

2020 WHMA 27TH ANNUAL WIRE HARNESS CONFERENCE



Electric Mobility Will Change Your Business

Presented to you by Ben Dagenais
From the Innovative Vehicle Institute

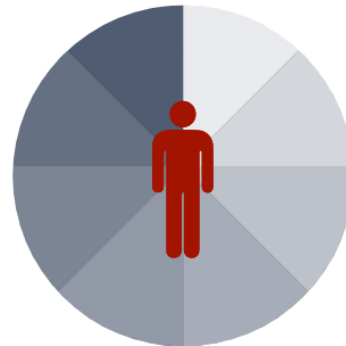
IPC Certified and Co-Chair of IPC-HVEM committee

A UNIQUE EXPERTISE

COLLABORATIVE APPROACH

ABOUT IVI

AN INNOVATION ACCELERATOR



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Wiring Harness Manufacturer's Association

An Affiliate of IPC



ENERGY EFFICIENCY

VEHICULAR INTELLIGENCE

OUR EXPERTISES

Electric and Hybrid Traction



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ELECTRIC AND HYBRID TRACTION



Development of an electric school bus



AWARD GÉNIE INNOVATION 2016



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ELECTRIC AND HYBRID TRACTION



Development of an electric urban bus



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ELECTRIC AND HYBRID TRACTION



Electric shuttle for
Calgary Airport



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ELECTRIC AND HYBRID TRACTION



Electrification of a
delivery truck



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ELECTRIC AND HYBRID TRACTION



Aerospace projects



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ELECTRIC AND HYBRID TRACTION



Electrification of a
street sweeper



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ENERGY EFFICIENCY



Design of a hybrid electric railcar tractor



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VEHICULAR INTELLIGENCE



Electric and autonomous
agricultural platform



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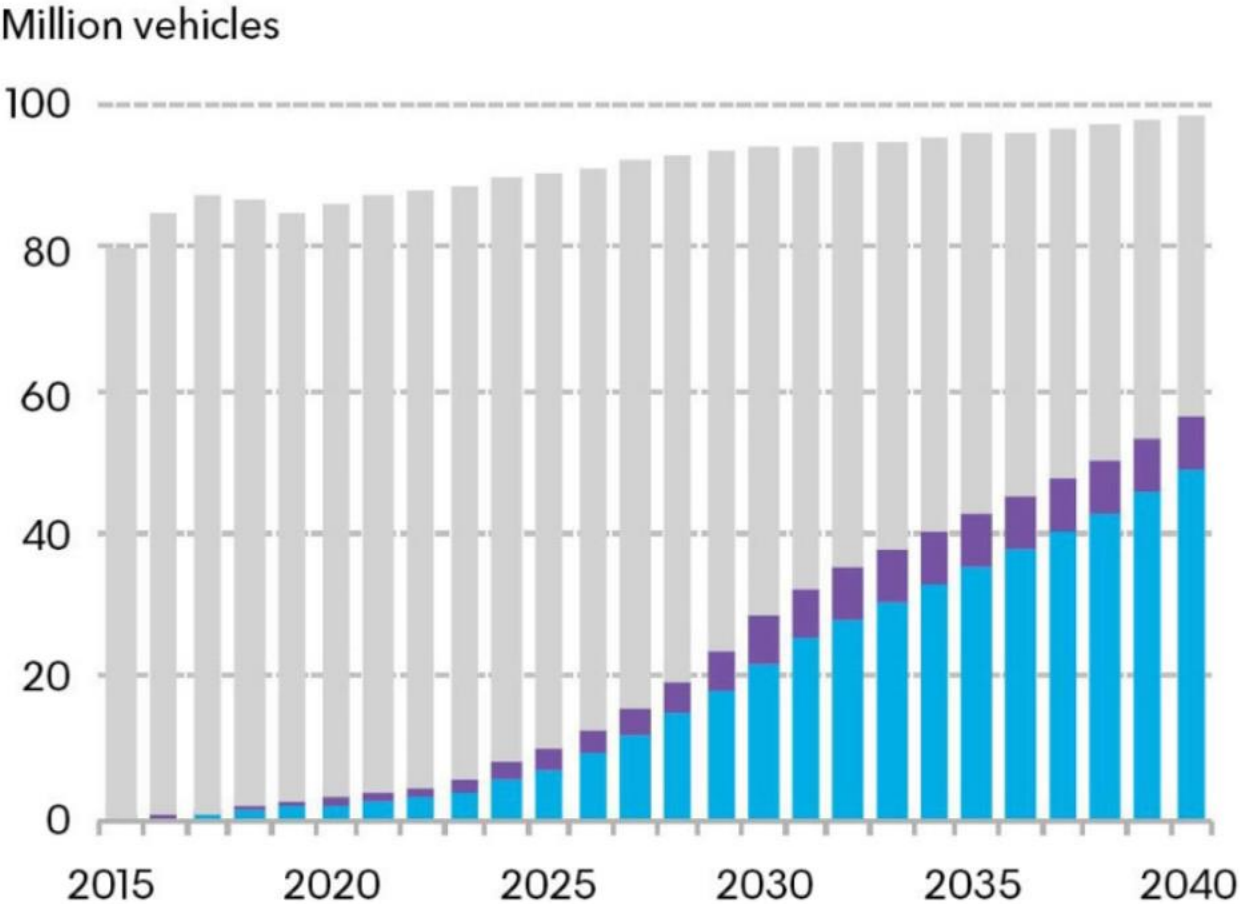
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ELECTRIC MOBILITY

Global long-term passenger vehicle sales by drivetrain



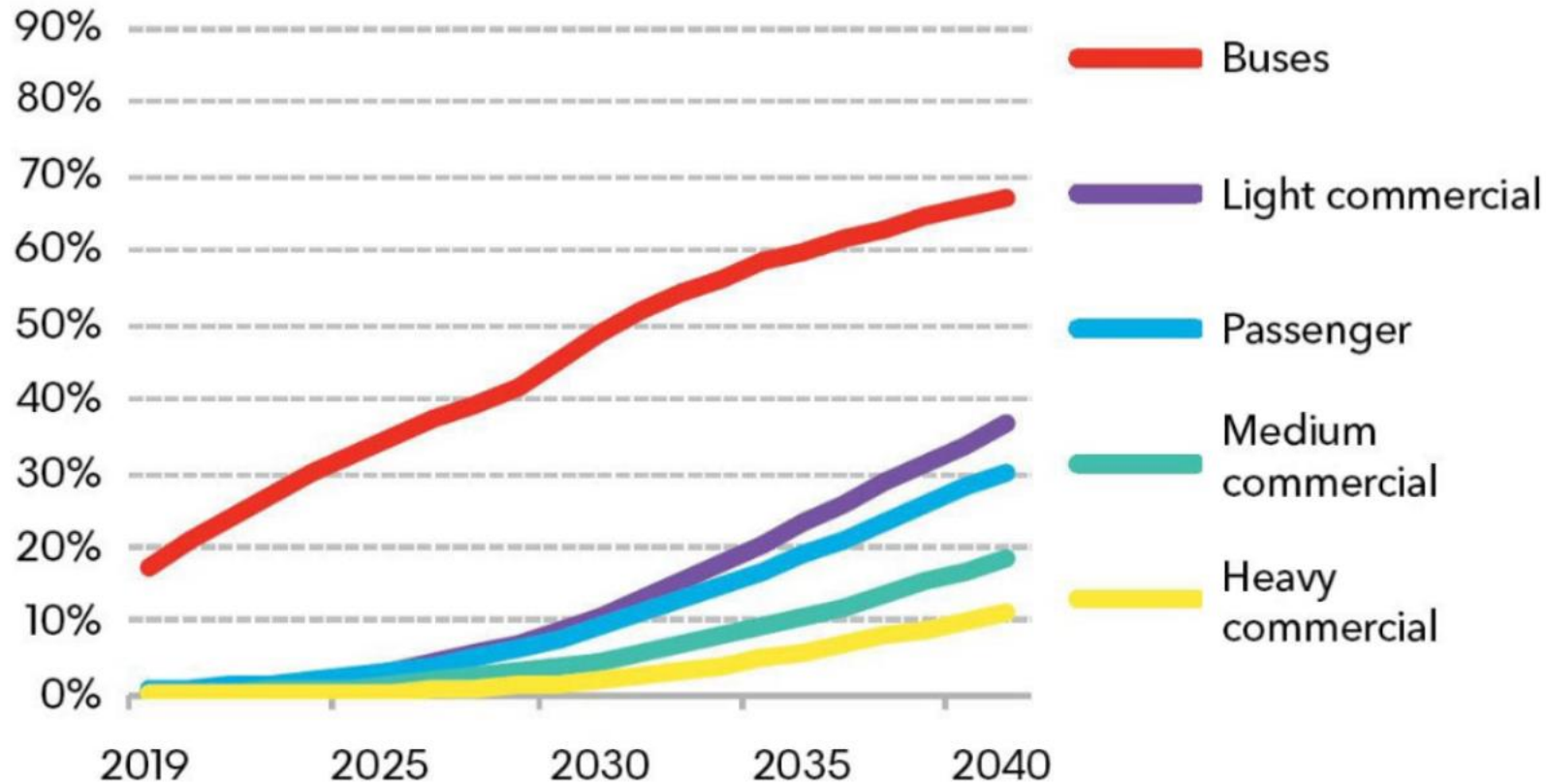
2 millions battery electric vehicle were sold in 2018 worldwide

Electric passenger cars sales are expected to rise close to 60% by 2040

Source: BloombergNEF

EV share of global vehicle fleet by segment

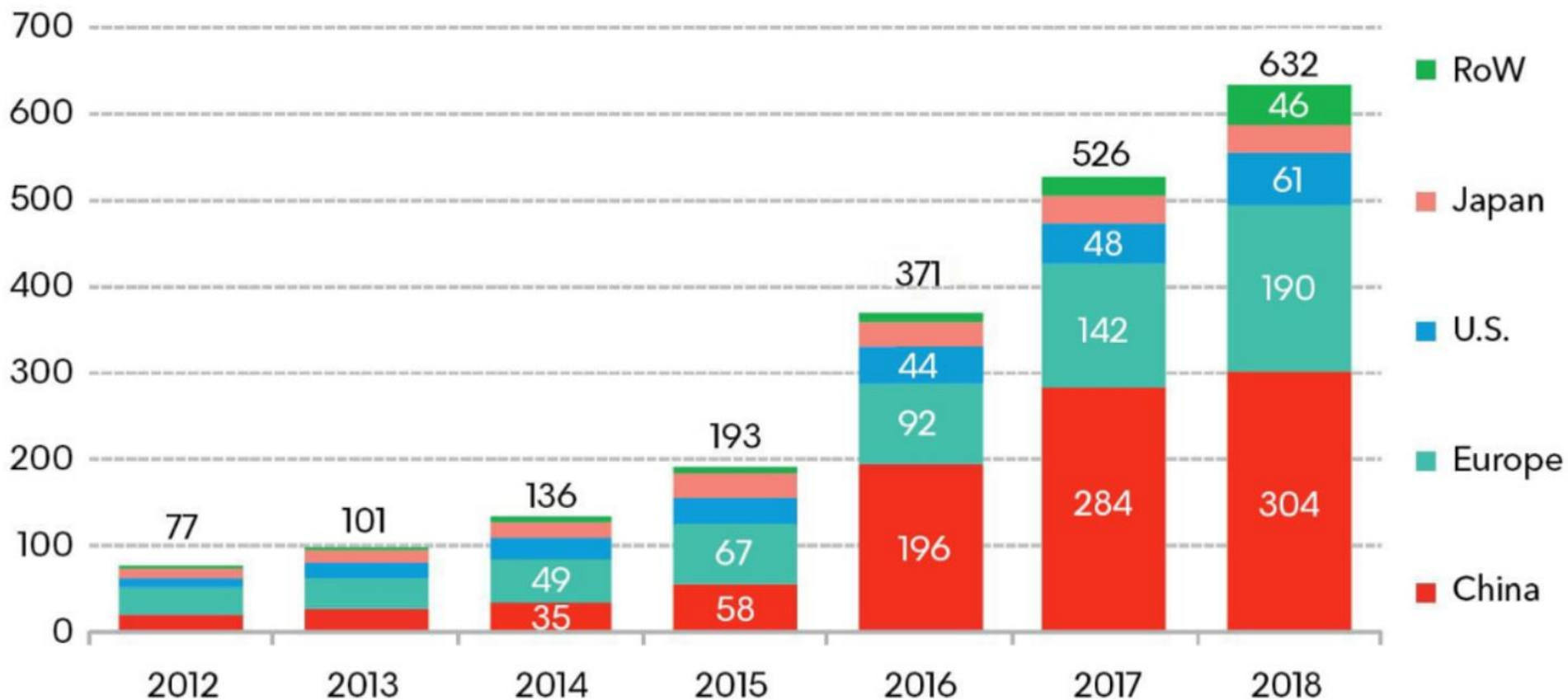
Share of fleet



Source: BloombergNEF. Note: Commercial vehicle adoption figures include the main markets of China, Europe, and the U.S.

Public charging outlets installed globally

Thousand units



Source: BloombergNEF. Note: Data current as of January 1, 2019. Data will be updated on the BNEF data hub at the end of 1H 2019.



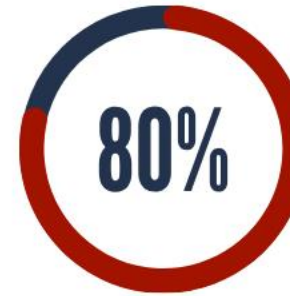
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LOS ANGELES ; ZERO EMISSIONS 2028 ROADMAP 2.0



Of all vehicles sold will be electric by the year 2028

Uber and Lyft to use only electric vehicle



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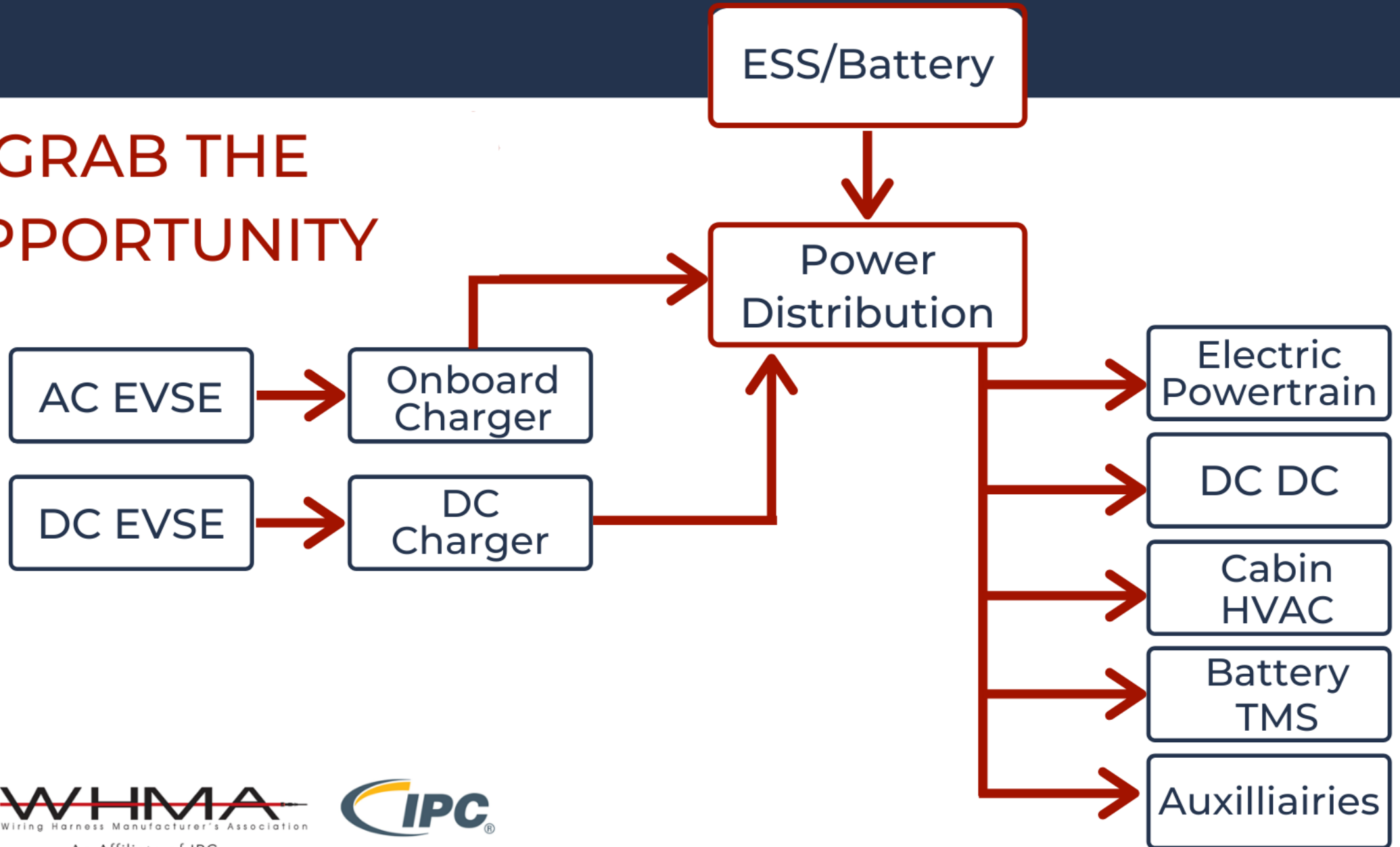


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GRAB THE OPPORTUNITY





BATTERY MODULES



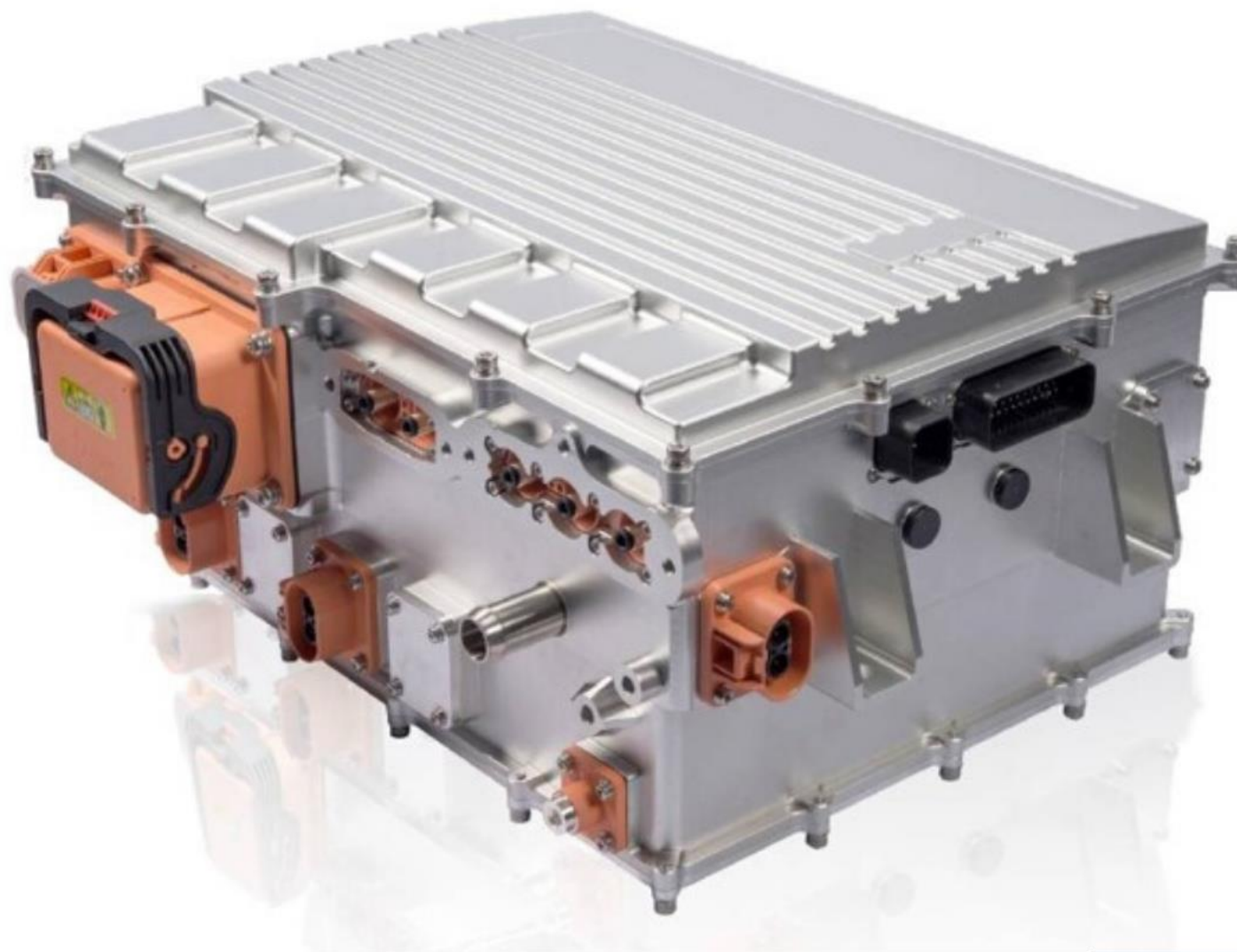
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POWER DISTRIBUTION ENCLOSURE



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BATTERY ASSEMBLY



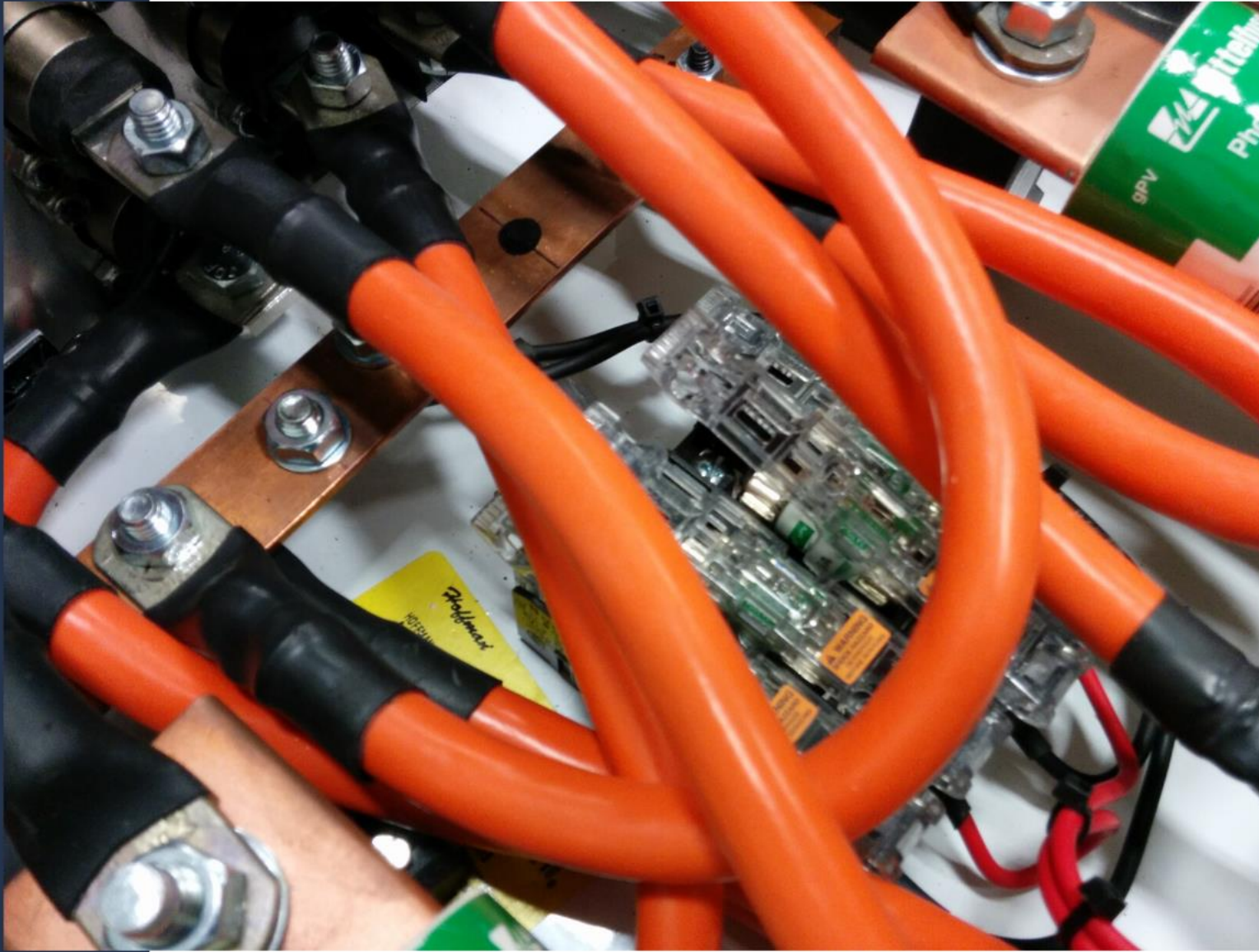
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GETTING THE BUSINESS DONE WITH THE ORANGE CABLE

Battery assembly safety



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High voltage
tools used in
the industry



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THE MULTIPLE
CHALLENGES THE
HIGH VOLTAGE
WIRING CAN SEND
YOU



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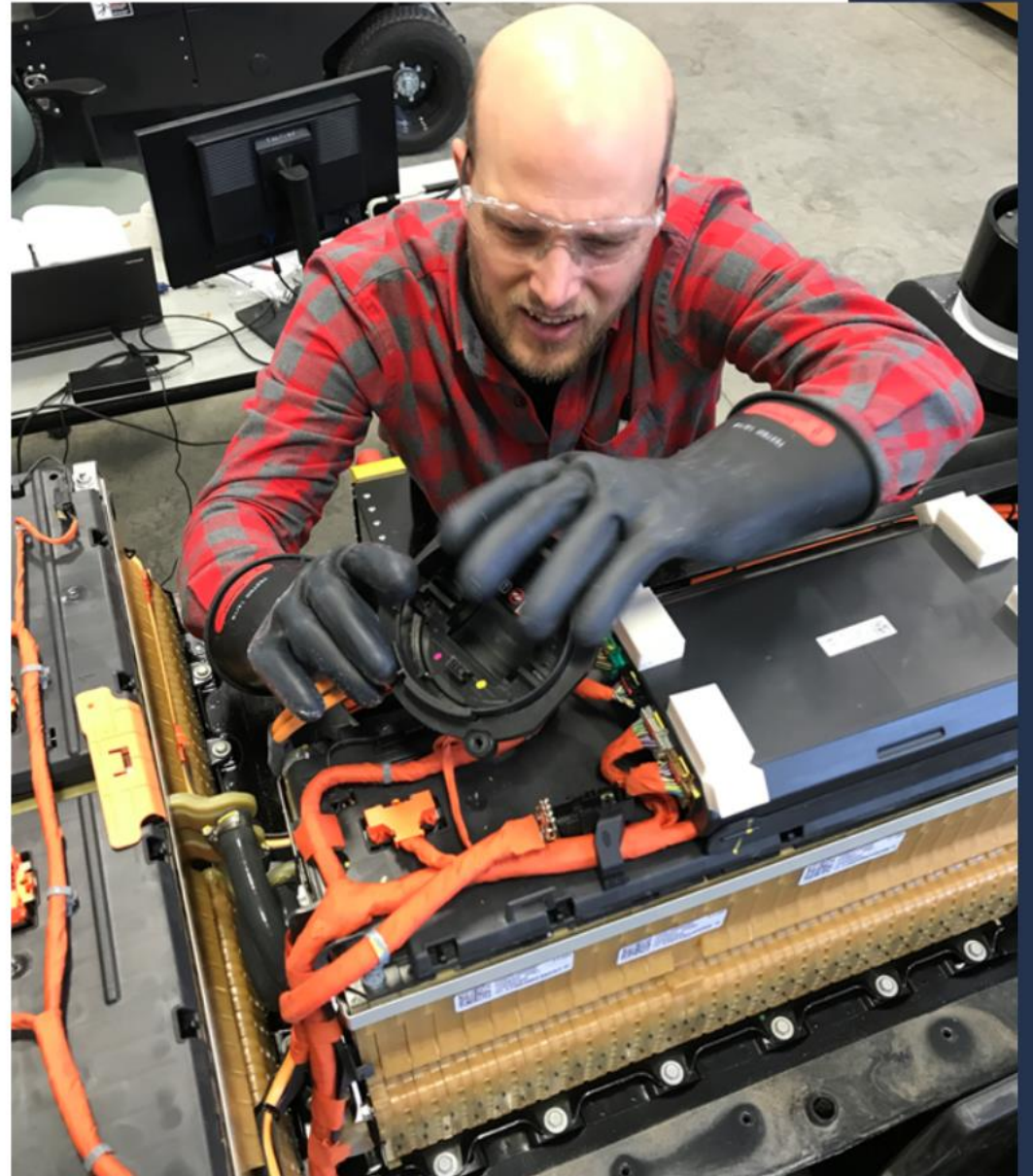


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Getting stock can be a
challenge



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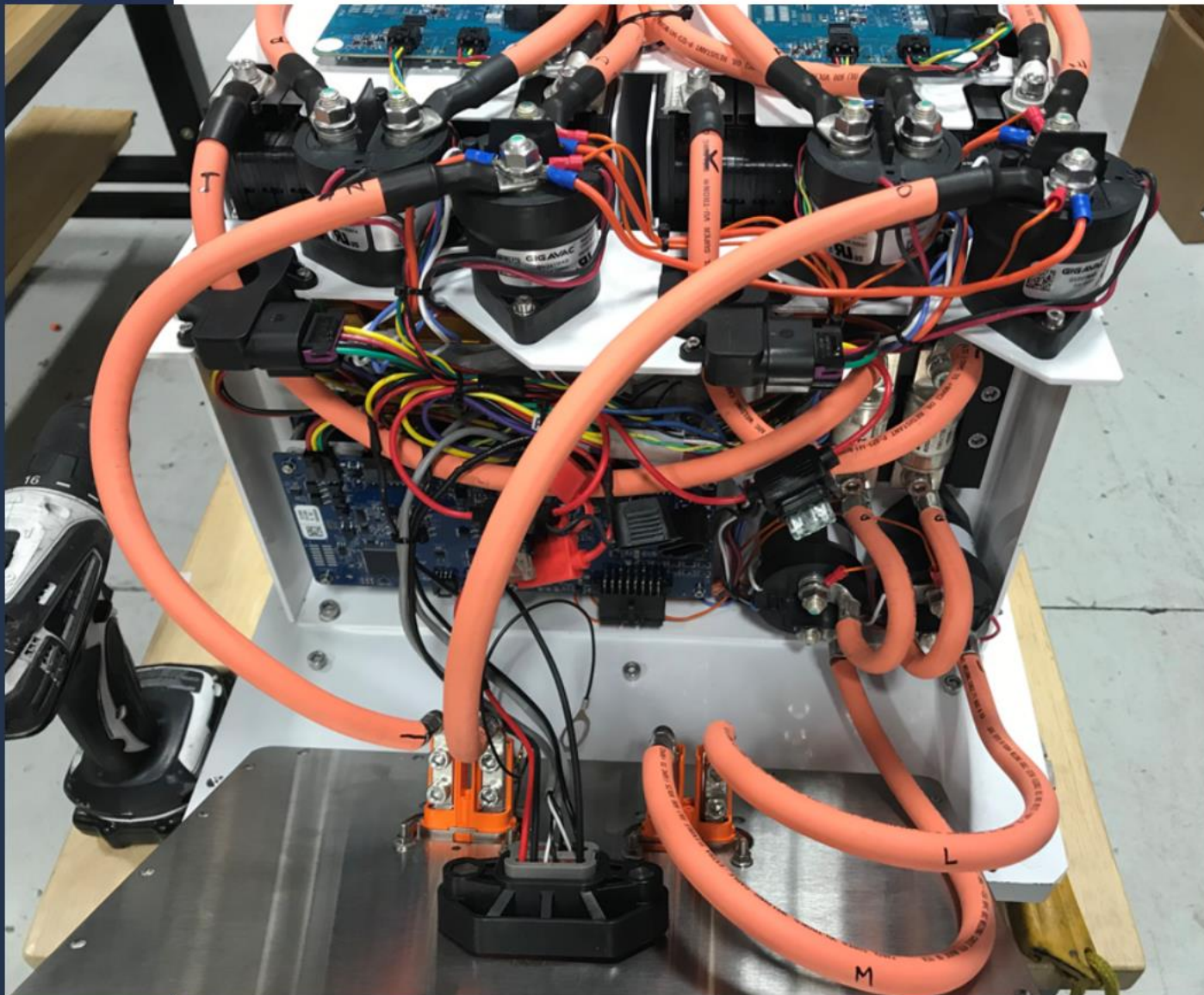
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The heavy weight of spools might require new lifting equipment at work stations

Footballing will prevent proper crimping





Most of the
cabling you will
work with are
SHIELDED



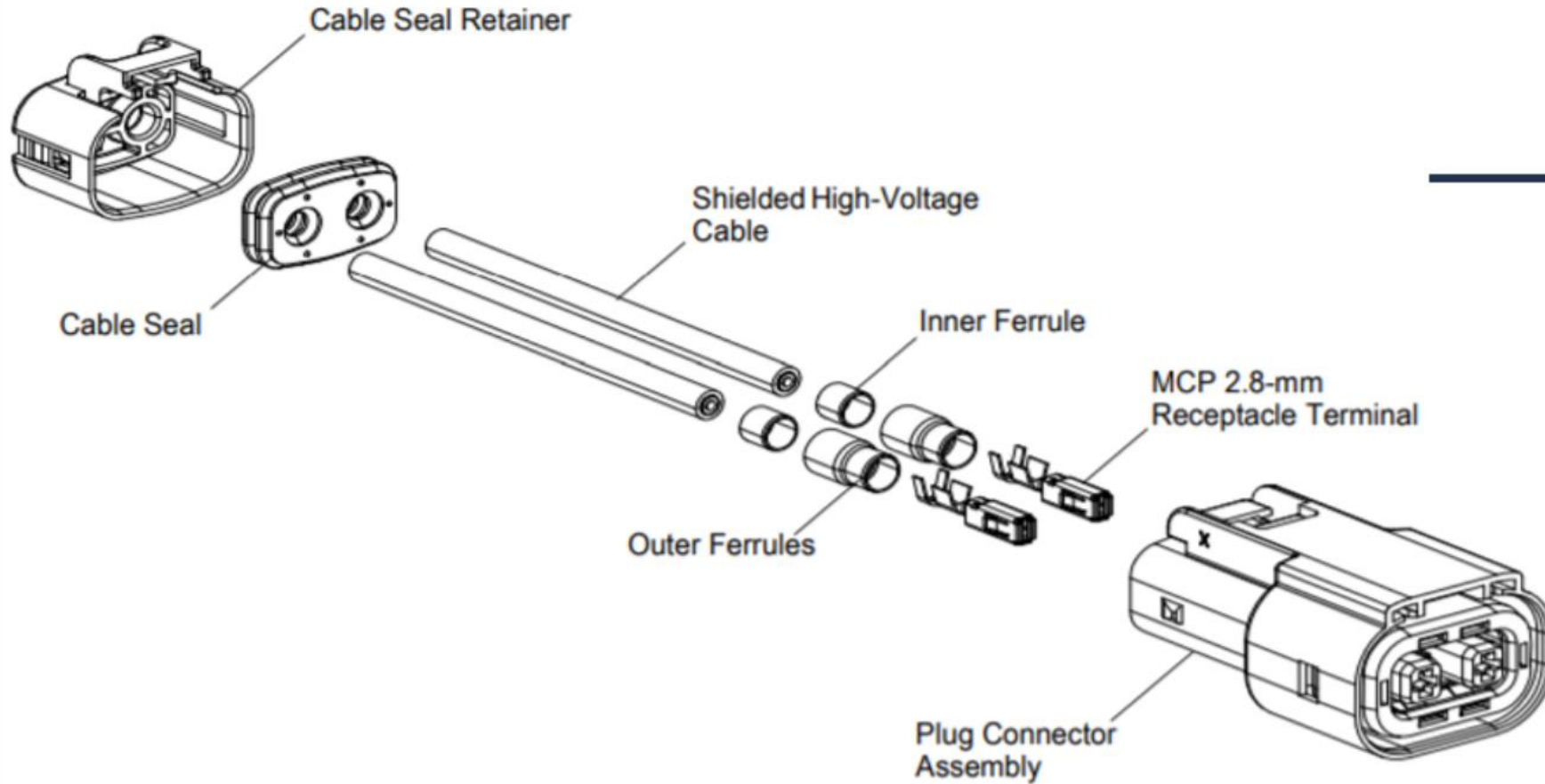
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TECHNICAL EXPERTISE



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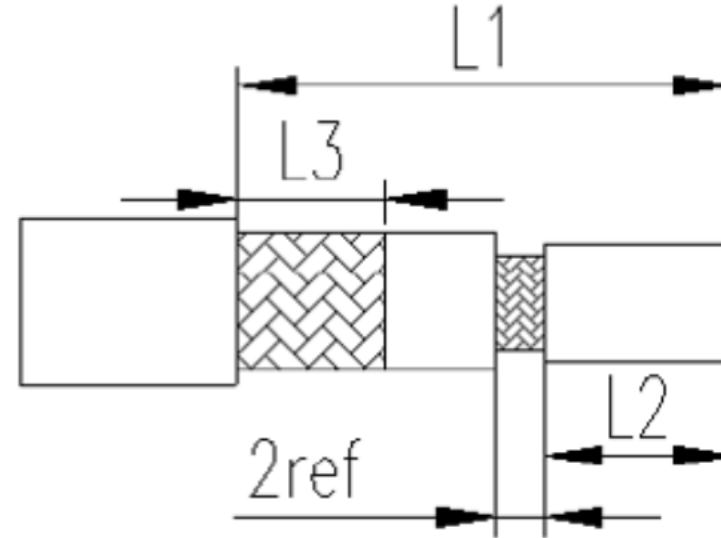


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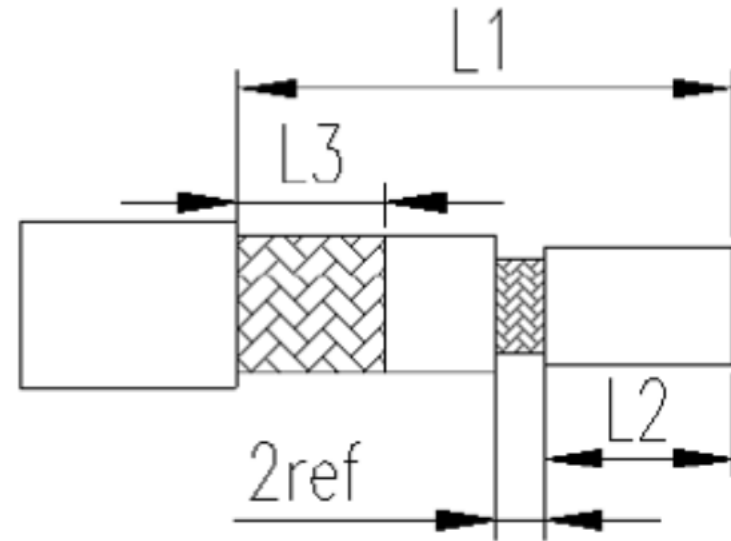
Precision work is key
to make money



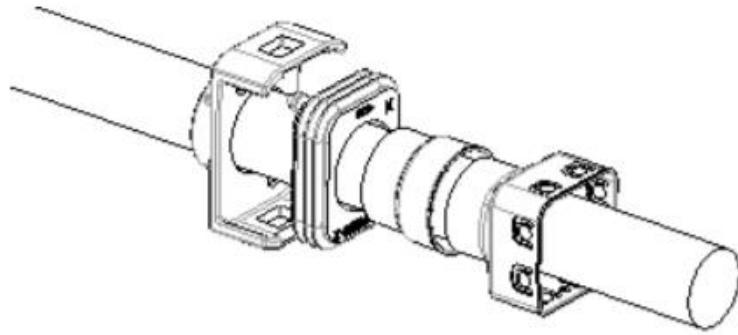
cable spec	L1(mm)	L2(mm)	L3(mm)
25mm ²	35±1	19±0.5	12 (ref)
35mm ²			14 (ref)
50mm ²			
70mm ²			



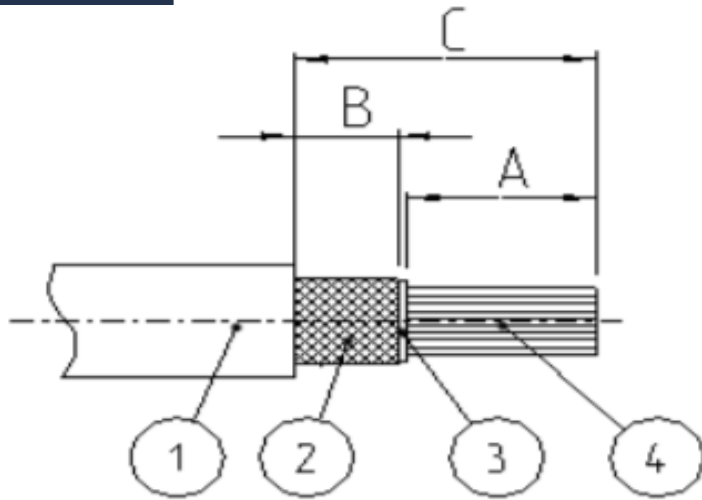
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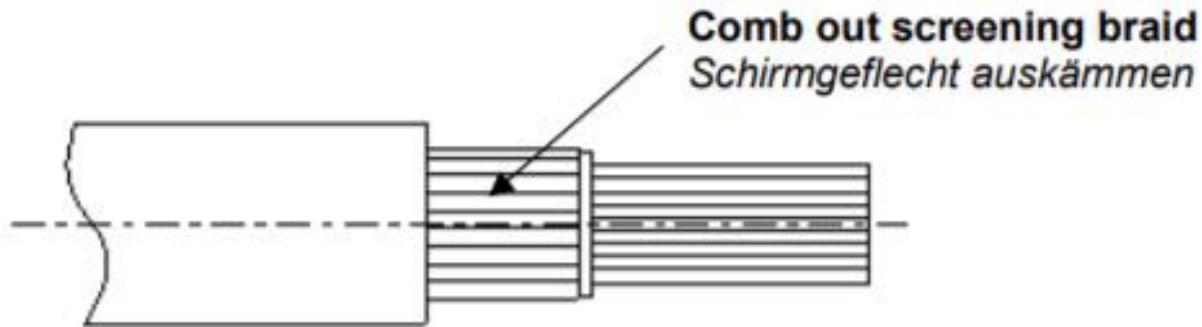
cable spec	L1(mm)	L2(mm)	L3(mm)
25mm ²	35±1	19±0.5	12 (ref)
35mm ²			14 (ref)
50mm ²			
70mm ²			



1



2



3

Complex connectors



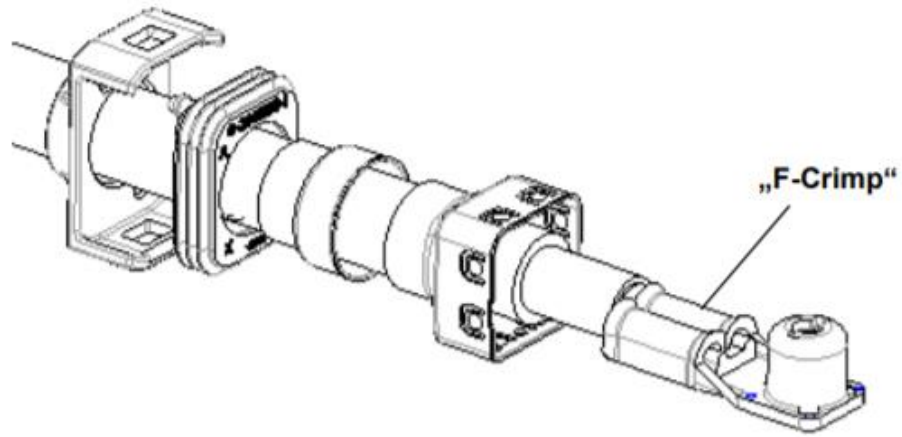
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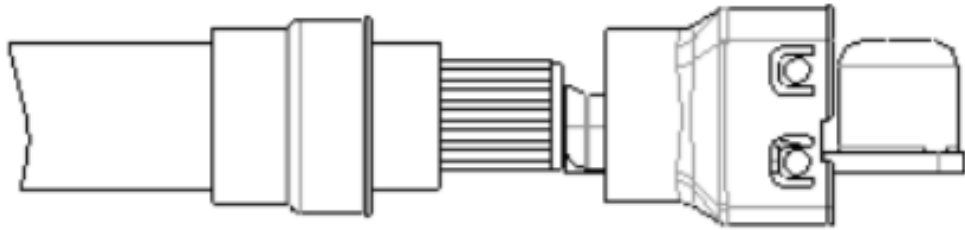
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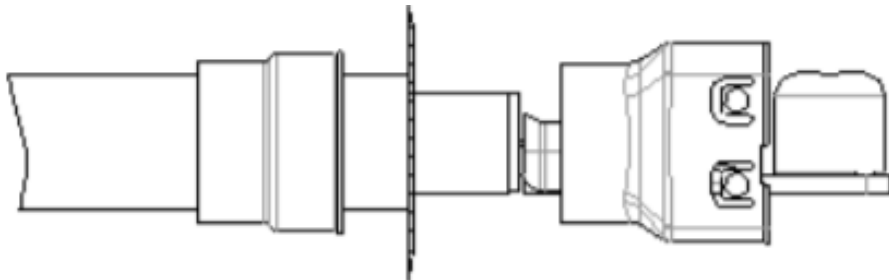


4

Complex connectors



5



6



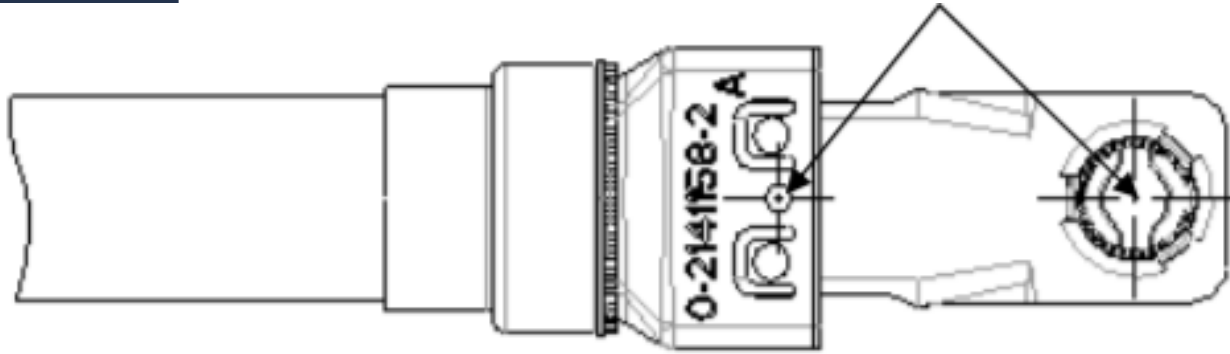
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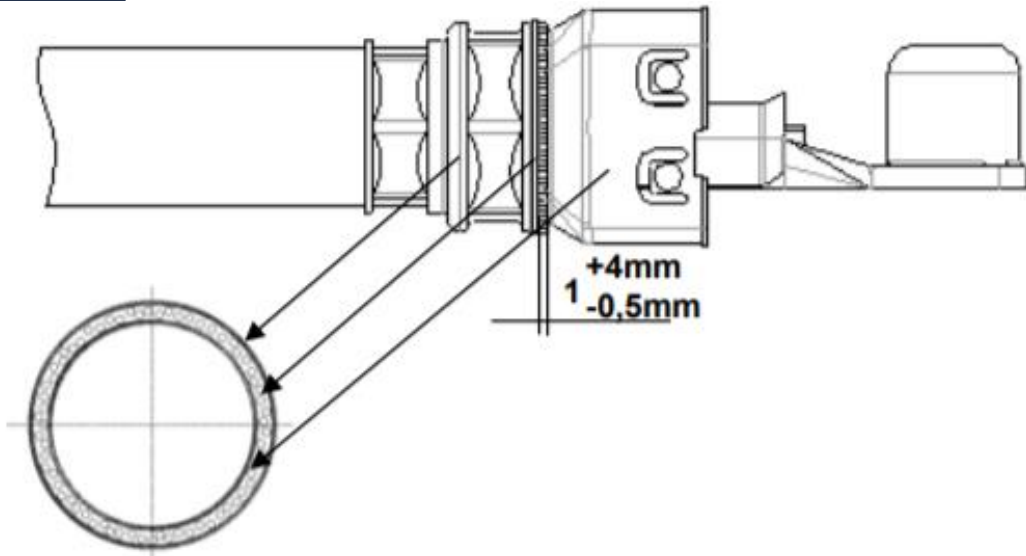
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7

Complex connectors



8

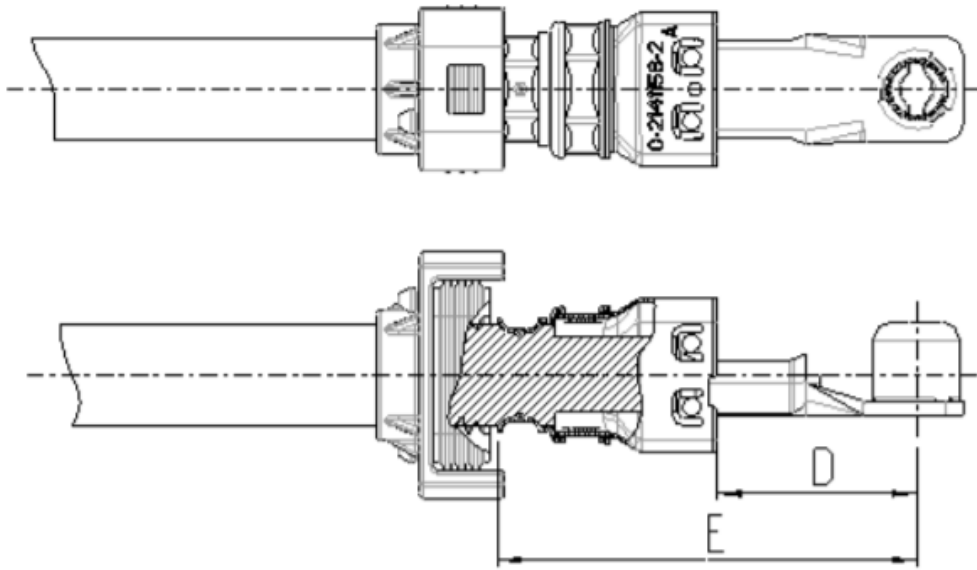


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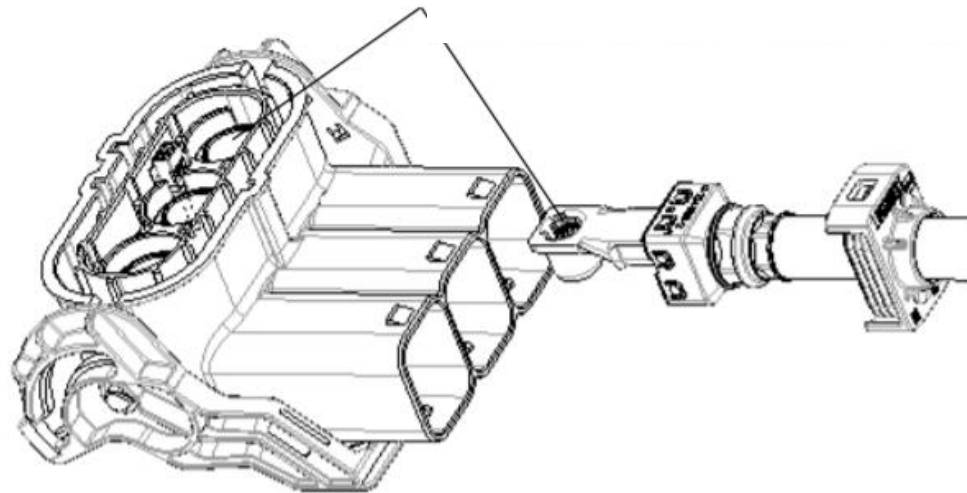
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9

Complex connectors



10

IPC High Voltage standard committee



IPC/WHMA-A-620 HVEM
Group 7-31FHV
St-Jérôme, Québec



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IPC High Voltage standard committee



Juarez, Mexico

IPC High Voltage standard committee



Munich, Germany



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Begin your Journey in electrification



Join us in the
IPC/WHMA-A-620-
HVEM committee

Let's CREATE the
Process !