



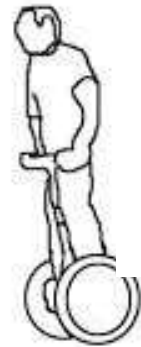
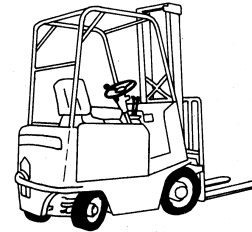
Arquitetura das Conexões e dos Sensoriamentos nos Veículos Elétricos



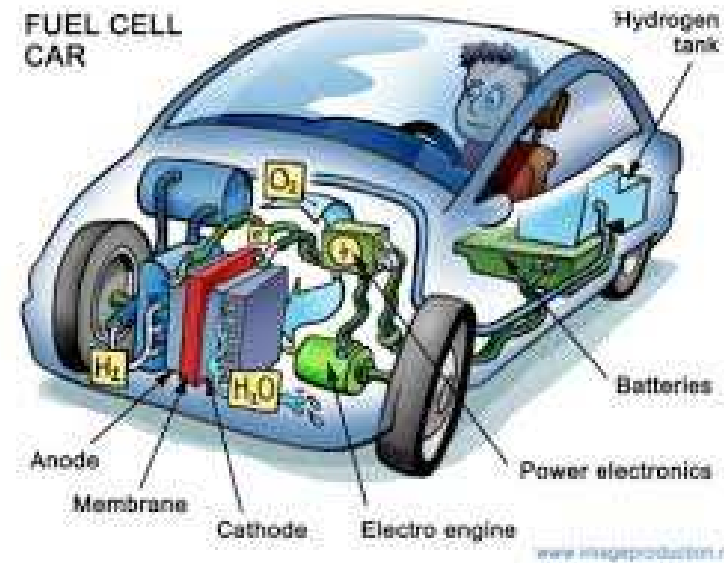
EVERY CONNECTION COUNTS



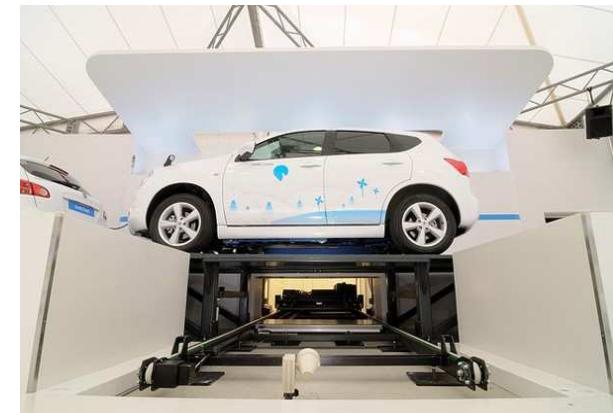
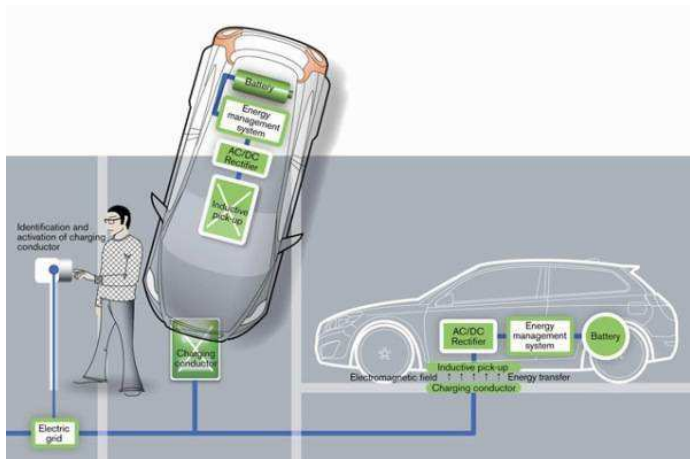
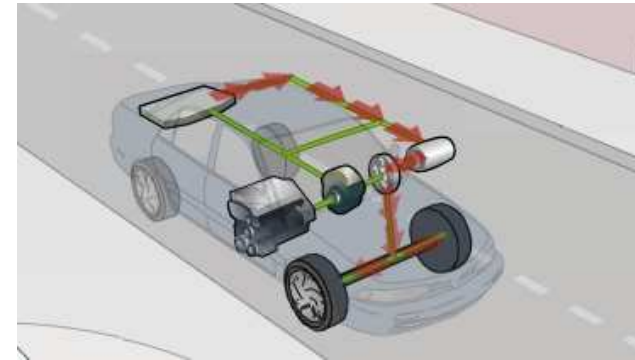
Exemplos de Veículos Elétricos:



Exemplos de sistemas p/ Veículos Elétricos:



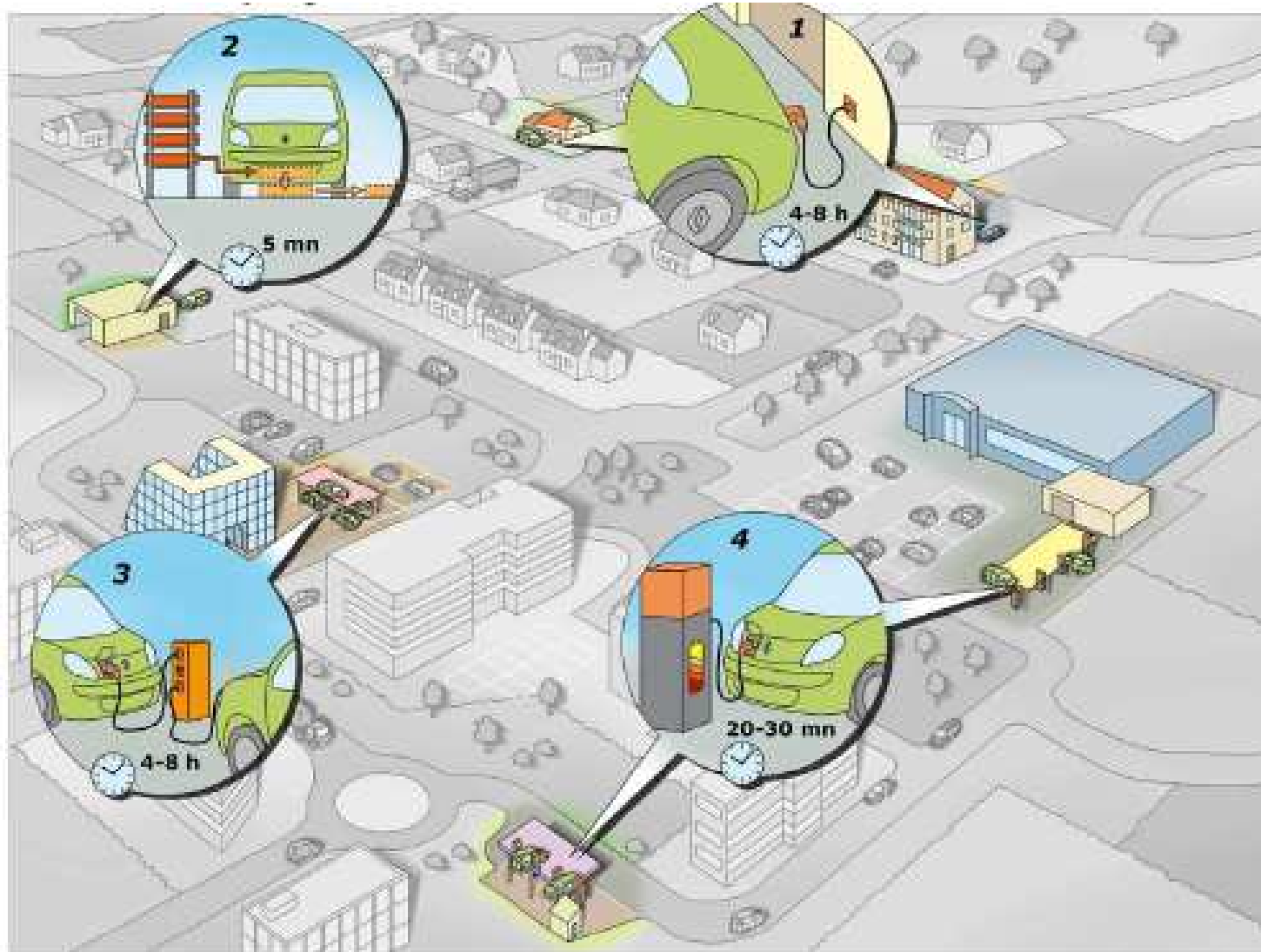
Exemplos de tecnologias p/ carga de baterias:



https://www.youtube.com/watch?v=H-Azrt_wUkc

Quickdrop system

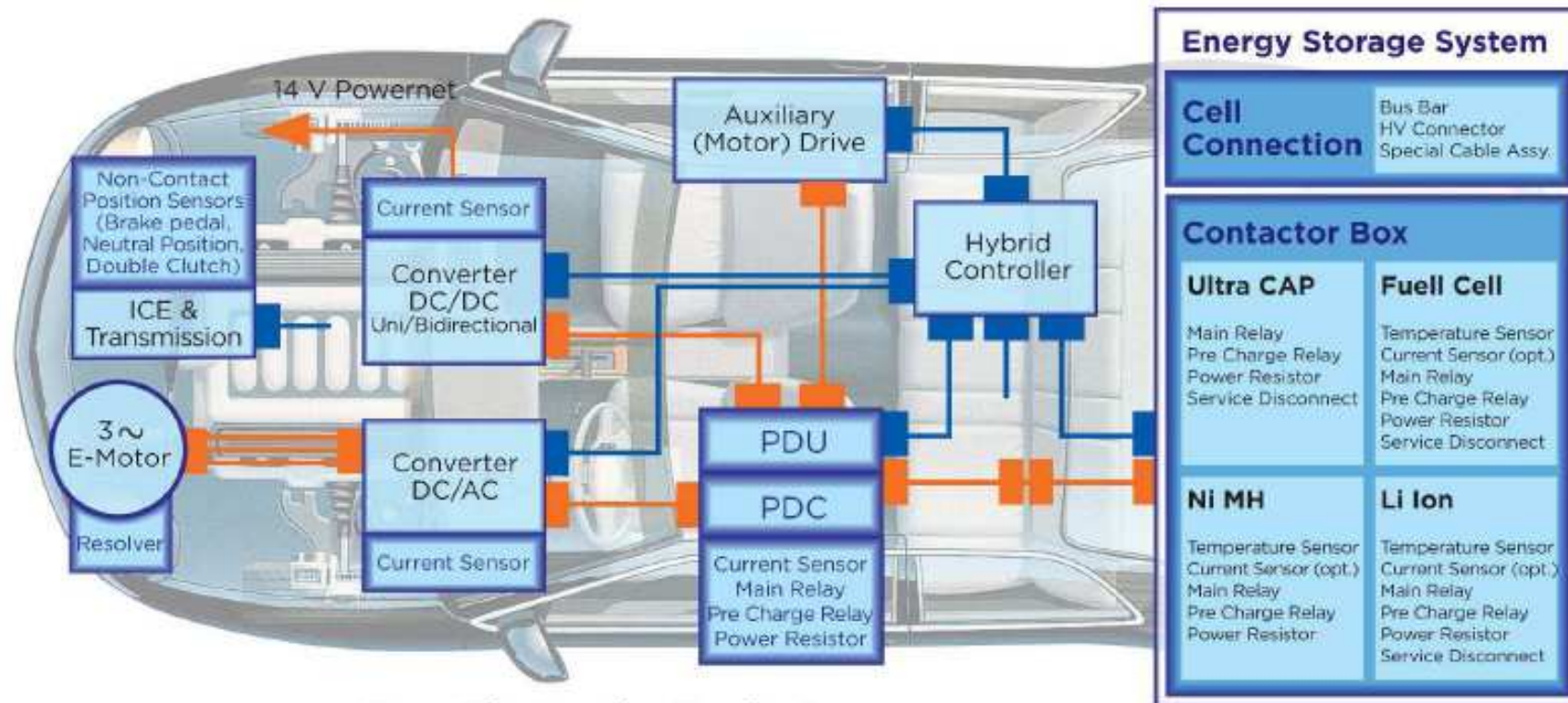
Exemplos de tecnologias p/ carga de baterias:



Posto para Quickdrop system:



Arquitetura Elétrica:



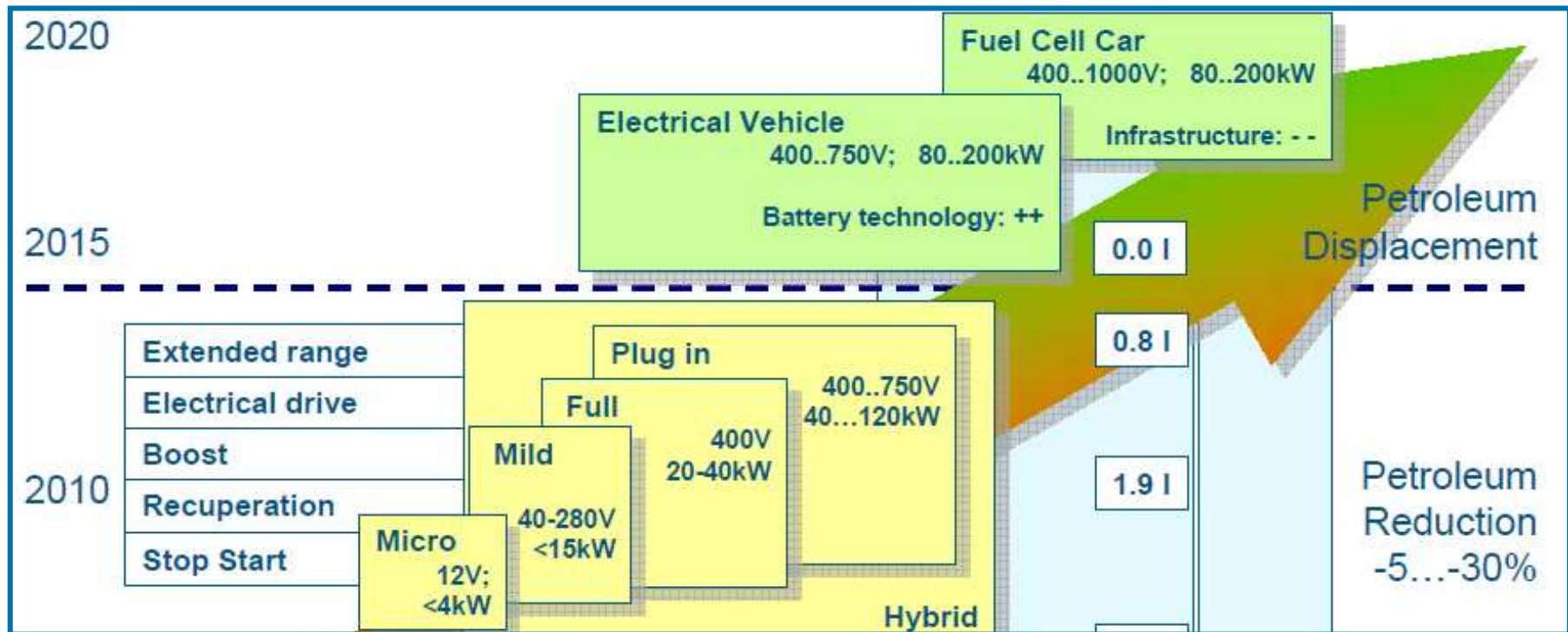
Tyco Electronics Products



Contactor Box
 PDU/PDC/PDB
 Main Relay
 Pre-Charge Relay
 Power Resistor
 Service Disconnect

High Voltage Interlock
 Cell Connection
 Current Sensor
 Non-Contact Position Sensor
 Temperature Sensor
 Resolver

Tensão / Corrente Elétrica:



$$P = I \times U$$

Desconexão em sistemas de Alta Tensão:

Desconexão em sistemas de Alta Tensão:



Alta tensão em instalações industriais:

Alta tensão em instalações industriais:



- Associação Brasileira de Normas Técnicas - ABNT
- Agência Nacional de Telecomunicações - ANATEL
- concessionária de energia elétrica local.
- *American National Standards Institute - ANSI*
- *Institute Electrical and Eletronics Engineers - IEEE*
- *National Electrical Manufactures Association - NEMA*
- *National Electrical Code - NEC*
- *American Society for Testing and Materials - ASTM*
- *International Electrical Commission - IEC*
- *Insulated Power Cable Engineers Association - IPCEA*



Alta tensão em veículos:



Veículos Elétricos

Onde está a cabine primária?
Ela deveria estar fora do veículo e em local de fácil acesso.



Alta tensão em veículos:

Carros fabricados pelas grandes montadoras de automóveis utilizam componentes especialmente desenvolvidos, que evitam os potenciais acidentes decorrentes da alta tensão.



Alta tensão em veículos:

Carros fabricados pelas grandes montadoras de automóveis utilizam componentes especialmente desenvolvidos, que evitam os potenciais acidentes decorrentes da alta tensão.

O problema é que nem todo veículo elétrico é carro produzido por grandes montadoras de automóveis.

E muitos veículos elétricos aplicam soluções industriais e não automotivas.



Lições aprendidas e oportunidades futuras:

Global invests for hybrid & Electric vehicles is arriving:

Chinese-Saudi carmaker Amsia Motors has signed a preliminary deal to build the first auto factory in the Brazilian state of Sergipe, where it plans to invest 1 billion Reais (\$457 million) on a plant focused on hybrid and electric vehicles. They are going to manufacture passenger cars, busses and agricultural machines.

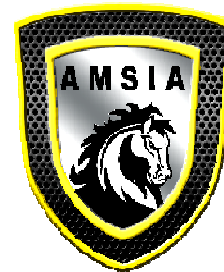


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Meta:
Aplicar 100%
de soluções
automotivas.



Exemplos de componentes p/ veículos elétricos:



Conexões p/ Alta Tensão



Reles e Contatores



Sensores

Exemplo de componente p/ veículo elétrico:

Fuse Rating: Up to 630A

Screw Size: M5

Voltage Rating: 600 VDC

Temperature Range: -40° C to 85° C

Current Rating: >350A Continuous @70/95mm² Wire

Mating Cycles: >50

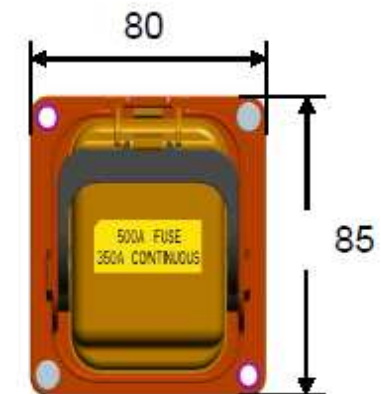
IP Rating: Mated: IPx7, IP6k9k

Unmated: IP2xb

Latching Style: Finger Actuated - 2 Stage

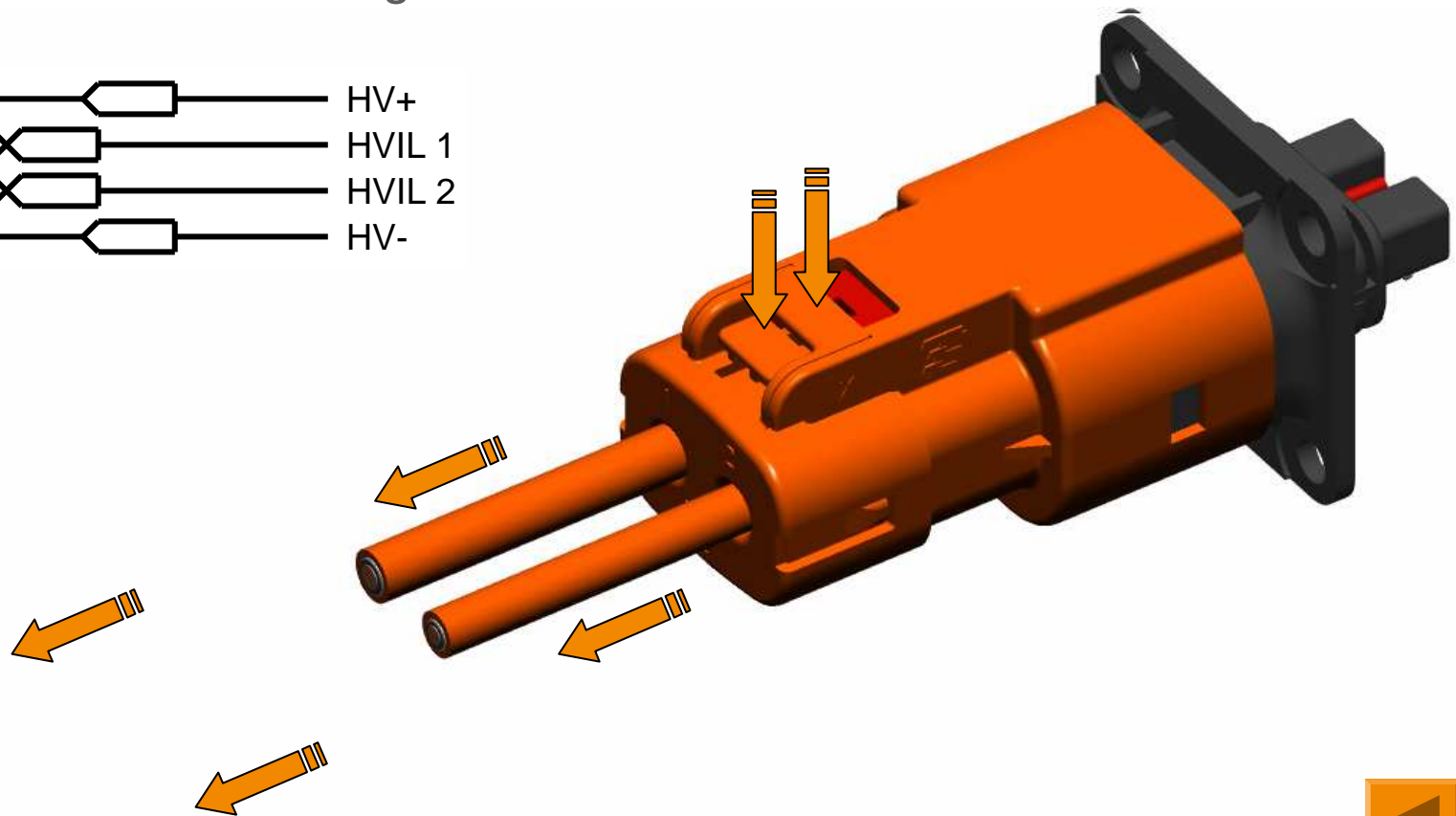
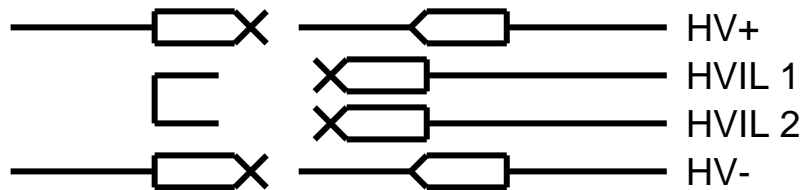
Lever Assist

HVIL: 2x Integrated-Internal



Exemplo de componente p/ veículo elétrico:

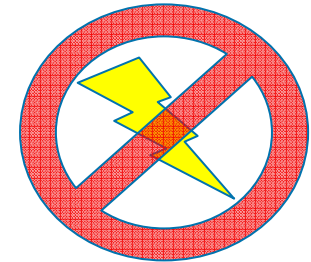
- Circuito de proteção integrado ao conector;
- Desconexão em dois estágios.



Exemplo de componente p/ veículo elétrico:

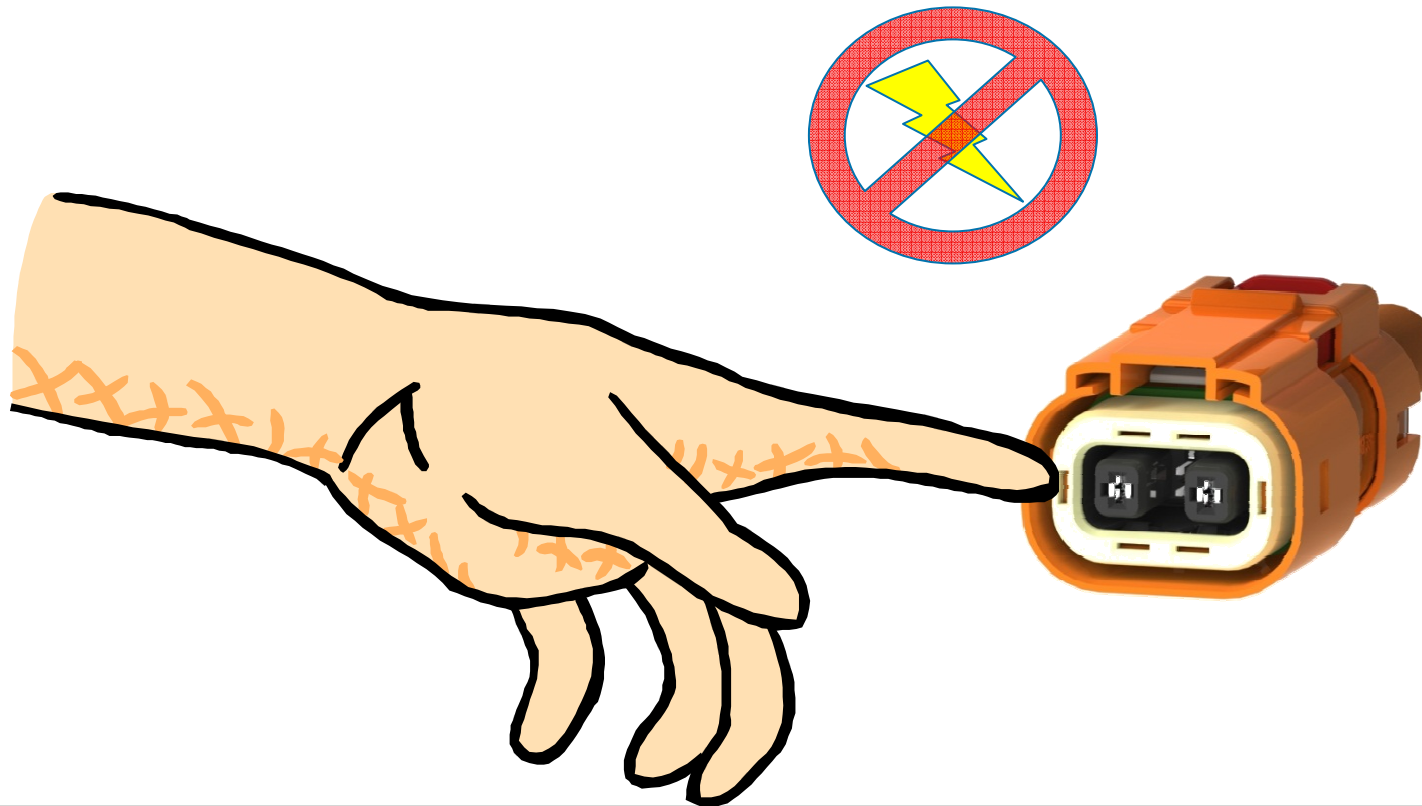
HVIL (High Voltage Interlock Loop)

Circuito de proteção integrado ao conector



Exemplo de componente p/ veículo elétrico:

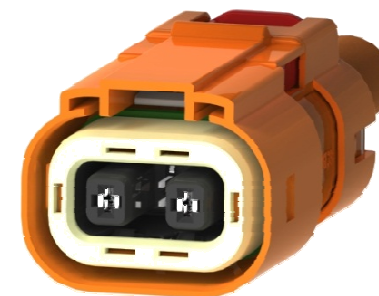
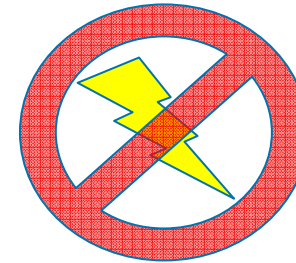
Segurança contra toque involuntário nos condutores de alta tensão:



Exemplo de componente p/ veículo elétrico:

Segurança contra problemas decorrentes de Interferência Eletromagnética:

360° Shielding



Exemplo de componente p/ veículo elétrico:

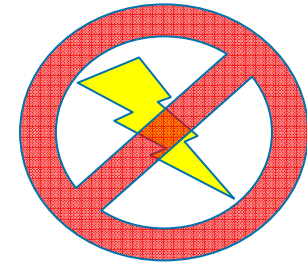
Segurança contra problemas decorrentes da incidência de água, partículas sólidas condutivas e outras substâncias: **IP 67 / IP 6K9K**

IP First number - Protection against solid objects

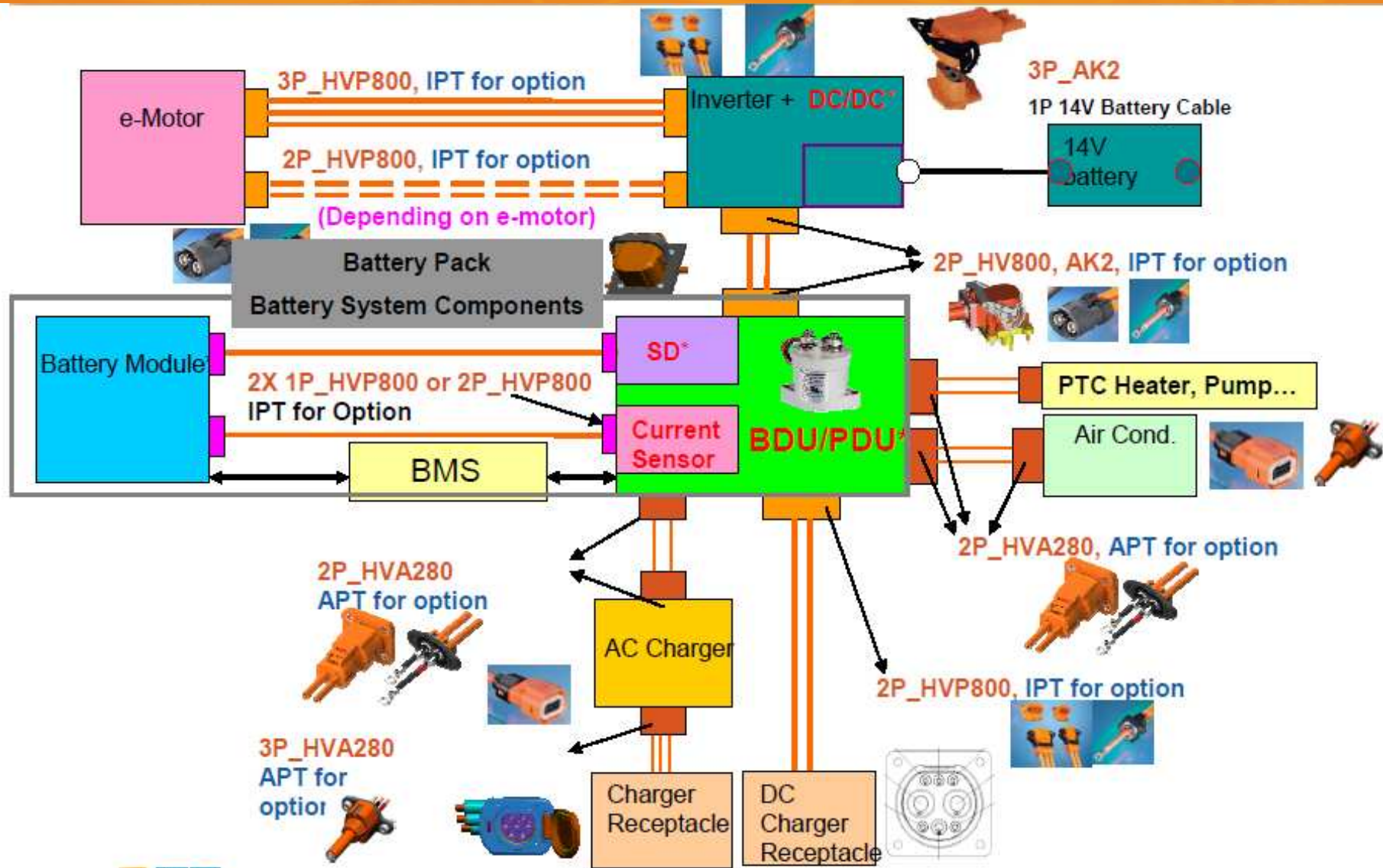
0	No special protection
1	Protection against accidental touch by hands
2	Protection against objects such as fingers
3	Protection against tools and wires
4	Protection against tools, wires, small wires
5	Limited protection against dust
6	Protected from dust

IP Second number - Protection against liquids

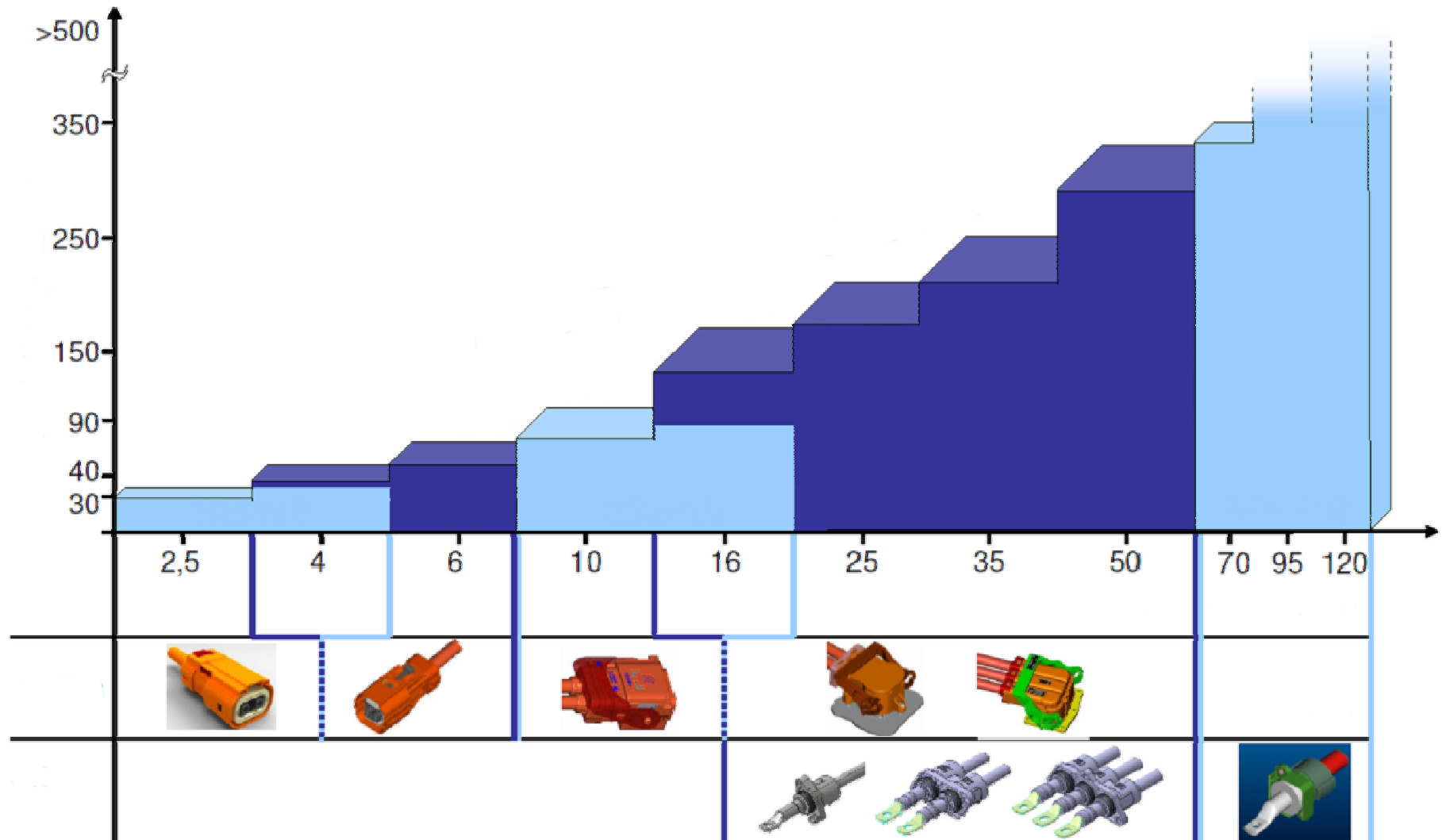
0	No Protection
1	Protection against vertically dropping condensation
2	Protection against direct sprays of water up to 15 degrees from vert.
3	Protection against direct sprays of water up to 60 degrees from vert.
4	Protection from sprays of water in all directions. Limited water ingress permitted
5	Protection from low pressure jets of water in all directions. Limited water ingress permitted
6	Nearly the same as # 5, except for ship decks
7	Protected against the effects of immersion in water to depth between 15 cm and 1 meter













Arquitetura elétrica:





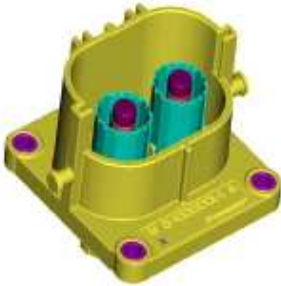

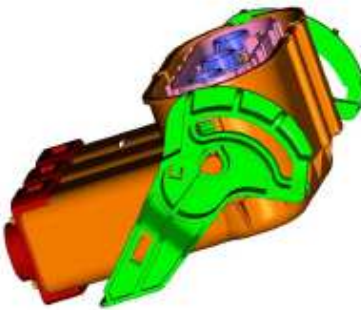
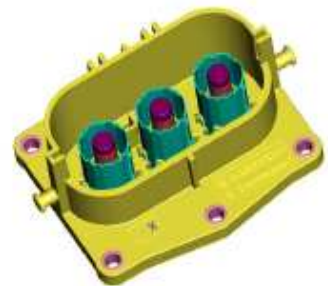
Diferentes componentes p/ veículos elétricos:



Diferentes componentes p/ veículos elétricos:

Typical Applications		In-Line	Header & Plug	
Battery Pack Electrical Heater DC/DC Converter On-Board Charger Electric Air Conditioning High Voltage Power Distribution Electric Power Steering	Packaging			
	Cable	Individual		Multi-core
				
	Number of Circuits	2 Pole		3 Pole
				
	HVIL	Shunted		In-Line
				
	Latching	Tool Actuated		Finger Actuated
				

Diferentes componentes p/ veículos elétricos:

	180°	90°	Header to mate 180° & 90° conn.
2 way			
3 way			

Melhoria potencial nos veículos elétricos:

- Segurança:
- Autonomia:

Melhoria potencial nos veículos elétricos:

Autonomia



Baterias

Níquel
Chumbo
Lítio
Sódio
Etc.

Melhoria potencial nos veículos elétricos:

Autonomia

Baterias

- Densidade energética;
- Controle de carga;
- Sensores;
- etc.

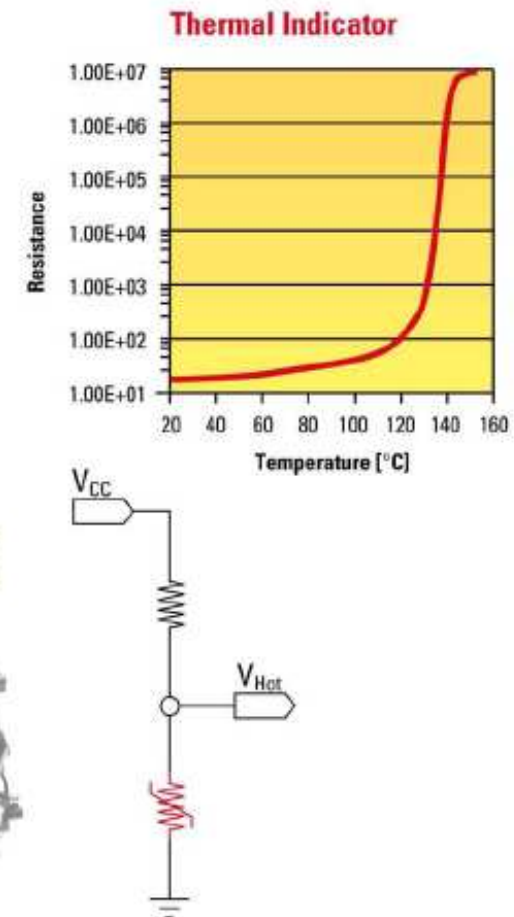
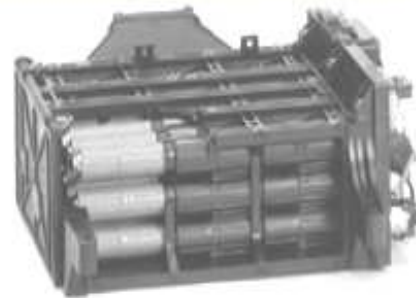
Eficiência Energética

- Regeneração (cinética / elétrica);
- Motorização independente;
- Redução do atrito;
- Redução de calor;
- Redução de massa do veículo;
- etc.

Melhoria potencial nos veículos elétricos:

Key target features

- Temperature Protection with Polyswitch (e.g. 75°C ...)
- Trip temperature as a material constant
- PolySwitches multivalent package-able
- Stripe in parallel to cells
- Battery heats up pPTC indirectly
- pPTC resistance jumps
- easy temperature indication
e.g. as redundant safety system



Melhoria potencial nos veículos elétricos:

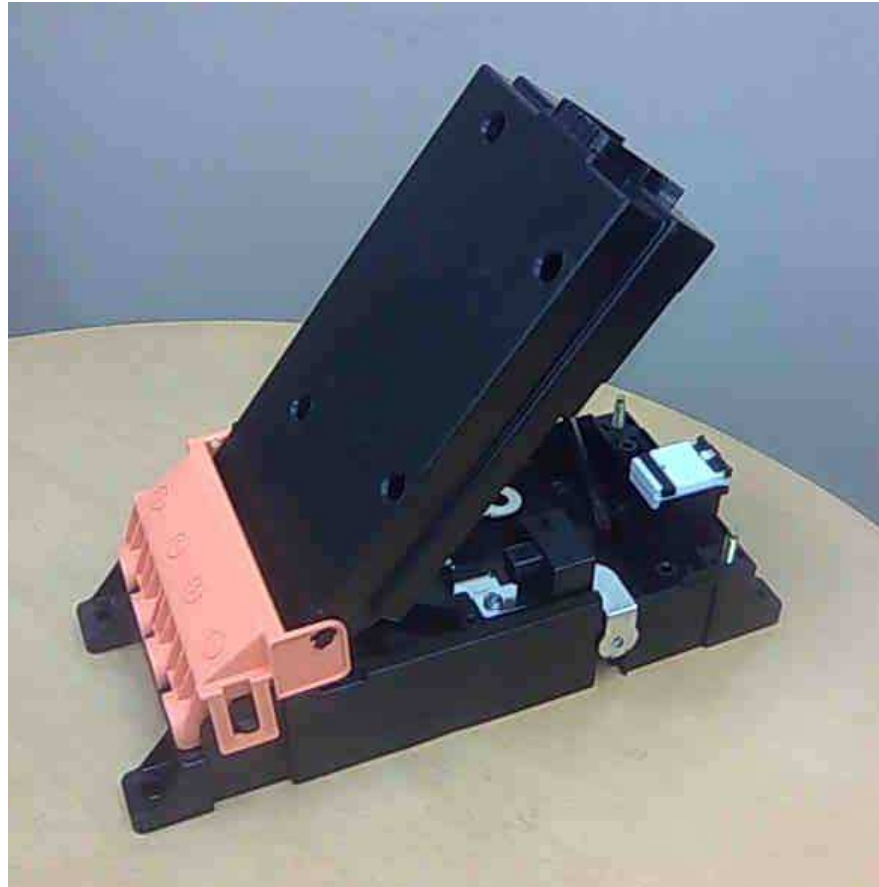
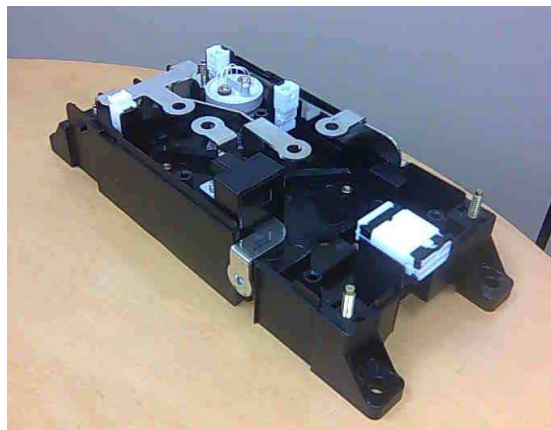
Regeneração X capacidade da bateria:

Sensor de corrente



Melhoria potencial nos veículos elétricos:

Battery Disconnect Unit (BDU)

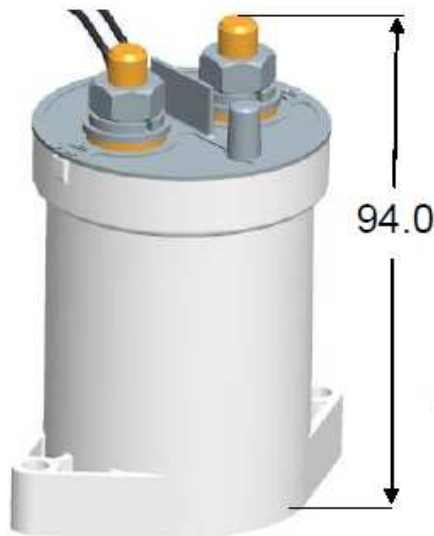


Melhoria potencial nos veículos elétricos:

- Redução de tamanho;
- Redução de peso;
- Redução de ruído sonoro.

EVC500L

500 Amps cont. current
Does NOT require economizer
to reduce coil power



(Mass: 600g)

EVC500

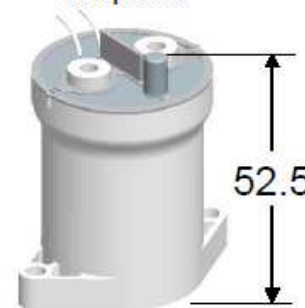
500 Amps cont. current
Requires economizer to
reduce coil power



(Mass: 430g)

EVC135

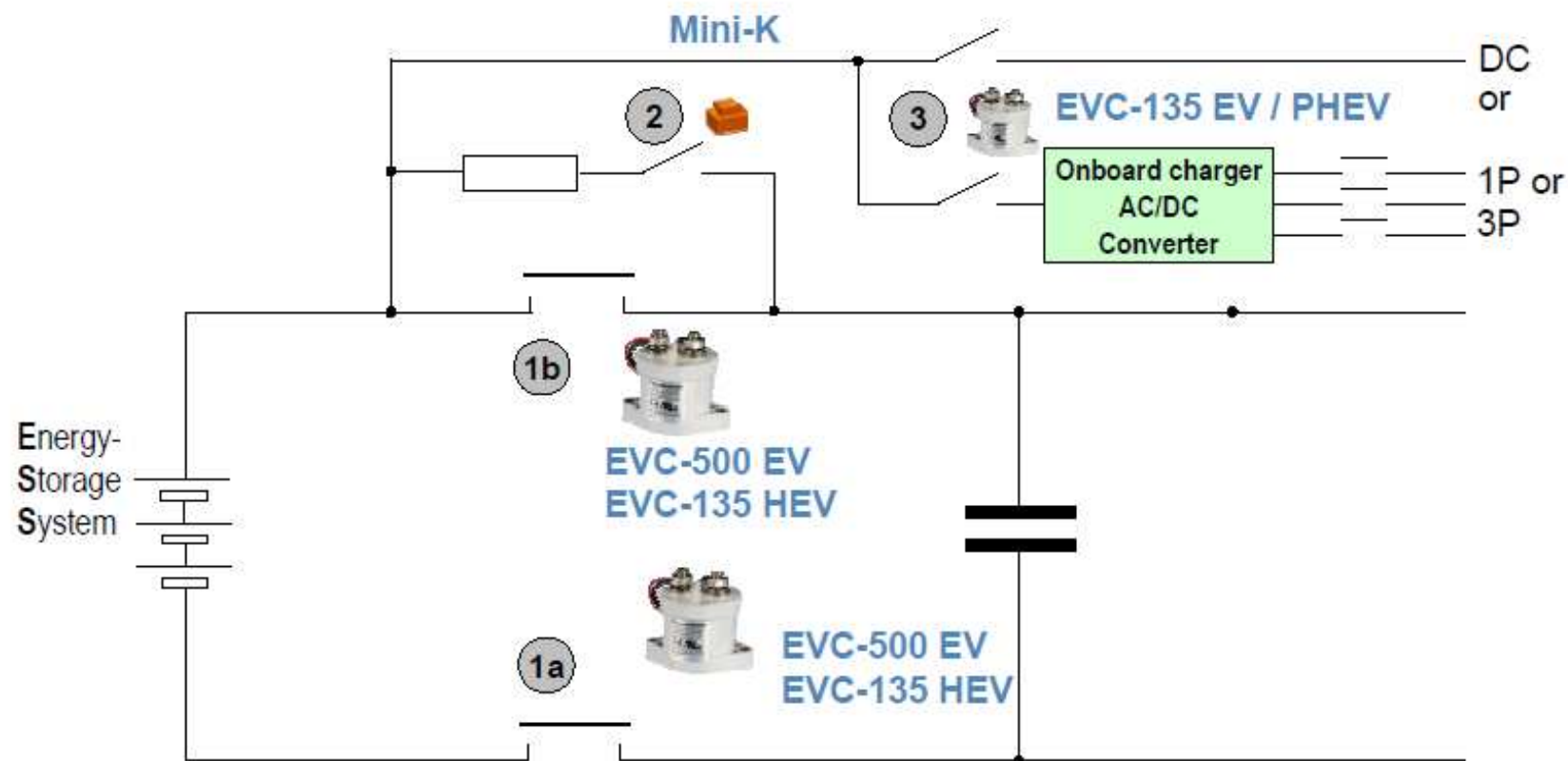
135 Amps cont. current
Does NOT require
economizer to reduce
coil power



(Mass: 190g)



Melhoria potencial nos veículos elétricos:



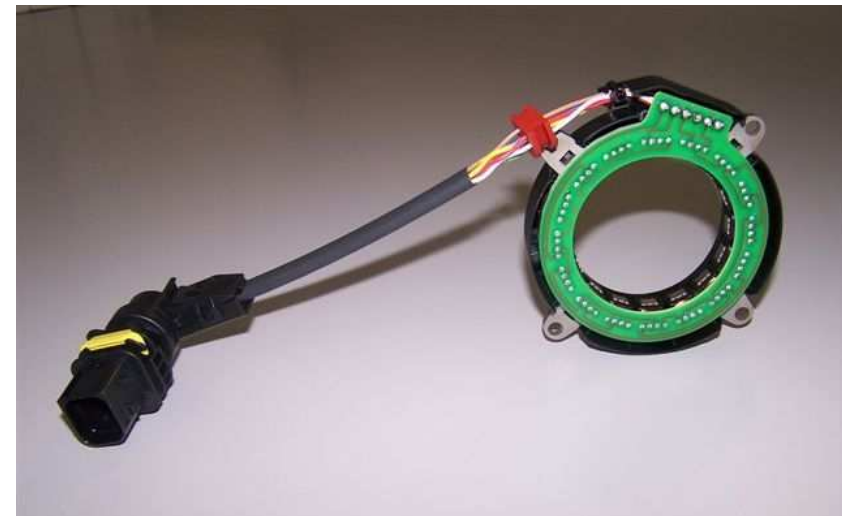
Key Applications:

- ① Main Contactor
- ② Precharge Relay
- ③ Charger Contactor (DC)

Work with TE Engineering to help design your next robust EV power system

Melhoria potencial nos veículos elétricos:

Resolver – (encolder extremamente leve)



Definição de Veículo Elétrico

Automotive

Industrial

Energy



Over 50 years of providing safe and reliable solutions around the globe.



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ANNOUNCING TE'S HYBRID & ELECTRIC MOBILITY SOLUTIONS

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WHEN IT NEEDS TO BE

SMARTER, FASTER, BETTER

WE'RE IN IT.

EVERY CONNECTION COUNTS



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