

Product Presentation

Application Name:

PA19-005

Product Name:

FARO Focus S350



• 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



General: - Weight: - Size: - Laser class: - Laser class: - Wavelength: - Beam - Government divergence: - Beam diameter at exit: Data handling and control: - Data storage: - Scanner control: - Data storage: - Scanner control: - Distance - Angular - Angular - Angular - Angular - Curracy: - Vertical: - Unambiguity interval: - Range: - Measurement speed (pts/sec): - Measurement speed (pts/sec): - Ranging error1 - Laser class 1 - Typical 0.3 mrad (0.024°)(1/e) - Typical 0.3 mrad (1/e) - Typical 0.3 mrad (1/e) - Through touchscreen display and WLAN connection. - Access by mobile devices through HTML5. - Bistance Accuracy: 1 mm - Accuracy @25m - Horizontal: 19 arcsec - 614m for 122 to 488 kpts/s; 307m for 976 kpts/s - Ranging error1 - Measurement speed (pts/sec): - P76,000 - Ranging error1 - FocusS:		FARO Focus S350	
- Size: 240 x 200 x 100 mm Laser (optical transmitter): - Laser class: Laser class 1 - Wavelength: 1550 nm - Beam divergence: (0.024°)(1/e) - Beam diameter at exit: Data handling and control: - Data storage: SD, SDHC™, SDXC™ - Scanner control: Through touchscreen display and WLAN connection. Access by mobile devices through HTML5. Ranging unit: - Distance Accuracy: 1 mm Accuracy @25m - Angular Horizontal: 19 arcsec - Vertical: 19 arcsec - Unambiguity interval: 307m for 976 kpts/s - Range: 0.6 m - 350 m indoor or outdoor with upright incidence to a 10% reflective surface - Measurement speed (pts/sec): / 976,000 - Ranging error1 ±1 mm	General:		
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- Data storage: - Scanner control: - Scanner control: - Scanner control: - Scanner control: - Through touchscreen display and WLAN connection. - Access by mobile devices through HTML5. - Ranging unit: - Distance - Accuracy @25m - Angular - Angular - Angular - Ancuracy: - Vertical: - Unambiguity interval: - Range: - Range: - Range: - Measurement speed (pts/sec): - Ranging error1 - Stance Accuracy: - Through touchscreen - Misplay and WLAN connection. - Accuracy: - Distance Accuracy: - 1 mm - Horizontal: 19 arcsec - 104 m for 122 to 488 kpts/s; - 307m for 976 kpts/s - Range: - Measurement speed (pts/sec): - 122,000 / 244,000 / 488,000 - 7976,000 - Ranging error1 - 1 mm	at exit:		
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Accuracy: - Vertical: - Unambiguity interval: - Range: - Range: - Range: - Range: - Measurement speed (pts/sec): - Ranging error1 - Vertical: - 19 arcsec - 19 arcsec - 10 488 kpts/s; 307m for 976 kpts/s - 10 6m - 350 m indoor or outdoor with upright incidence to a 10% reflective surface - 122,000 / 244,000 / 488,000 - 121 mm	Accuracy @25m		
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incidence to a 10% reflective surface - Measurement speed (pts/sec): / 976,000 - Ranging error1 ±1 mm	- Range:	0.6 m - 350 m indoor or	
reflective surface - Measurement speed (pts/sec): / 976,000 - Ranging error1 ±1 mm		outdoor with upright	
- Measurement speed (pts/sec): / 976,000 / 244,000 / 488,000 / 976,000 - Ranging error1 ±1 mm		incidence to a 10%	
speed (pts/sec): / 976,000 - Ranging error1 ±1 mm		reflective surface	
- Ranging error1 ±1 mm	- Measurement	122,000 / 244,000 / 488,000	
	speed (pts/sec):	/ 976,000	
FocusS:	- Ranging error1	±1 mm	
	FocusS:		

	FARO Focus S350	
Color unit:		
- Resolution:	Up to 165 megapixel color	
- HDR:	2x, 3x, 5x	
- Parallax:	Co-axial design	
Multi-Sensor:		
- Dual axis	Levels each scan: Accuracy	
compensator:	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.	
- Compass:	The electronic compass	
	gives the scan an	
	orientation.	
- GPS:	Integrated GNSS receiver	
Interface	- WLAN:802.11n (150	
Connection:	Mbit/s), Ad-hoc and	
	Infrastructure mode	
Deflection unit:		
- Field of view:	(vertical/horizontal): 300°/ 360°	
- Step size:	(vertical/horizontal):0.009°	
	(40,960 3D-Pixel on 360°) /	
	0.009° (40,960 3D-Pixel on	
	360°)	
- Max. vertical	97 Hz	
scan speed:		
Ambient Conditions:		
- Ambient	5 °C - 40 °C	
Temperature:		
- Extended	-20 - 55°C	
operating		
temperature:		



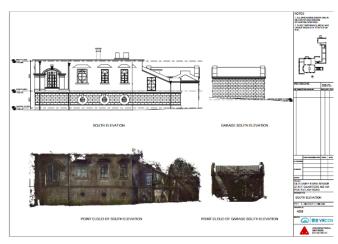


Innovative Features

- 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 350m 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



2D Plan extracted from BIM Model



Site Photo



PointCloud model

Adoption Example

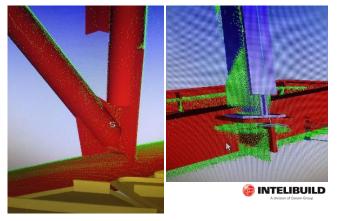
- Project for Illustration: Midfield Concourse Linkbridge & Skylight inspection
- Work Process: Collect data of each Linkbridge & Skylight, then compare to the design model
- Use/ Function in project: Record of the existing features and inspection





Complete Point Cloud Model

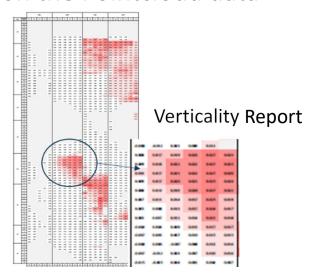




Inspection Result

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

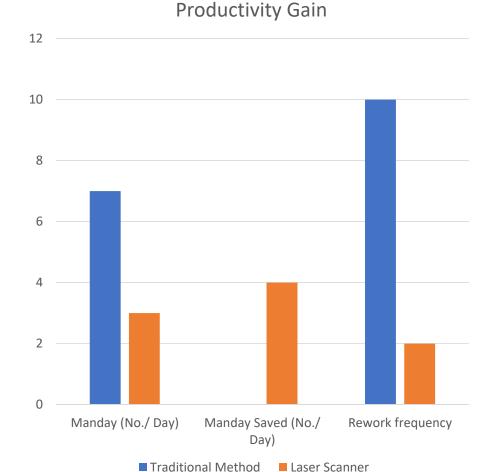


Complete Point Cloud Model



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

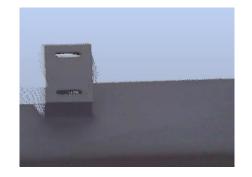


Benefits - Quality

- 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

