

ENR502039

## Connecting Substation P&C Drawings to Mesh Models with an iPhone/iPad LiDAR

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### Learning Objectives

- Learn how to use iPhone and iPad LiDAR to create models of objects.
- Learn about moving captured mesh model data to ReCap Photo.
- Learn about connecting mesh models to 2D drawings.
- Learn about attaching it as part of a Vault lifecycle.

### Description

Can 2D wiring drawings and 3D mesh models play together? This class will explore the possibilities of using iPhone/iPad Pro LiDAR to create mesh models of substation assets in the field. In this case study, working with a utility customer, we scanned their substation wiring panels with an iPad and iPhone Pro. Next, we created mesh models in a ReCap Photo environment and connected it to its 2D drawings in AutoCAD Electrical software. Finally, we attached it as part of a lifecycle in Autodesk Vault. Capturing this data could allow engineers and designers to see the actual wiring in a model with their 2D wiring drawing. This can also allow snapshots of how the rack was wired at that point in time. We'll go over the process of retrieving the data, the differences in hardware, exploring the advantages and shortcomings of the data retrieved and how we may further the process as the technology improves.

### Speakers



Jack Hopson  
Autodesk

Technical Solutions Executive - Utilities

For over 20 years, I have applied my skills in design to energy delivery, telecommunications, education, product development, sales and marketing. The majority of my career has been working for and with utilities to improve their tools and processes by applying new technologies for faster and more accurate results. Power, Gas, Water and Communication are absolute

necessities for maintaining our quality of life. The work that I do with Autodesk technology helps utilities bring these resources to communities in a safe, reliable and cost-effective way.



Steve Jacquin  
Ameren  
Design Supervisor

## Introduction

This case study is intended to see if everyday devices such as an iPad and iPhone with LiDAR can be used to create model data of everyday assets in the field for design and/or verification. We will be talking about what we discovered in regards to quality, usability, benefits and shortcomings.

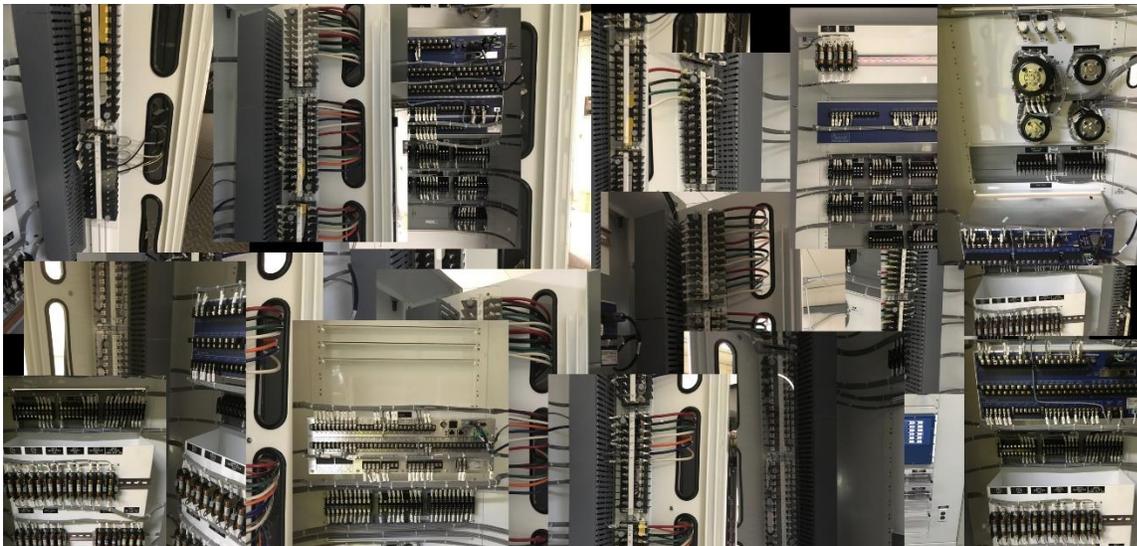
## The Experiment

This experiment roots started back in 2015 using photogrammetry to capture wiring panel assets. We will discuss the results of those experiments and how it built the framework for using iPad/iPhone LiDAR for this case study.



## Why Wiring Panels?

Protection and Control Substation Designers often have to rely on multiple photographs with wiring drawings that can take time to decipher when doing a wiring project on a brownfield site. Having a full wiring cabinet modeled would allow them to fully zoom and rotate the panel to identify as is conditions.



## Requirements for Success

The main objective of the case study is to see if wiring labels and connection labels can be read in the model. However, additional benefits were discovered during this case study.



## The Software

- 3D Scanner App
- Autodesk Construction Cloud
- Autodesk ReCAP
- AutoCAD Electrical
- Autodesk Vault