

Why DC is the magic key to the Energy Transition?

- 1) **Decentralised Renewable Energy Systems (DRES) are the key to meet EU 2050 goals.**
 - a) The European Union is the largest economy with a legally binding target to reach 27% of its energy consumption from renewable energy sources by 2030. In 2016 slightly more than 12% of the Union's electricity demand was covered by solar and wind, but in order to reach the 2030 target a tripling of this contribution is needed. [[Arantegui et al 2018](#)]
 - b) To accommodate renewable production locally, the distribution grid needs to become smarter to deal with variable generation from many distributed sources such as, solar photovoltaic, but also increased demand response with more decentralised generation and smart grids. [[EU energy roadmap](#)]
- 2) **Photovoltaic Systems (PV) are the backbone of DRES with huge growth potential.**
 - a) Already in 2018, 48% of new net installed power capacity in EU is Solar. [[statista](#)]
 - b) For 80% of households in Europe would be cheaper to produce their own electricity than to purchase it from an electricity company. [[EU consumer organisation 2016](#)]
 - c) Rooftop PV also brings a better geographical match between supply and demand, a factor of increasing importance as we progressively electrify the heating and cooling and the transport sectors. [[Katlin et al 2018](#)]
- 3) **PV generate Direct Current (DC) electricity, meaning it's DC-Native.**
- 4) **Most of final energy consumption is also DC-Native.**
 - a) Most notably: electronics, PWM motors in industry, batteries incl Electric Vehicles.
 - b) This share is set to grow with the growth of the Electric Vehicle sector: by 2030 it is expected to have 0,8 TW capacity of EV chargers installed in the EU, whereas total electric grid capacity of EU could reach just 1,4 TW. [[ec report](#)]
- 5) **Most electricity transmission in the world today is done via Alternating Current (AC) – a 19th century technology.**
 - a) AC was good when all electricity generators were rotating turbines.
 - b) AC was good when industrial power consumers were rotating motors.
 - c) It was easy to step up and step down voltages via low-tech transformers to reduce power losses for long energy transmission lines.
- 6) **All of the driving forces for the AC grid are disappearing with pure simple DC taking hold.**
 - a) The HVDC links connecting the Finnish grid to Sweden and Estonia were among the very best in the Nordic countries in terms of technical availability in 2019. The connections ensure the security of transmission to consumption in Finland. [[FINGRID 2020](#)]
- 7) **Switching to DC for local energy distribution improves energy efficiency by up to 25%.**
 - a) Eliminating conversions from DC to alternating current (AC) saves 10-20 percent in electricity consumption. [[United States Office of Energy Efficiency & Renewable Energy 2017](#)]
 - b) Switching to DC for DRES power distribution is expected to produce: „site energy savings between 9% and 20% when solar PV is distributed to all home appliances. When battery storage for excess solar energy is considered, these savings increase to 14–25%.“ [[Glasgo et al 2016](#)]

Why DC market is now and how to profit with UBIK?

Schneider knows DC is NOW:

With the acquisition of [DC Systems](#), Schneider Electric is consolidating its portfolio (2021):

To offer customers increased simplicity and resiliency for relevant applications such as building microgrids in unreliable public grid environments, or long-distance applications such as public lighting.

- DC Systems is a Netherlands based start-up, specializing in active AC/DC microgrids, DC power conversion, and a comprehensive range of DC solutions;
- This acquisition reinforces Schneider Electric's expertise to provide resilient and sustainable energy infrastructures.

[DC Systems](#) has an established track record in developing DC electrical distribution systems for microgrids, and its DNA has been built on the deployment of real-life projects. With several years of experience in the field, DC Systems is recognized for being one of the first organizations to have made a "100% DC-electrified building", namely the Amsterdam based "Circl building" (ABN Amro bank office). DC Systems has also provided DC electrical solutions for more than 300 kilometers of public road lighting, as well as for several commercial buildings across Europe. All of these projects were realized thanks to its existing ecosystems of contractors and integrators.

DC Systems is a long standing partner of UBIK and sees UBIK as the only suitable PV microconverter supplier on the market today.

EATON knows DC is NOW:

Eaton receives German government funding for DC-INDUSTRIE2 project (2020).

The three-year research initiative will investigate the potential of direct current (DC) technology in industrial production plants. An industrial shift away from traditional alternating current (AC) technologies is essential given the rise of key applications that natively use or produce DC power, such as renewable energy sources and energy storage solutions. The DC-INDUSTRIE2 project aims to support this energy transition - creating a 'smart grid for industry' by designing an open DC power supply network and digitizing its underlying architecture. The goal is to scale up this intelligent DC network to support an entire production hall or large processing plant.

UBIK is a partner in the [Team CASA](#) project powered by Eaton. Team CASA vision is an imminent future where all homes are comfortable, affordable, sustainable and, coincidentally, DC.

Both Schneider and EATON have created the [Current OS Foundation](#) to promote DC infrastructure standards.

UBIK is the first strategical member of the [Current OS Foundation](#) as PV conversion and storage solutions are key to the success of DC and DRES and UBIK provides what is needed.