation of GNSS engine in GS10, GS15, GS16, GS18 T and GS25 tracks all existing and future planned GNSS signals:
 - A high channel count of 555
 - Improved signal acquisition speed and sensitivity
- Leica Future Proof is the best modernisation strategy since it accounts for the highly dynamic changes of GNSS and fulfils customer needs:
 - Latest equipment that tracks all available signals today and tomorrow
 - Latest equipment that keeps its value (secured investment)
 - Top performance





- How we created new Self-learning GNSS
 - Smart and adaptive selection of signals (RTKplus)
 - Smart use of RTK corrections (SmartNet) and PPP corrections (SmartLink)





- What's RTKplus?
 - A marketing buzzword with a lot behind
 - Like RTK but better
 - The intelligent use of all signals of all GNSS systems
 - A powerful 555 channel measurement engine (ME7) tracking all signals
 - New engines working in harmony
 - Ensuring a certain future
 - Another milestone of high precision GNSS technology



Antenna tracks analogue signals



ME7 converts signal into binary measurements

0110001001 0101011101 0111001101



RTK engine converts into coordinates



RTKplus pushes the boundaries in performance



- What's SmartLink?
 - Precise point positioning (PPP) corrections are provided by a geostationary satellite(s)
 - Allows cm-level positioning within minutes everywhere
 - Works fully remotely and can be a backup solution for RTK (SmartNet or local)





- What's SmartNet?
 - Any GNSS-device enabled an open-standard correction service and is constantly monitored for integrity, availability and accuracy



- World's largest reference station network GNSS correction service built on the world's largest reference station network
- Continuous availability provided 24/7 by a highly-available infrastructure and professional support team with more than 10 years of experience reliably delivering the service
- Trusted technology with more than 4,000 reference stations based on Leica Geosystems technology that ensure position accuracy in any application





 Leica GS18 T – First GNSS tilt pole – Immune to magnetic disturbances and calibration-free





• Leica TPS & GNSS technology – powered by Leica Captivate software









• Leica TPS & GNSS technology – powered by Leica Captivate software





3D Everything 3D Everywhere

