

# Transnational Approach for Charge device Control by DSO's in A-CH-CZ

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Webinar – 8. April 2021 (Report Nenning)

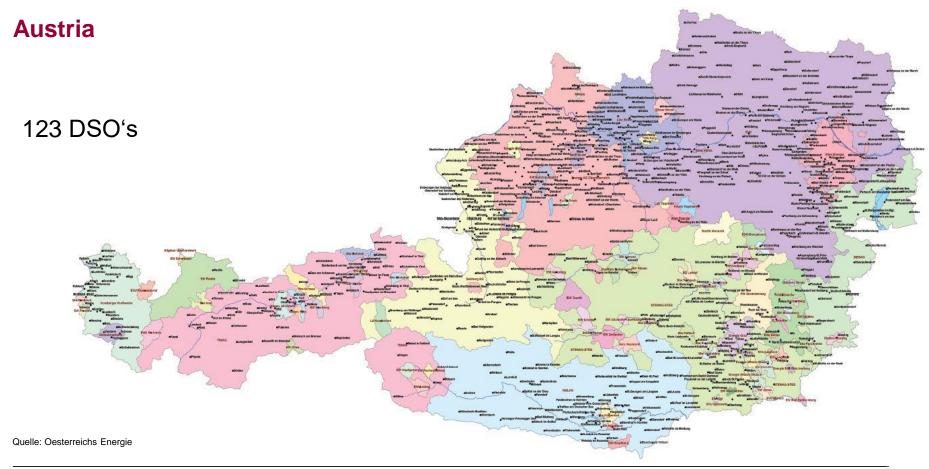
- Looking back to 2020-March (begin of cooperation)
- What has happened in the meantime in A-CH-CZ
- Grid friendly functions and implementation in regulation papers
- Wallbox market
- Political and regulatory challenges
- Possibilities to leed A-CH-CZ to success



## Since 2019 in work in D-A-CH-CZ Associations

Country	Association
Germany	bdew
	FNN
Austria	Oesterreichs Energie
Switzerland	VSE
Czech Republic	EGC

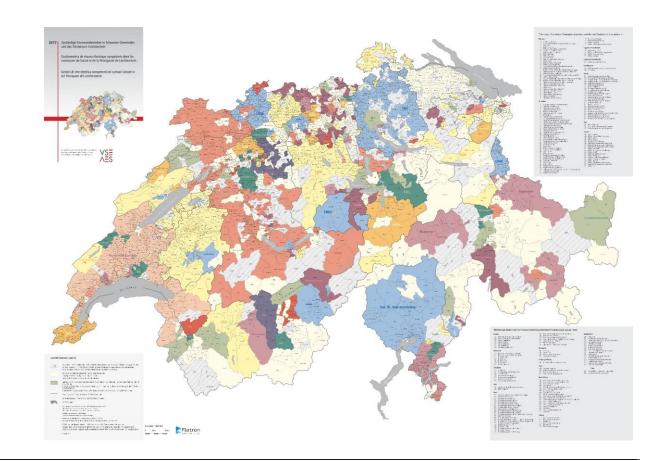






## Switzerland:

630 DSO's



Quelle: VSE



## **Czech Republic:**

3 DSO's



Quelle: EGC



# **Economic area A-CH-CZ**

- 28 Mio inhabitants
- 15 Mio Cars
- 753 DSO's
- Economic area is big enough for a standardized controlling solution in products
- Common sense
- Common demand





## Germany: no participation (FNN decision December 2019)

890 DSO's



Quelle: https://de.statista.com; Vortrag TU Clausthal



# Roadmap to a digital interface

Switch: Rules, \$	of Control with one E Standards, Wallbox ons by producers		custome	ion of digital interfa r<>DSO, Rules, St	andards		
20	1 1 2021	1 1	2022	1 1 2023	1 1 2024	1.1.20	25



# Interim solution single pole contact (normally open contact) in direction to a digital interface afterwards

Idea: The first step is near for DSO's, WB-manufacturers, regulators and customers installations

– simple

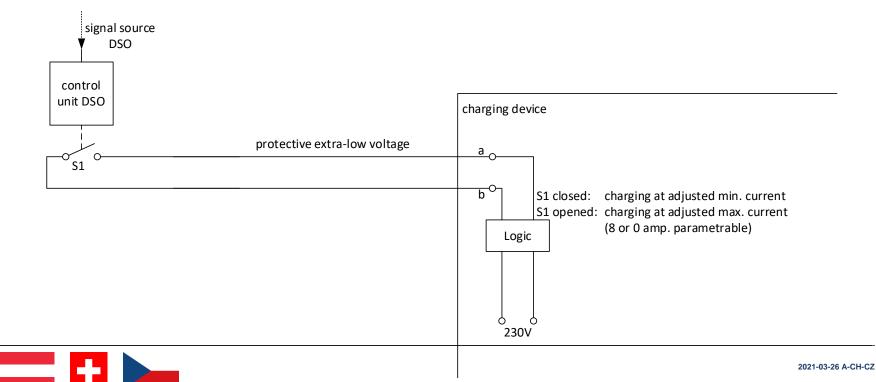
- Wallbox needs a DSO-Contact
- Kind of contact regarded by electrician staff
- Optionally: coupling relay for galvanic separation
- 2 contact states:
  - On: Contact closed  $\rightarrow$  charging with 100% Sr
  - Off: Contact opened  $\rightarrow$  Charging current reduced to 8A (eg. 5,5kVA)

(Variant: Reduction to 0 A, eg . in case of existing wallbox still equipped with contact)



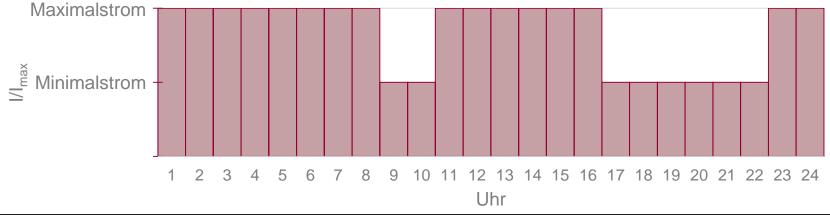
# A-CH-CZ Single line diagram of charging control function

Achievement: DSO now will be enabled to influence the charging process for the first time



## **One DSO-contact in the charging device offers:**

- Standardised DSO controlling, but without information back to DSO
- Changing between 2 states (maximum current and 8A / 0A alternatively)
- Existing device like ripple control, clock relay can be used, also with timetable e.g.:





# Testing of DSO-Control in a single household Wallbox

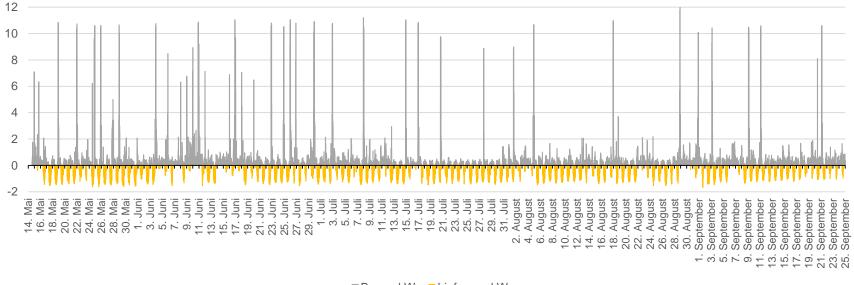


Diagram of active power in kW

■Bezug kW ■Lieferung kW



# **Testing of DSO-Control in a KEBA Wallbox**

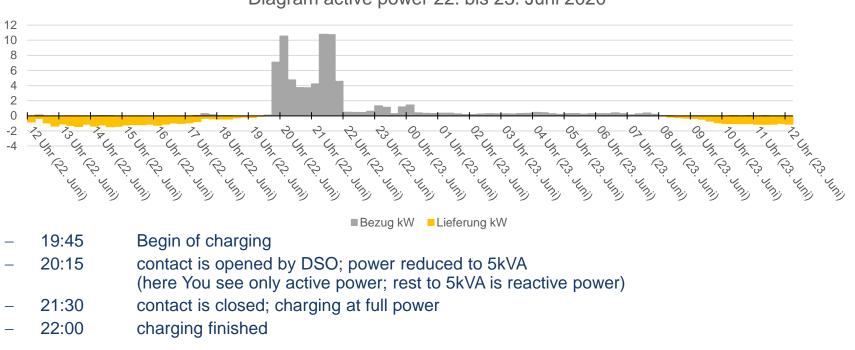


Diagram active power 22. bis 23. Juni 2020





How to lead the A-CH-CZ solution to success in reality?

## **Communication steps (here: Austria)**

- 03.03.2020 A-CH-CZ official start of association cooperation
- 15.07.2020 kickoff new expert group for TOR loads and distribution grids (chairman L. SCHOBER)
- 24.11.2020 Information of FNN PG Netzintegration E-Mobilität (Berlin)
- August 2020 new TAEV with extended requirements for e-mobility (editoral K.SCHEIDA)
- 09.12.2020 Homepages in A-CH-CZ in December after 2 webinars on 12.01. and 02.02. with wallbox producers (50 participants)
- 16.03.2021 information of regulator E-Control by OE (for a prosperous cooperation)
- 08.04.2021 webinar with presentation of the guideline for the control switch (in German and English)
- 19.04.2021 cooperation with regulator E-Control implementation into national rules

• .....



## Customers Installation rules (Austria) National-TAEV Oct. 2020 Chap. II.6.31 Electromobility charging points

Legally significant:

The TAEV is agreed in the General Terms and Conditions (AB-VN).

Excerpt:

10. The charging point shall comply with the requirements for controllability by the grid operator according to TOR and the technical specifications of the grid operator (regarding signalling devices, communication devices, control circuits). This may include a wire-guided control line from a signal transmitter to the charging point (if necessary, prepared with empty conduits and cable routes according to the local control concept of the grid operator).





## Sub-TAEV of the federal state Vorarlberg of 19.11.2020 - Notes on: Homepage, CAT.7 control line and controllable charging point

6.31 Electromobility charging stations

Note: Due to the current dynamic development, please refer to the homepage of the grid operator. For charging stations > 3.68 kVA, a connection request to the grid operator must be made in any case, in order to ensure a functioning charge.

6.31.2.(2) For the control of e-mobility charging for a possibly higher charging power in the future it is recommended that a CAT7 control cable is laid between the transfer metering point and the charging station or prepared by means of an empty conduit.

6.31.2.(3) When buying a home charging device (HCD), the choice of a controllable unit is recommended.

6.31.3 Mode 2 charging is permissible, but when charging at a so-called "CEE power socket", attention is drawn to possible safety and convenience disadvantages. This solution has a rather provisional character and is also unsuitable for a future grid control of the charging.

For charging via CEE power sockets, please refer to point 6.31(5).



Ausführungsbestimmungen zu den

TAEV

für das öffentliche Versorgungsnetz der Vorarlberger Netzbetreiber

Ausgabe 2020 Stand 19.11.2020

herausgegeben von den Vorarlberger Netzbetreibern



## Grid access contracts – additional power under conditions (an example)

### Example of a grid access contract (excerpted and abridged):

Charging capacity of max. 7 kW available at all times for a 3-phase connection (3\*10A) or 2.3 kW for a 1-phase connection (1\*10A) is provided.

The connection is possible without additional measures to the existing grid connection.

The charging power is to be limited as follows until further notice:

Single-phase charging is possible with max. 3,6 kW or with max. charging current 1x16A (alternating current).

Three-phase charging is possible with a maximum of 11 kW or with a maximum charging current of 3x16A (three-phase current).

This extent of grid usage is granted temporarily under conditions and is only acquired if the customer agrees to any subsequent charging power regulation by the grid operator.

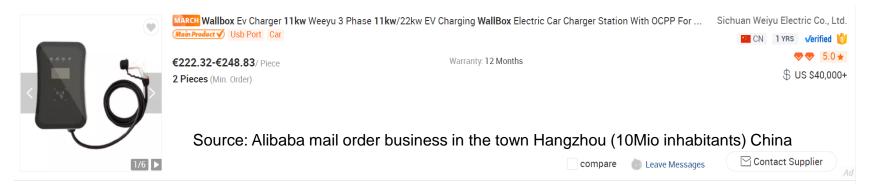
The customer shall bear the costs for the implementation of the charging power regulation.

The grid operator will inform the customer in due time.



## Quality device <> cheap rail product <> mobile charging device (ICCB)

 The "good" manufacturers (not cheap rail) say: "We already build in the switching contact and the other requirements (at our own additional cost), but we are competing with the mail order business of Alibaba and Amazon products. Can you then also protect us so that they don't sell successfully and their inadequate wallboxes remain installed in the garages without consequences?





## Wallboxes of OEM's – e.g. by VW

### Preise incl. MWSt.



## € 399.-

VW Wallbox – ID Charger

## ID.Charger

✓ 11kW Ladeleistung

✓ DC Fehlerstromschutz

✓ Typ 2 Ladekabel integriert

#### tzt Ansehei

## € 599.-

ID.Charger Connect

✓ Typ 2 Ladekabel integriert

✓ Zugangskontrolle per Ladekarte

✓ 11kW Ladeleistung

✓ App Steuerung

✓ DC Fehlerstromschutz

✓ W-Lan + Lan Anschluss

✓ Softwareaktualisierung

✓ LTE Modul optional

€ 849.-

## ID. Charger Pro

- ✓ 11kW Ladeleistung
- ✓ DC Fehlerstromschutz
- ✓ Typ 2 Ladekabel integriert
- ✓ W-Lan + Lan Anschluss
- ✓ App Steuerung
- ✓ Zugangskontrolle per Ladekarte
- ✓ Softwareaktualisierung
- ✓ LTE Modul integriert
- ✓ Stromzähler

Jetzt Anseher

#### Quelle VW (ELLI)



## Some prices of charging device



Heidelberg Wallbox Home Eco -Ladestation Elektro- & Hybrid Autos 11 kW maximale Ladeleistung (5,0m)

**516,00**<sup>€</sup> <del>538,99€</del> 59,99 € Versand

Preisrecherche: Nenning privat



KEBA...
€ 699,00
The Mobility Ho..
Versand gratis

Von Kelkoo



MENNEKES AMTRON 121001205 Compact 3,7/11 C2 – 11 kW private Garagen-Wallbox inkl. 5 m PKW-Ladekabel mit Typ 2 Ladestecker

#### 699,00€

9,90 € Versand Nur noch 3 auf Lager Andere Angebote 675,00 € (9 neue Artikel)



11KW, Typ 2 - LIGHT mobiles Ladestation für Elektroauto, Ladeneinheit 16A, Notladekabel mit integrierter Wallbox, 3-Phasenladu...

#### 955,00€

15,99 € Versand Nur noch 1 auf Lager



## Charging points without reporting to the grid operator Estimation of the number of unreported cases at about 25%

- What do we do with clients who don't tell us anything?
- Do we take legal action against them?
- Do we risk bad press?





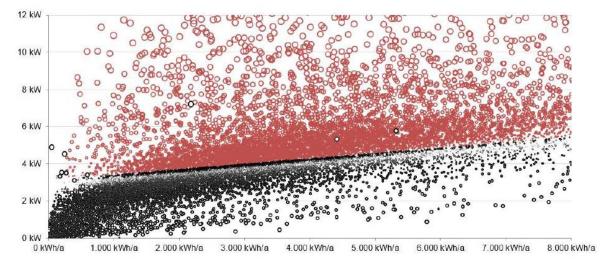
## Legal action against non-rules-compliant charging points difficult

## Information of the Ministry of Economic Affairs (Austria):

- Placing equipment on the market can practically only be effectively combated on grounds of danger according to the Electrical Engineering Law (Elektrotechnikgesetz ETG)
- If the charging station has a CE marking, it is difficult from a legal point of view.
- It will not be easy only because of a violation of the national rules (e.g. TOR by the national regulator).



## Realisation: Without an incentive for the customer, DSO have a hard time



Grid tariffs V2.1 position paper E-Control – January 2021

Abbildung 10: Kostenauswirkungen durch Umstellung auf einen leistungsgemessenen Tarif

https://www.e-control.at/marktteilnehmer/strom/netzentgelte/tarife-2-1



"TARIFE 2.1"

WEITERENTWICKLUNG DER NETZENT-GELTSTRUKTUR FÜR DEN STROM-NETZBEREICH

## A sample calculation with power-price-component

- Assumptions p.a.
- Household with e-mobility

Tarifierung Neu	LP	Pauschale	AP	
Ebene 7	Cent / kW	Cent / Jahr	Cent / kWh	
Netznutzungsentgelt (> 8 kW)	4.116		3,4156	
Netznutzungsentgelt (<= 8 kW)	2.000		3,4156	

Abbildung 11: Neue Tarifierung bei einheitlichem Arbeits- und zweigliedrigem Leistungspreis

- Share of household only: W=4000kWh, Pmax=4 kW Share household only: W=4000kWh, Pmax = 4 kW
- Share of e-mobility: W=3000kWh, Pmax = 11kW
- Sum HH+E-Mob. W=7000kWh, Pmax = 15kW
- Grid usage: 7000kWh\*3,4156ct/kWh= € 239.-
- Grid usage 8kW\*20€/kW = € 160.-

https://www.e-control.at/marktteilnehmer/strom/netzentgelte/tarife-2-1

- Grid usage 7kW\*41,16€/kW = € 288.-
- Total grid usage for W and P = € 687.-

- Share e-mobility: W=3000kWh, Pmax = 5 kW
- Sum HH+E-Mob. W=7000kWh, Pmax = 9 kW
- Grid usage: 7000kWh\*3,4156ct/kWh= € 239.-
- Grid usage 8kW\*20€/kW = € 160.-
- Grid usage 1kW\*41,16€/kW = € 41.-
- Total grid usage for W and P = € 440.-

Difference p.a. = € 687 - € 440 = € 247.- p.a.



## **Technical requirements as a precondition for financial promotion**

The actual subsidy flat rates for e-charging infrastructure are:

- 600 € for an intelligent charging cable or
- 600 € for a wallbox (home charging station) in a one/two-family house or
- 900 € for an intelligent OCPP-capable wallbox in a multi-apartment building as a single installation or
- 1.800 € for an intelligent OCPP-capable charging station when installed in a block of flats as part of a communal system.
- → A-CH-CZ technical requirements as a precondition for financial promotion have to be set

https://www.oesterreich.gv.at/themen/bauen wohnen und umwelt/elektroautos und e mobilitaet/Seite.4320020.html



## **Findings and perspectives**

- 1. A-CH-CZ will succeed in introducing a sufficient number of wallboxes with switching contact.
- 2. This is the first time that the DSO will have any standardised possibility to intervene.
- 3. Unresolved problem 1: Unreported or non-compliant (low-cost) charging stations
- 4. Unresolved problem 2: Mobile charging device Mode 2 (in cable control box ICCB)
- 5. Legal action against non-compliant charging points rather hopeless (press, politics)
- 6. This undermines the solidarity of WB manufacturers with regard to additional functions.
- 7. Incentives are needed: grid tariffs V2.1 with noticeable power-price-component crucial for success
- 8. Consideration: Start with control because of message: "E-mob. needs to be controlled by the DSO!"





## Your A-CH-CZ Grid Associations

Oesterreichs Energie VSE EGC