



**Understanding
CORFLEX® RA90 Cables
Designed to withstand harsh
conditions since the 1950's**

By: Isaac Müller, Applications Engineer

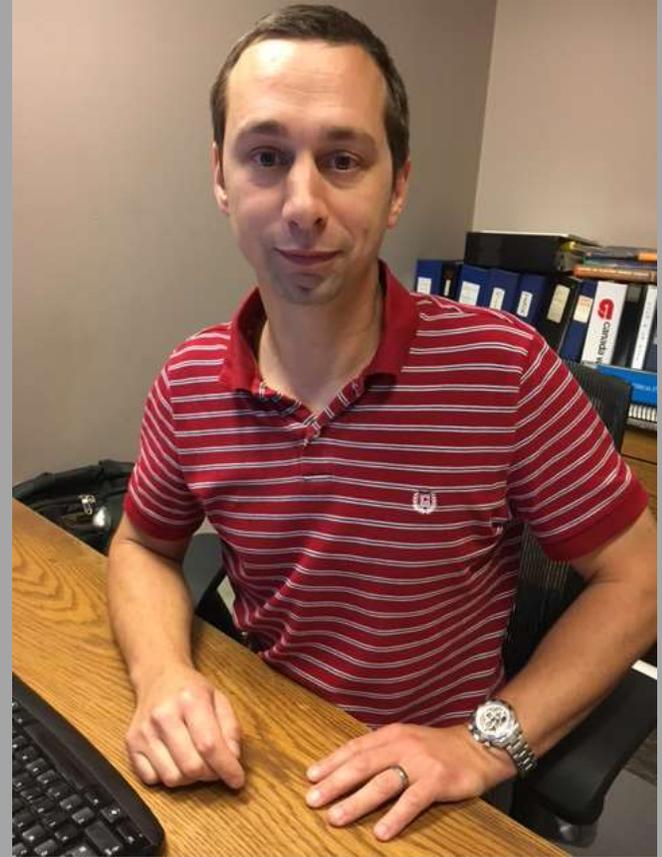
ATTENTION

AUDIENCE PARTICIPATION

- Questions can be asked at any time using the chat function on the webinar screen
- Any unanswered questions will be followed up through email
 - This presentation will be emailed to all registrants

Introduction

- Active Canadian Electrical Code Member
- Chair of Section 4 (conductors)
- Vice-Chair of Section 12 (wiring methods)
- Voting member of the Committee on Canadian Electrical Code, Part I, representing wire and cable manufacturing



Isaac Müller, P.Eng.
Applications Engineer, Nexans Canada Inc.

Nexans is a global leader with a long legacy in **North America**

A horizontal timeline of Nexans milestones from 1911 to 2014. The timeline is represented by a thick black line with a pencil eraser at the right end. Each year is accompanied by a circular icon and a text box. The 2001 entry features the Nexans logo and 'Paris, France'. The 2012 entry features the AmerCable logo and 'El Dorado, AR'. The 'Today' entry features a large circular image of a modern factory interior with a train on a track, overlaid with the word 'Today' in a white circle.

| Year | Event | Location |
|-------|---|-----------------|
| 1911 | superconductivity was discovered | Toronto, ON |
| 1911 | Canada Wire | Toronto, ON |
| 1931 | Rod Mill Plant | Montreal, QC |
| 1945 | Chester Plant | Chester, NY |
| 1945 | Slinky made its debut | |
| 1965 | Fergus Plant | Fergus, ON |
| 1965 | maple leaf became Canada's new national flag symbol | |
| 1971 | Weyburn Plant | Weyburn, SK |
| 1971 | Intel released the world's first microprocessor | |
| 1993 | Berk-Tek | New Holland, PA |
| 1993 | Jurassic Park was the highest-grossing film | |
| 2001 | Nexans | Paris, France |
| 2012 | AmerCable | El Dorado, AR |
| 2012 | Facebook went public | |
| 2014 | Goose Creek Plant | Goose Creek, SC |
| 2014 | Angry Birds was downloaded 2 billion times | |
| Today | | |

INDUSTRY EDUCATION

- Nexans' leadership - educating the industry on wire and cable
- **2019 Nexans in Canada Webinar** for an overview of our products & services – click [here](#) to watch it
- Previous **2018 Canadian Electrical Code Changes Webinar** that was well attended – click [here](#) to watch it
- Prior **VFD webinar** – click [here](#) to watch it



SERVICES WE OFFER

- Full technical support for products manufactured
- Electrical and physical cable properties calculations (i.e. impedances, dimensions)
- Conductor ampacity and temperature calculations
- Post installation product support
- Custom engineered solutions to optimize a project from conception to energization
- Overhead line calculations, including conductor ampacity, temperature, impedance, as well as sag and tension



AGENDA

- What is CORFLEX®?
- CORFLEX® Applications
- Advantages & Limitations
- Why use CORFLEX®?
- CORFLEX® Cable Comparisons
- Target Installations
- Summary
- Q&A



What is CORFLEX®?

Continuous Corrugated Aluminum Sheath Armoured Cables

- Single copper or compact ACM aluminum conductors with EXELENE® crosslinked polyethylene insulation
- Available as 600V, 1 kV, 5 kV, 8 kV and 15 kV

CORFLEX® RA90 Cable

- 600 V, 90°C Dry / 90°C Wet, -40°C Installation
- CSA C22.2 No. 123 – Metal Sheathed Cables
- CSA C22.2 No. 174 – Hazardous Locations



Power & Control Cable

DriveRx® VFD

- **V**ariable **F**requency **D**rive cable, type RA90
- 1 kV, 90°C Dry / 90°C Wet, -40°C Installation
- CSA C22.2 No. 123 – Metal Sheathed Cables
- CSA C22.2 No. 174 – Hazardous Locations
- Conductors:
 - Copper – 12 AWG to 10 AWG – Unilay Compressed Class B (ASTM B8)
 - Copper – 8 AWG to 500 kcmil – Compact (ASTM B496)



Fittings

CORFLEX® Connectors

- CSA C22.2 No. 18.3 – Conduit, Tubing, and Cable Fittings
- Designed for CORFLEX® and DriveRx® VFD
- Provide 360° contact to the sheath
- Threaded hub that will accept ground bushings
- Have good high frequency shielding properties
- Type D for dry locations
- Type W for wet or Hazardous Locations
- Connectors are not explosion proof



Applications

- Services, feeders and branch circuits
- Indoors or outdoors
- Exposed or concealed
- Cable tray
- Raceway
- Direct burial
- Concrete encasement



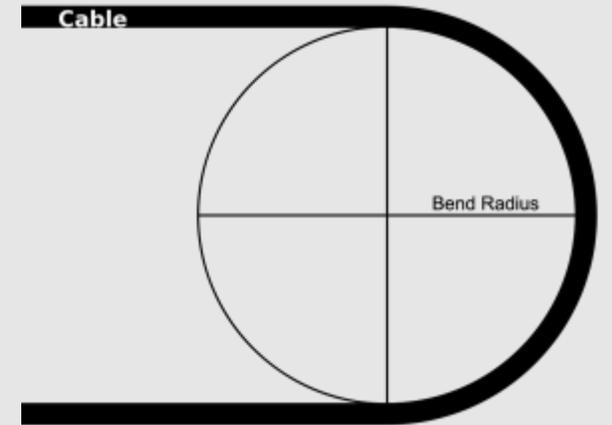
Advantages

- Manufactured for the Canadian market since **1950's**
- **Smaller overall outer diameter**
- **Self supporting**
- **Hand trainable**
- **Moisture** and **vapour impervious** aluminum sheath
- Effectively a manufactured cable in **conduit** solution
- **Cost** and **space** effective **single** conductor armoured cable
- Can withstand **1.5x number of bends** required by standard



Limitations

- Larger minimum bending radius:
 - use caution when rewinding cable onto a new reel (i.e. short lengths, cuts)
 - Difficult or not possible to pull into raceway (conduit)
- Tools are required to cut the armour → i.e. hacksaw to cut the armour



Why Use CORFLEX[®]?

- **No bonding conductor required**
- Designed to **transition between various installation** conditions
 - *Direct burial, cable tray, exposed, etc.*
- **Self supporting** qualities
- **Free-air ampacities** → CE Code Table 1 (copper) or Table 3 (aluminum)
- **Optimum VFD cable design** → Continuously corrugated aluminum sheath is designed to be:
 - *Shield*
 - *High frequency current return path*
 - *Mechanical protection (armour)*



CORFLEX[®] Cable Comparison → 1c 500 kcmil Cu

| | CORFLEX [®] | TECK90 |
|-------------------|----------------------|------------------|
| Voltage Rating | 600 V | 1 kV |
| Bonding Conductor | No | Concentric Wires |
| Inner Jacket | No | PVC |
| Armour | CCW Al Sheath | AIA |
| Outer Diameter | 33.8 mm | 40.3 mm |
| Weight | 2895 kg/km | 3742 kg/km |

CONCLUSION:

CORFLEX[®] is lighter and has a smaller diameter compared to TECK90.

CORFLEX[®] Cable Comparison → 1c 500 kcmil Al

| | CORFLEX [®] | ACWU90 |
|-------------------|----------------------|------------------|
| Voltage Rating | 600 V | 600 V |
| Bonding Conductor | No | Concentric Wires |
| Armour | CCW Al Sheath | AIA |
| Outer Diameter | 33.0 mm | 34.8 mm |
| Weight | 1281 kg/km | 1422 kg/km |

CONCLUSION:

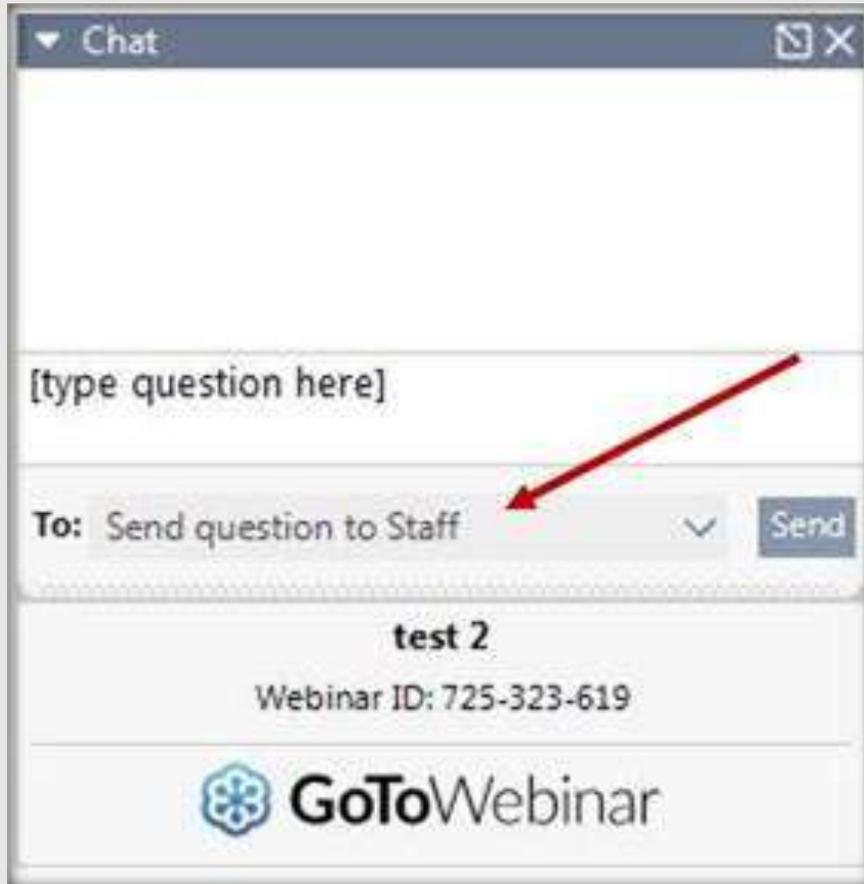
CORFLEX[®] is lighter compared to ACWU90.

Target Installations

- Generally long, straight runs
- Direct burial (such as service entrance)
- Single conductor cable runs leveraging free-air ampacities
- 400+ A circuits → cost effective alternative to cable bus or bus duct
- Hazardous Locations (HL) → Class I, Div 1; Class II, Div 1
- Variable Frequency Drives (VFD) → optimum design



Questions



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