

AMORPHOUS ULTRA EFFICIENT TRANSFORMERS FOR THE EV CHARGING INFRASTRUCTURE



POWERING EV CHARGING STATIONS

The transition from Internal Combustion Engines (ICE) to Electrical Vehicles (EVs) will require a large and extensive network of charging stations. The US Department of Transportation estimates that 1.2 million public charging stations will be required by 2030 to support 30 million EVs that are expected to be on the road. For every EV station, a transformer is required to provide power from the Utility Grid.

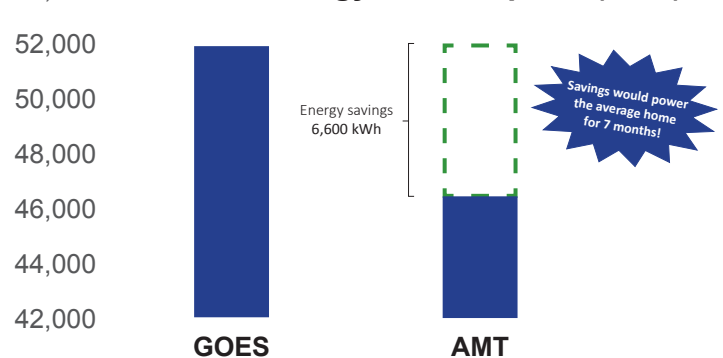
Typically, a 750 kVA three phase transformer is used when the EV station has up to 10 charging ports. Amorphous Metal Transformers (AMTs) complement the efficiency and environmental benefits associated with EVs. These ultra-efficient transformers have approximately 60% less electrical losses than their Grain-Oriented Electrical Steel (GOES) counterparts and reduce the electrical generation requirements, thus reducing CO2 emissions for fossil fuel sources. Transformers have electrical losses even when there is no EV charging at the station. AMTs show lower losses overall and are particularly efficient in the 'no-load' situations.

ENERGY SAVINGS AND CO2 REDUCTION WITH AMORPHOUS METAL TRANSFORMERS

750 kVA		
Transformer Type	No-Load Losses	Load Losses
AMT	446	4,840
GOES	1,100	4,951

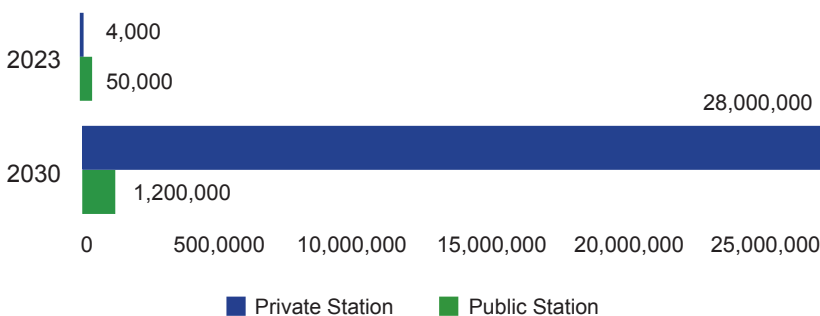
Source : LADWP IFB No 295, Group 1 - October 2022

Annual Energy Consumption (kWh)



According to U.S. Energy Information Administration (EIA) the estimated average of annual electricity consumption for a U.S. household is ~10,632 kWh*. Annual energy savings from installing 750 kVA AMT for the EV charging station is approximately 6,600 kWh which is enough energy to power a standard US household for 7 months. In addition, the energy savings defers 120 MT of CO2 emissions over the life of the transformer.

EV STATION NEED IN THE US



Sources: US Department of Transportation's Alternative Fuels Database and McKinsey Research

Metglas® amorphous alloys are earth-friendly, high technology materials for distribution transformers that can reduce no-load loss (standby electricity) in distribution transformers to about one-third the level compared to those using grain-oriented electrical steel. Worldwide use of amorphous metal-based transformers, therefore, will help us reduce fossil-fuel dependency and create a cleaner environment with higher air quality.

Metglas Amorphous Metals have a unique non-crystalline structure and possess excellent physical and magnetic properties. Metglas products help companies around the globe reduce operating costs, strengthen energy conservation efforts and increase application efficiency.