



CASE STUDY

ANIXTER'S ENGINEERING SERVICES' RETOOLING OF POWER CABLING DISTRIBUTION DESIGN SAVES CONSTRUCTION COMPANY \$2 MILLION

Analyzing Power Distribution Design to Improve Cost Efficiencies

A construction company in Calgary was about to procure cable for two power distribution projects—50 MVA and 66 MVA—at an oil and gas plant. That's when Anixter's engineering team learned about the project from the contractor and saw room for improvement. The customer's current power distribution design for the oil and gas plant was created by the EPC and required 27 single-conductor cables, 25 kV, 750 kcmil and 1000 kcmil, with 2x27 splices. The engineering team knew they could reduce the number of cables and splices while also decreasing the installation time and cost.

Value Engineering a Better Power Distribution System

- Created value-engineered power cabling design
- Performed all cable pulling calculations
- Conducted a site visit and inspected the installation equipment setup prior to shipping the cable to ensure it would be ready to install as soon as it arrived
- Worked on-site with the customer to provide termination and installation training, answer all questions and oversee installation

The Anixter engineering team utilized ETAP®—electrical engineering software that calculates underground ampacity and performs temperature analysis, among other things—to propose a new power cabling design. The new design brought 27 single-conductor cables down to seven multiconductor cables of 25 kV, 750 kcmil and 1000 kcmil, with no splices. While the previous design required the cables to be buried underground in two separate trenches, each 12.5 and 10 feet wide, 3 feet deep and 5,000 feet long, Anixter's value-engineered design required only one trench with dimensions of 4 feet wide by 3 feet deep.

Expensive miscalculations like this often occur simply because a more cost-efficient design is unknown. To cut cable costs, a design will sometimes employ a larger trench and single-conductor cable. However, the cost of trenching on a project like this can often outweigh cable costs.

As part of Anixter's technical expertise, the Anixter engineering team uses the latest software and keeps up to date with standards and local codes to ensure the most cost-efficient design. They calculated their power cabling design would save the customer \$2 million on the installation, trenching, cable and splicing.

SUMMARY

Customer

Construction company for an oil and gas plant

Challenge

The power cabling distribution design was not cost-efficient

Solution

Anixter's engineering services team used ETAP® software to redesign the power cabling system

Results

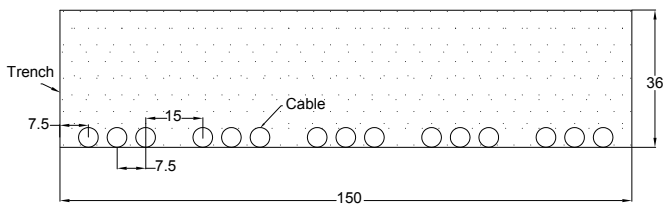
- Saved the customer \$2 million
- Reduced installation time by two-thirds
- More reliable power distribution system

Anixter's electrical and electronic application engineers bridge the gap between applications designers and installers by offering technical knowledge and best practice insight based on the latest training and years of industry experience.

Saving the Customer Time and Money

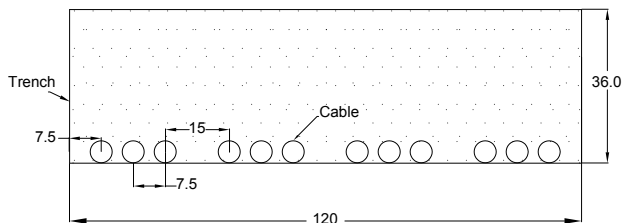
The customer was very pleased with the results of the project and the time and cost savings provided by the Anixter engineering team.

- Reduced installation time and costs by over 65 percent
- More reliable system mitigates cost of future maintenance
- Saved 23 percent on cable
- Customer returned to Anixter with another project for a 69 kV system



Notes:

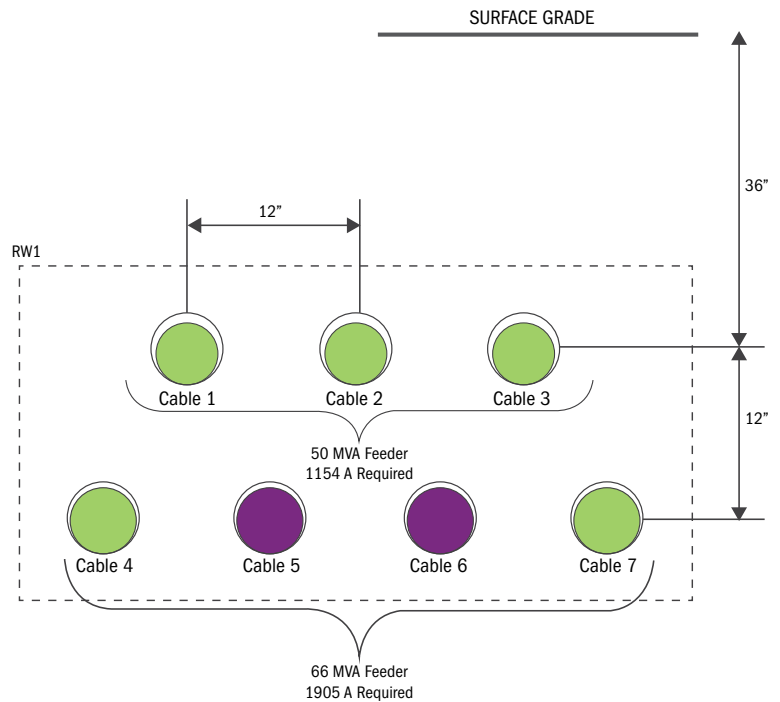
- All units are in inches
- Cable: 1C-1000 kcmil 25 kV power cable, copper tape shield, Cu, 133%
- Trench Depth: 3 ft



Notes:

- All units are in inches
- Cable: 1C-750 kcmil 25 kV power cable, copper tape shield, Cu, 133%
- Trench Depth: 3 ft

Original Power Cabling Designs



CABLES:	25 kV 3/C 133% 105°C
	- 1000 kcmil x 4 Cables/Phase (66 MVA Feeder) - 750 kcmil x 3 Cables/Phase (50 MVA Feeder)
INSTALL:	Direct Buried
TRENCH:	48" Width
SPACING:	12" Horizontal & Vertical
TEMP:	25°C Ambient
SOIL:	90 RHO
AMPACITY:	461 A x 4 Cables/Phase = 1844 A (66 MVA Feeder, 1905 A Req'd) 410 A x 3 Cables/Phase = 1230 A (50 MVA Feeder, 1154 A Req'd)

Anixter Engineering Services Power Cabling Design

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