

Reduce CO₂ emission – use Smart Power Relay E-1048



Marko Wilsdorf, Business Field Manager and Head of the Transportation Division of E-T-A

Reliable switching of loads is the major task of a relay. Additional reasons for using electronic relays include: the enhanced shock and vibration resistance, the insusceptibility to dust and dirt, noiseless

operation as well as the suitability to include additional functions and benefits (e.g. overcurrent protection, delayed trip behaviour, bus connection...)



A semi-conductor relay helps to save fuel: Smart Power Relay E-1048-8D

In view of all this you may not think of fuel consumption and reduction of CO₂ emissions in the first place when talking about semi-conductor relays or solid state remote power controllers.

However, with fuel prices skyrocketing, all car components are being put to the test whether they can in some way help save fuel.

In this respect, semi-conductor relays such as type E-1048 can score again, because a standard electro-magnetic relay (EMR) up to a current rating of 50A requires a permanent holding current of typically 130 mA, whereas the electronic relay only requires a control current of typically 5 mA. In a 24 V electrical on-board system of a commercial vehicle, this means savings of up to 3 W per relay. This may not sound much but, considering the efficiency of the diesel engine and the generator (see fig. 1), this turns into more than 30 l Diesel fuel and thus more than 80 kg CO₂ emissions savings per vehicle a year (see table 1).

Values for 10 relays in vehicle	Fuel savings (diesel) ¹	CO ₂ reduction ²
per hour	0,015 l	40 g
per hour (8 working hours/day)	0,122 l	321 g
per year (250 working days/year)	30,612 l	80,204 g

¹ heating value of diesel: 9.8 kWh/m³
² CO₂ emission per litre diesel: 2,620 g

Table 1: fuel and CO₂ savings

Savings can also be achieved with a bistable EMR, but a mono-stable relay cannot easily be replaced by a bistable relay as many automotive systems only accept mono-stable solutions for safety reasons.

Another possibility to save holding power is to reduce the current after a switching operation to the so-called holding current. This leads to a rarely acceptable higher susceptibility to shock and vibration.

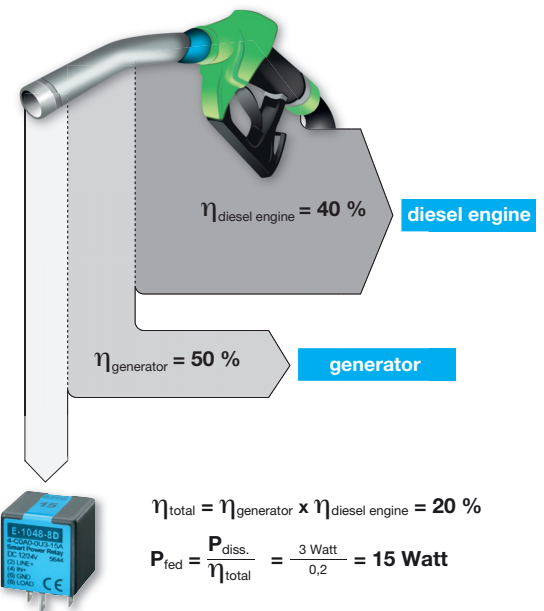


Fig. 1: multiplication of energy demand through poor efficiency