



3D Capture of Underground Electrical Vaults with Anchorage Municipal Light & Power

Anchorage Municipal Light & Power (ML&P) has launched an ambitious program to model every electrical substation and underground vault in their service area, all in full color 3D. This encompasses a total of over 500 vaults, with the goal of producing accurate, comprehensive, and current 3D data for each site, in full color detail. The immediate benefits include minimal site visits, informed engineering decisions, accurate as-built design data, and virtual verification.

To accomplish this task, ML&P has deployed the DotProduct DPI-8 Kit for rapid & reliable 3D capture in tight spaces. The first vaults were captured with photogrammetry, however this workflow proved laborious, difficult to reproduce, and repeatable only 80% of the time.

The 3D mesh files produced by photogrammetry showed the value of 3D, but still lacked in the precision, speed, and reliability needed for full functional value, ultimately calling for a more powerful solution, the DotProduct DPI-8 Kit

With implementation of the DPI-8 Kit, ML&P developed a reliable and repeatable process to capture comprehensive full color 3D data, all at engineering-grade accuracies and 8x the speed.

“By using the DPI-8 Kit we have created a workflow that is repeatable 95% of the time and produces a stable product that can easily be imported into AutoCAD and its variants.”

-Forrest Roy, Locator, Anchorage ML&P

The ability to fill in gaps or adjust data in the field was also very important for ML&P. With the DPI-8 Kit, ML&P can confidently produce complete color point clouds in single visits, only requiring photos and 360 videos as supplement.

One challenge was the dark nature of the vaults. However, with the attachment of a diffuse mounted light kit, the DPI-8 is able to capture excellent color data, even in complete darkness.

After capture, the vault data passes directly into Autodesk ReCap, via the free plugin for DP import. Within ReCap, ML&P is able to crop, annotate, edit, and measure, all before also exporting to AutoCAD, Autodesk Utility Design, Infraworks, Navisworks, and other Autodesk programs.



The resulting point cloud models have improved the efficiency and accuracy of the design process for ML&P. These models are used to take internal measurements, verify conduit and conductor configurations, verify equipment statuses and locations, and as an accurate 3D reference in AutoCAD, allowing engineers to design to accurate real world conditions.

With hundreds of vaults remaining, ML&P continues to perfect this workflow, and are rapidly adding to and updating their growing 3D database every time they visit a vault.

About Anchorage Municipal Light & Power

ML&P generates, transmits and distributes electric power to approximately 25,000 residential customers, 6,000 commercial customers, & 2 military bases in Anchorage, AK. ML&P has evolved into an acknowledged energy leader by being customer-oriented, innovative, and responsive to customer needs for safe, economical, and reliable electric service.

