Future local intelligent transactional energy node for EV charging & mobility hub

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How will the grid face the increasing number of EVs*?

End of an era: Petrol and diesel cars banned in EU from 2035

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By Liv Klingert

The time of petrol and diesel cars in Europe may soon be over after the European Parliament on Wednesday voted to end the sale of combustion engine cars by 2035.

* EVs: Electric vehicles
STABILITI RELIEVES THE GRID FOR EV CHARGING
New concept: Stabiliti relieves the grid for EV charging

1. Stabiliti & topology of the concept
2. How it works: power management system
3. Two use cases
Nowadays, Stabiliti is an AC//DC/DC converter

**Characteristics**

**DC ports:**
- $V_{DC}$: 100 up to 1000 V
- $I_{DC\ max}$: 60 A
- Efficiency: < 97.5%

**AC port:**
- $I_{AC\ nom}$: 39.6 A
- $V_{AC}$: 400 up to 480 V
- Efficiency: < 95.5%

\[ P_{DC} = V_{DC} \times I_{DC} \]
\[ 6 \text{ to } 60 \ kW_{DC} \]
\[ 25 \text{ – } 30 \ kW_{AC} \]
Three 2-ports converters become a unique Stabiliti to charge EVs

3 converters vs. 1 converter
AC port switches to DC port and relieves the grid for EV charging

- Peak shaving
- Off-grid charging
- Renewable
- Microgrid

How is the grid relieved?

3rd port in DC mode:
- $V_{DC}$: +500/0/-500 V
- $I_{DC\ max}$: 50 A
- MPPT

Fast DC charger
Optimal energy routing of the three ports

\[ \sum_{3 \text{ports}} \text{Energy} = 0 \]

10 + 20 kW DC Production

\[ 30 \text{ kW AC Load} \]

30 kW DC Production

Galvanic isolation

20 kW DC Production

50 kW DC Load
You arrive at work and need to charge your car

1. Plug to charging station
2. Voltage and power information transferred
3. Controller modulates nb of converters:
   - 50 kW max/converter
   - 250 kW with 5 converters
4. Charging starts
Run out of energy in your EV? The Stabiliti tow truck helps you!
On the move: tow truck fills your empty EV thanks to Stabiliti

Battery SoC equalization through AC

AC Charger

DC Fast Charger

DC Fast Charger
The batteries of the truck are recharged via grid & PV at the garage.

Truck is ready for a new fixing!
What can we conclude?

1. Unique 3-ports converter

2. Power Management System including PVs and EVs

3. Flexible Alternatives to the grid for EV DC Fast charging
Thank you for your attention

Check our website

www.cet-power.com

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Connect existing PV installation to AC grid and add additional PV