

Background information EVT

What is an EVT?

An **electrical variable transmission** is a power converter with two mechanical ports and one electrical port. It can be seen as an electric machine with two concentric rotors. The inner rotor contains three phase windings and slip rings to transfer electric current to these windings. The outer rotor can be a squirrel – cage rotor, or can contain permanent magnets depending on the type used. The stator finally is a conventional electric motor stator. Today, very few such devices exist, but one has been developed in the past by Electrical Variable Transmission BV and has recently been adopted in a unique test setup at Ghent University.

Typical application

A typical application is in the drive train of a vehicle. In that case **mechanically** one of the shafts is connected to the internal combustion engine (ICE), the second shaft to the final drive of the vehicle. **Electrically** both the stator and the inner rotor are connected to a common dc-bus using two power electronic converters (PEC's). Optionally a battery can be added. The main functionality of the EVT is to work as **power split** transmission. The power to the wheels is split in a part coming from the ICE, while the remaining part is exchanged with a battery. A drive train with EVT is thus a **hybrid** drive train. When the battery is omitted, the EVT can work as a “simple” continuously variable transmission (CVT).

