Laser scanner: Integrated solutions for complex construction projects

Mario Baez Camargo
BIM Project Manager
The purpose of this class is to show the versatility and relevance of the Laser Scanner and point cloud visualization applied to complex construction projects. We will explore solutions covering from, clash detection, cinematic studies, quality control, volume calculation, construction progress documentation, Urban environment studies to hoisting sequences. Also, I will explain how the point cloud and the BIM Model can deliver extraordinary accurate solutions for better decision making.
At the end of this class, you will be able to:

1. Realize why the laser scanner is a great tool for decision making.
2. Understand the different solutions that point clouds can bring to projects.
3. Know the importance of integrating the BIM Model and the point cloud.
4. Comprehend the power of 3D visualization for better communication between stakeholders.
Content:

1. Introduction
2. Projects
3. Conclusions
1. Introduction
ICA time line.

1948-1960
1961-1973
1974-1981
1982-1994
1995-2002
2003-2012

“As the construction market is scheduled to grow to US$12 trillion by 2020, design and construction professionals need the best tools to design and build the world’s most complex buildings”*

*Lisa Campbell, vice president, industry strategy marketing for AEC and ENI, Autodesk.
Time to measure

976,000 points:

1 second*

= .0002 h

35,136,000 seconds**

= 9,760 h

**//activetectonics.asu.edu/TotalStation/document.html.
Clients are asking for it: 72% say demand for Laser Scanning has increased.

Top 3 Applications for Laser Scanning:
- 44% Topographic Mapping
- 34% Transportation
- 28% Architectural/BIM

Source: April 2013 point of Beginning [www.poBonline.com].
Development of cost structure

- Green: project management
- Orange: process
- Gray: measuring / laser scanning
- Yellow: process / intelligent models

History | Today | Future

Source: Astacus Germany GmbH & Co. KG, Liederbach
2. Projects
NOTAS:

Georeferenciado

1. EL ORIGEN DE LA GAMA METRO EN EL EJE 3-109-537, Tomando como REFERENCIA EL CORDONERÍA AL.
2. 29-100,000,000 HACEDOR 40-04-40 40-40.
3. DE LA ESQUINA SUR-ORIENTE DE LA CALLE TERÁN CHOLULA Y LA CALLE SERNA.
4. DE TAPA PARA.

5. SE INDICA EL NORT MAGNÉTICO.
6. SE ESTÁ EN LA VÁLVULA DE GAS CONSTRUCCIÓN DE wich PARA EL PROYECTO DE
7. CONSTRUCCIÓN DEL METRO DE LA CIUDAD DE MÉXICO.

SECCIÓN EN PLANTA-COLUMNAS 113-320:

SECCIÓN EN PLANTA-COLUMNAS 117-324:
Total Volume Backfill = 3857.19 m³
3. Conclusions
• Safer and faster data capture in complex environments.

• Always be aware on the impact of a design based on doubtful data.

• Certainty is priceless.

• Opportune and precise information is key for decision making.

• Useful and “sexy” deliverables attract team’s attention and ideas.

• Complete projects faster.

• Never miss Site information.
Thank you!