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## MAINTENANCE SYSTEM FOR CHANGING HIGH-VOLTAGE CHARGING CABLES FOR PERSONS WITHOUT SPECIAL HIGH- VOLTAGE TRAINING

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## MAINTENANCE SYSTEM FOR CHANGING HIGH-VOLTAGE CHARGING CABLES FOR PERSONS WITHOUT SPECIAL HIGH-VOLTAGE TRAINING

### Technical task:

At present there are charging stations with firmly attached cables. With a permanently attached cable, the current-carrying wires of the charging cable are mechanically connected to the charging hardware (contactor). This connection is made mechanically via screw terminals which, due to their safety relevance (reverse polarity possible), may only be carried out by trained specialists (special high-voltage training).

These charging cables are a wearing part, so that a recurring exchange is necessary with regular use.

### Initial situation:

Reverse polarity during connection can lead to a short circuit hazard, fire hazard and life-threatening electric shock.

A lot of time is required for replacement, as each wire of the charging cable is connected manually with special tools and specialist personnel must be available or requested separately.

In addition, high installation costs arise during replacement, as trained specialist personnel are required (higher hourly rates).

### Solution:

Within the charging station, the charging cable is not connected to the contactor (1) by means of individual wires, but by means of a polarity reversal protected coupling point provided for this purpose. This coupling point can be designed in different variants. These variants include:

1. 7 (AC) or 5 (DC) core plug connection (2)
2. CCS Combo 2 (DC) standard connection (3)
3. type 2 (AC) standard connection (4)

This coupling point is mechanically locked manually (5) so that no removal is possible during current flow or when the charging station is closed. Due to the reverse polarity protection and the simple plug connection, the charging cable can be replaced by any trained person.

It makes no difference to the charging electronics whether it is connected to a coupling point, a plug connection outside the station or via strands.

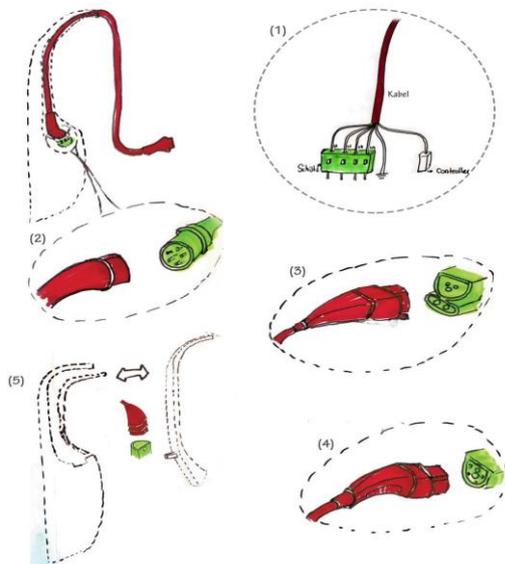


Figure 1

### Advantages

- Reverse polarity protection through plug coding in Type 2, CCS Combo 2 and coupling plug.
- Replacement can be carried out without special tools.
- The coupling point is plug & play compatible and can be operated by any trained person (e.g. maintenance staff, caretaker, ...), thus the time required and the hourly rates are significantly lower.