



Product Presentation

- **Application Name:**
PA19-018 / PA19-019 / PA19-020
- **Product Name:**
FARO Focus S150/ FARO Focus S70/ FARO Focus M70



- **Core Function:**
Record of the existing features with HDR Panoramic image;
Detail As-built measurement; Inspection with Design Model
(CAD/ BIM model)
- **Technology Used:**
Terrestrial Laser Scanning Technology
- **Construction Process involved:**
Initial design
Retrofits and Renovation
As-built
- **Key Improvement in Construction Process:**
 - Productivity
 - Quality
 - Safety
- **Job Reference:**
 - The Old Dairy Farm Senior Staff Quarters, Pok Fu Lam, Project, 2014
 - Midfield Concourse, Hong Kong International Airport, Project, 2014
 - Lift Shaft Wall Plumbness Analysis, Quarry Bay, Trial, 2021



Specifications:

	FARO Focus S150	FARO Focus S70	FARO Focus M70
General:			
- Weight:	4.2 kg	4.2 kg	4.2 kg
- Size:	240 x 200 x 100 mm	240 x 200 x 100 mm	240 x 200 x 100 mm
Laser (optical transmitter):			
- Laser class:	Laser class 1	Laser class 1	Laser class 1
- Wavelength:	1550 nm	1550 nm	1550 nm
- Beam divergence:	Typical 0.3 mrad (0.024°)(1/e)	Typical 0.3 mrad (0.024°)(1/e)	Typical 0.3 mrad (0.024°)(1/e)
- Beam diameter at exit:	Typical 2.12 mm (1/e)	Typical 2.12 mm (1/e)	Typical 2.12 mm (1/e)
Data handling and control:			
- Data storage:	SD, SDHC™, SDXC™	SD, SDHC™, SDXC™	SD, SDHC™, SDXC™
- Scanner control:	Through touchscreen display and WLAN connection. Access by mobile devices through HTML5.	Through touchscreen display and WLAN connection. Access by mobile devices through HTML5.	Through touchscreen display and WLAN connection. Access by mobile devices through HTML5.
Ranging unit:			
- Distance Accuracy @25m	Distance Accuracy: 1 mm	Distance Accuracy: 1 mm	Distance Accuracy: 3 mm
- Angular Accuracy:	Horizontal: 19 arcsec	Horizontal: 19 arcsec	Horizontal: Not specify
- Vertical:	19 arcsec	19 arcsec	Not specify
- Unambiguity interval:	614m for 122 to 488 kpts/s; 307m for 976 kpts/s	614m for 122 to 488 kpts/s; 307m for 976 kpts/s	Not specify
- Range:	0.6 m - 150 m indoor or outdoor with upright incidence to a 10% reflective surface	0.6 m - 70 m indoor or outdoor with upright incidence to a 10% reflective surface	0.6 m - 70 m indoor or outdoor with upright incidence to a 10% reflective surface
- Measurement speed (pts/sec):	122,000 / 244,000 / 488,000 / 976,000	122,000 / 244,000 / 488,000 / 976,000	122,000 / 244,000 / 488,000
- Ranging error1 FocusS :	±1 mm	±1 mm	±3 mm

	FARO Focus S150	FARO Focus S70	FARO Focus M70
Color unit:			
- Resolution:	Up to 165 megapixel color	Up to 165 megapixel color	Up to 165 megapixel color
- HDR:	2x, 3x, 5x	2x, 3x, 5x	2x, 3x, 5x
- Parallax:	Co-axial design	Co-axial design	Co-axial design
Multi-Sensor:			
- Dual axis compensator:	Levels each scan: Accuracy 0.019°; Range ±2°	Levels each scan: Accuracy 0.019°; Range ±2°	Levels each scan: Accuracy 0.019°; Range ±2°
- Height sensor:	Via an electronic barometer the height relative to a fixed point can be detected and added to a scan.	Via an electronic barometer the height relative to a fixed point can be detected and added to a scan.	Via an electronic barometer the height relative to a fixed point can be detected and added to a scan.
- Compass:	The electronic compass gives the scan an orientation.	The electronic compass gives the scan an orientation.	The electronic compass gives the scan an orientation.
- GPS:	Integrated GNSS receiver	Integrated GNSS receiver	Integrated GNSS receiver
- Interface Connection:	- WLAN:802.11n (150 Mbit/s), Ad-hoc and Infrastructure mode	- WLAN:802.11n (150 Mbit/s), Ad-hoc and Infrastructure mod	- WLAN:802.11n (150 Mbit/s), Ad-hoc and Infrastructure mode
Deflection unit:			
- Field of view:	(vertical/horizontal): 300° / 360°	(vertical/horizontal): 300° / 360°	(vertical/horizontal): 300° / 360°
- Step size:	(vertical/horizontal):0.009° (40,960 3D-Pixel on 360°) / 0.009° (40,960 3D-Pixel on 360°)	(vertical/horizontal):0.009° (40,960 3D-Pixel on 360°) / 0.009° (40,960 3D-Pixel on 360°)	(vertical/horizontal):0.009° (40,960 3D-Pixel on 360°) / 0.009° (40,960 3D-Pixel on 360°)
- Max. vertical scan speed:	97 Hz	97 Hz	97 Hz
Ambient Conditions:			
- Ambient Temperature:	5 °C - 40 °C	5 °C - 40 °C	5 °C - 40 °C
- Extended operating temperature:	-20 - 55°C	-20 - 55°C	-20 - 55°C



Innovative Features

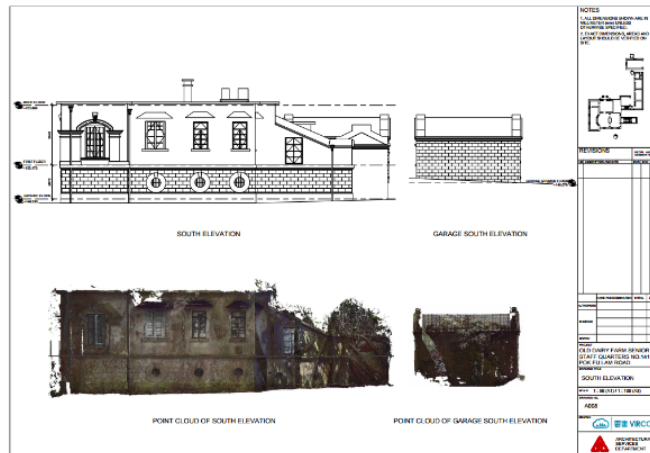
- Core Technology:
 - Terrestrial Laser Scanning
- Comparison with current practice and popular models:
 - Technology: Mobile Mapping System
 - Specification: GeoSLAM Horizon Handheld Laser Scanner
 - Benefits: Accurate result (3D position accuracy: 2mm at 10m/ 3.5mm at 25m); higher resolution (Up to 1.5mm at 10m range); lower noise range
- Comparison with similar Pre-approved list products and competitors:
 - Technology: Terrestrial Laser Scanning
 - Specification: Leica RTC 360
 - Benefits: Smaller & lighter model; Up to 150m Scanning Range; Standard SD Card Storage
- First Launch Date: 10/10/2016

Adoption Example

- Project for Illustration: The Old Dairy Farm Senior Staff Quarters
- Work Process: Collect dataset in multiples scan stations to capture a complete model
- Use/ Function in project: Record of the existing features and based on the Pointcloud data convert to BIM model



Site Photo



2D Plan extracted from BIM Model



PointCloud model

Adoption Example

- Project for Illustration: Midfield Concourse Linkbridge & Skylight inspection
- Work Process: Collect data of each Linkbridge & Skylight, then compare to the design model
- Use/ Function in project: Record of the existing features and inspection



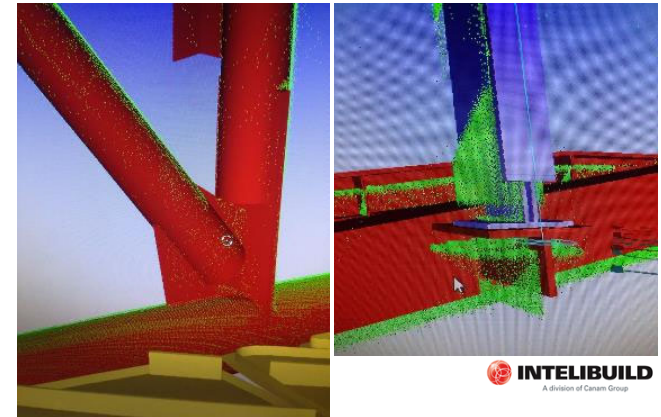
Site Photo



Complete Point Cloud Model



PointCloud model



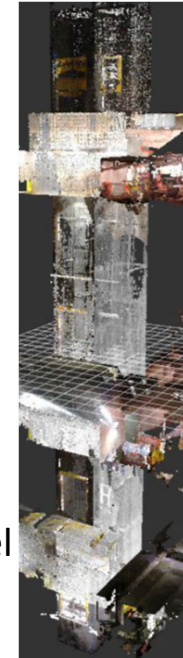
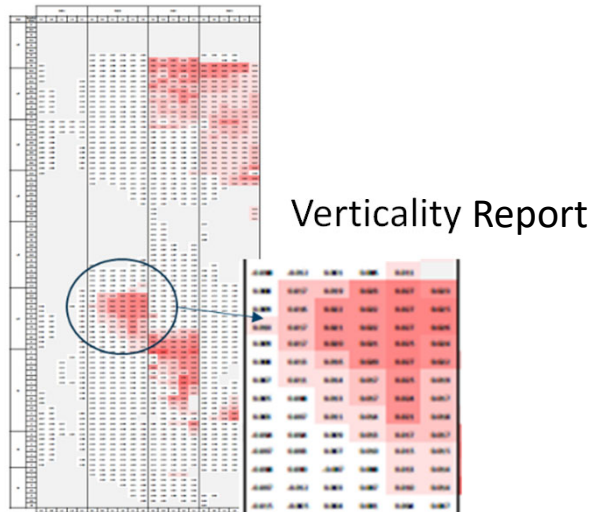
Inspection Result

Adoption Example

- Project for Illustration: Lift Shaft Wall Plumbness Analysis
- Work Process: Collect data on target floors, then compare with design model
- Use/ Function in project: Record of the existing features and provide verticality report of Lift Shaft based on the Pointcloud data



Site Photo

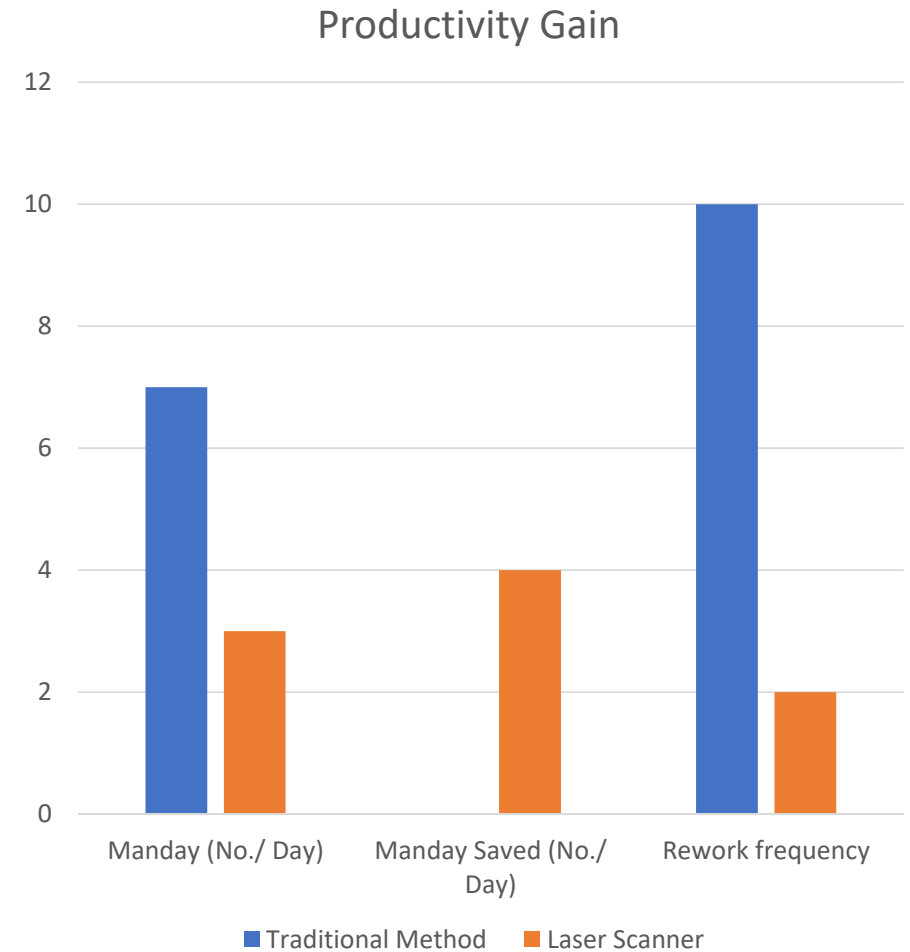


Complete Point Cloud Model



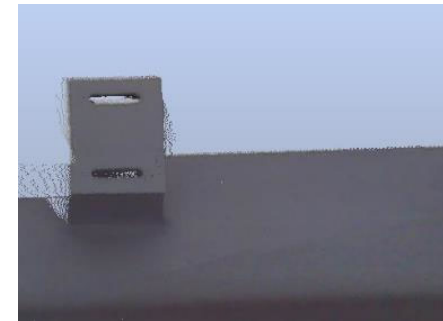
Benefits – Productivity

- Improve productivity by:
 - Improved efficiency (eg. ~600 Clips on Linkbridge)
- Traditional Output:
 - 7 days to complete one Linkbridge
- Output by [FARO Focus Laser Scanner]:
 - 3 days to complete one Linkbridge
- Rework (Traditional Method):
 - High
- Rework (Laser Scanning Method):
 - Low
- Total Saving in Mandays (without rework):
 - 4 days
- Total Saving in Project Period:
 - 76 days



Benefits – Quality

- Improve quality by:
- Error reduction
 - Total Station: Survey the center position of each clips
 - Laser Scanner: Scan the profile of Clip that can check the position and orientation of each clips



Benefits – Safety

- Improve Safety by:
- Dangerous work
 - Traditional method: Worker needs to walk on the beams of Linkbridge to survey clips position
 - Laser Scanner: Place the scanner on the roof of Linkbridge to scan clips profile

