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Leading the way to sustainable public transport through vehicle conversion

| October 2023

INTERVIEW ANDREAS PFEFFER

Lighter, cleaner cars for the future

Carbon composites make aluminum in cars look like an overweight couch potato. And Thailand is home to the world's best carbon composite manufacturer called Cobra Advanced Composites

ALFRED THA HLA

The world's best carbon composite parts fitted in some of the newest high performance cars are being made in Thailand by Cobra Advanced Composites (CAC). You're thinking it's probably some hi-tech *farang*venture.

Company CEO Andreas Pfeffer first emphasised that the Audi R8 was reviewed in *Motoring*'s pages as a better car than the Porsche GT3. He then said the R8 sources its carbon composite components (interior trimmings, door handles, tunnel covers, engine covers, air filter box, engine separator, engine logo, front and rear spoilers) directly from CAC.

It's a big deal when premium European automotive companies source from Asia; and even Ferrari's F430 and F599 is in the pipeline for dashboard and tunnel covers from CAC, besides the current list of the BMW M3, Ducati, Aprilia, Yamaha-after products and KTM.

Carbon composites—high tensile carbon filaments embedded in an epoxy matrix—are so much lighter than aluminum yet four times stronger than steel but very expensive.

High cost is mitigated by its unsurpassed strength-to-weight ratio; while low weight is essential in high performance cars like the Audi R8 and in reducing CO_2 emissions.

Andreas explained: "Carbon composites are made of precise cut clothes of woven carbon filaments impregnated with resin. These clothes are put into a mould according to a defined lay up pattern which defines the physical and also optical properties. After lay up in the mould the part is curded under high temperature and pressured to the final part."

What you usually see on the streets on modified cars' body panels are rarely made from full carbonfibre. They are often just a single layer of carbonfibre laminated onto fibreglass for the "look" of carbonfibre. It's unpainted to accentuate the look of the carbonfibre w

Carbon con form of a "fib in size with a " nation which how many tho tiny filamen grouped toget smallest is a " while the "3-K more commo fibre which 3,000 filaments, or three times as many as that in a 1-K fibre. CAC uses the 3-K size.

Suffice to say that you aren't going to see carbon composites in, say a Honda Jazz, unless Toyota decides to market its carbon composite-bodied electric-powered 1/X (the One Tenth) concept.

Shifting gears back to CAC, it's wholly owned and operated by the Chotikapanich family.

Pfeffer credited his staff at CAC's plant at Amata Nakorn Industrial Estate, Chon Buri off Highway 7:

"They (staff) make the parts and made it possible for CAC to get respected customers like Audi, BMW, Ferrari and KTM. A lot of foreign companies come to Thailand just to take advantage of the 'fair price' labour and stand in the spotlight for great products. But our success (two parts) per week. Projected sales this year is B250 million and expected to double next year.

Andreas noted that carbon composites are very light in weight and good looking:

"We use it to reduce weight and to give the car a nice look. Compared to plastic interiors or, parts which looks cheap, at the aesthetic level you have to have carbon. It's also very strong. When Formula One drivers survive a 300kph crash it is because of carbon."

But carbon composites are hard to repair and will take time before it goes downstream, like say from the Audi R8 to the A6 and A4.

CAC's product lineup is the Audi R8 and TT, BMW M3, KTM and Ferrari F430 and F599.

"It is very labour intensive. You have 60 pieces of carbon that needs to be put together,

CAC produces 60 Audi R8 sets (15 parts per set) and 40 TT S-Line sets

see us.

Nicely built buildings, high volume carbon composites, even you (the writer) couldn't believe it yourself when I said our parent company was the world's largest surfboard manufacturer in the world.".

So if the automobile industry is going to "fight every gram to lose weight" in its challenge to reduce CO_2 and make it safer for us to drive — the best alternative could be carbon composites.

I'd hate to be selling steel by then.

10 questions for Pfeffer

Favourite car?
The Mercedes-Benz 230SL Pagoda 1965.

Favourite restaurant?
Scirocco open-air sky bar at the State Tower. Great evening view of Bangkok.

Favourite time piece?
A. Lange & Söhne.

Favourite industrialist?
Taichi Ohno [1912-1990], father of the Toyota Production System, also known as Lean Manufacturing.

Favourite athlete?
Robby Naish [born 1963; windsurf ner of the Overall World Cham- 1983-1987, and Wave World titles in 1988, 1989, and 1991.

historical figure?
das Karamchand Gandhi 3; political and spiritual leader nominated five times for the ce prize in 1937-39, 1947-48. as Mahatma Gandhi, he was n January 30, 1948, while having public walk at the Birla House, , by a Hindu radical.

author?
mack, *Lean thinking* (2005).

Favourite movie?
Endless Summer (1966); influential film about surfers by Bruce Brown.

Greatest achievement?
My two sons.

Imagine you are in charge of automotive policy for a day, what would you do?
Provide funds for the development of electric cars.

My two sons.

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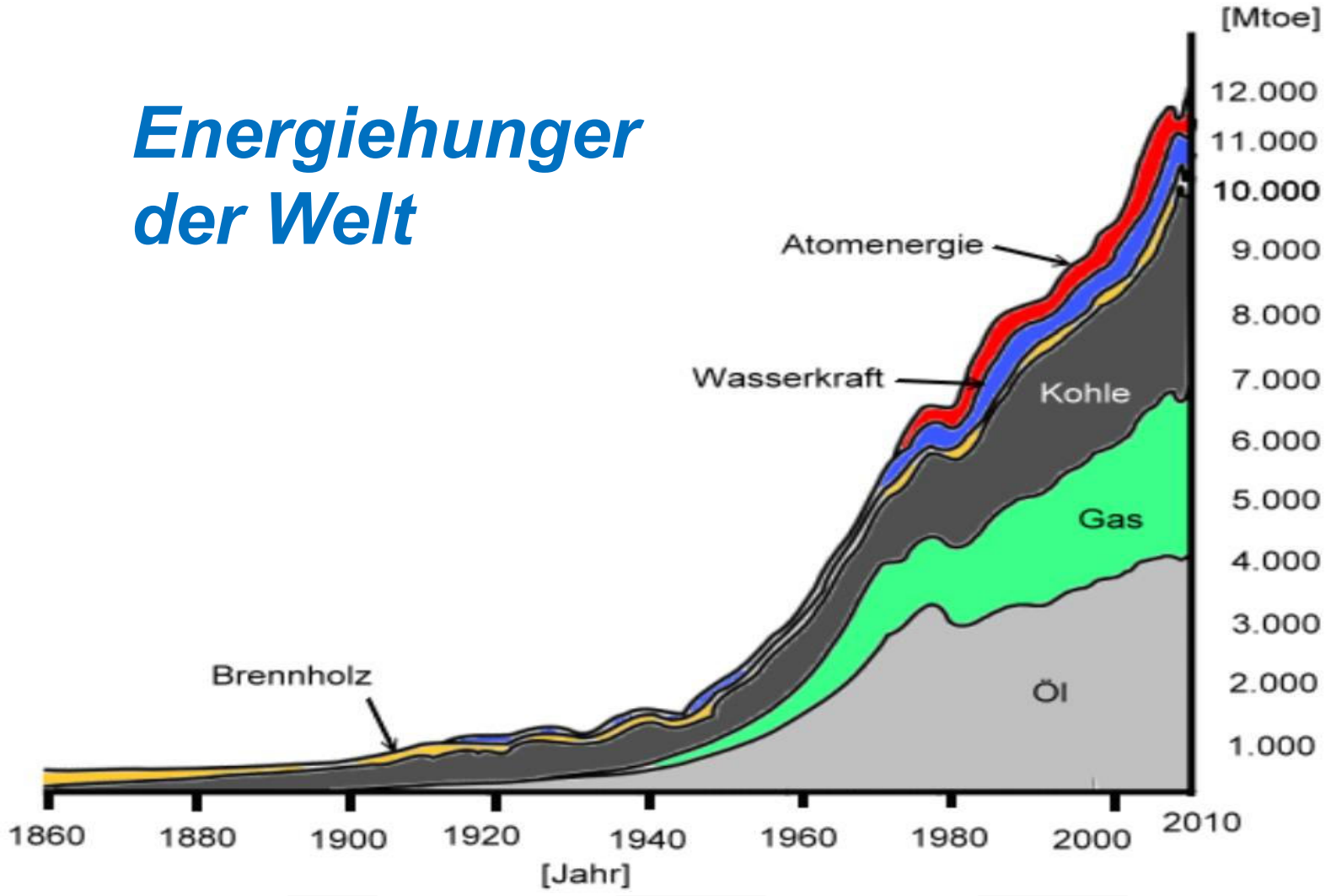
Energiehunger der Welt



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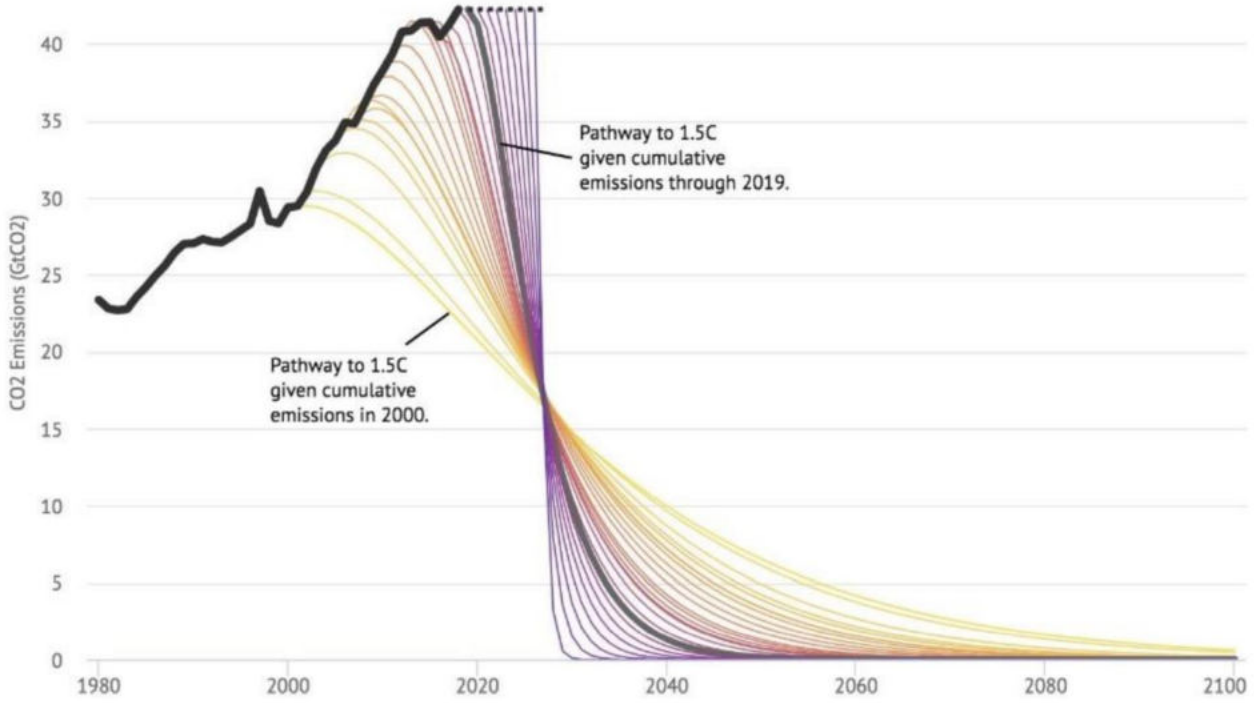
Planetare Grenzen – Beispiel CO2

Untätigkeit erhöht den Handlungsdruck:
um das 1.5C-Ziel zu erreichen, ist eine drastische Reduktion erforderlich



Quelle: UNEP Emissions Gap Report (2019), Carbon Brief

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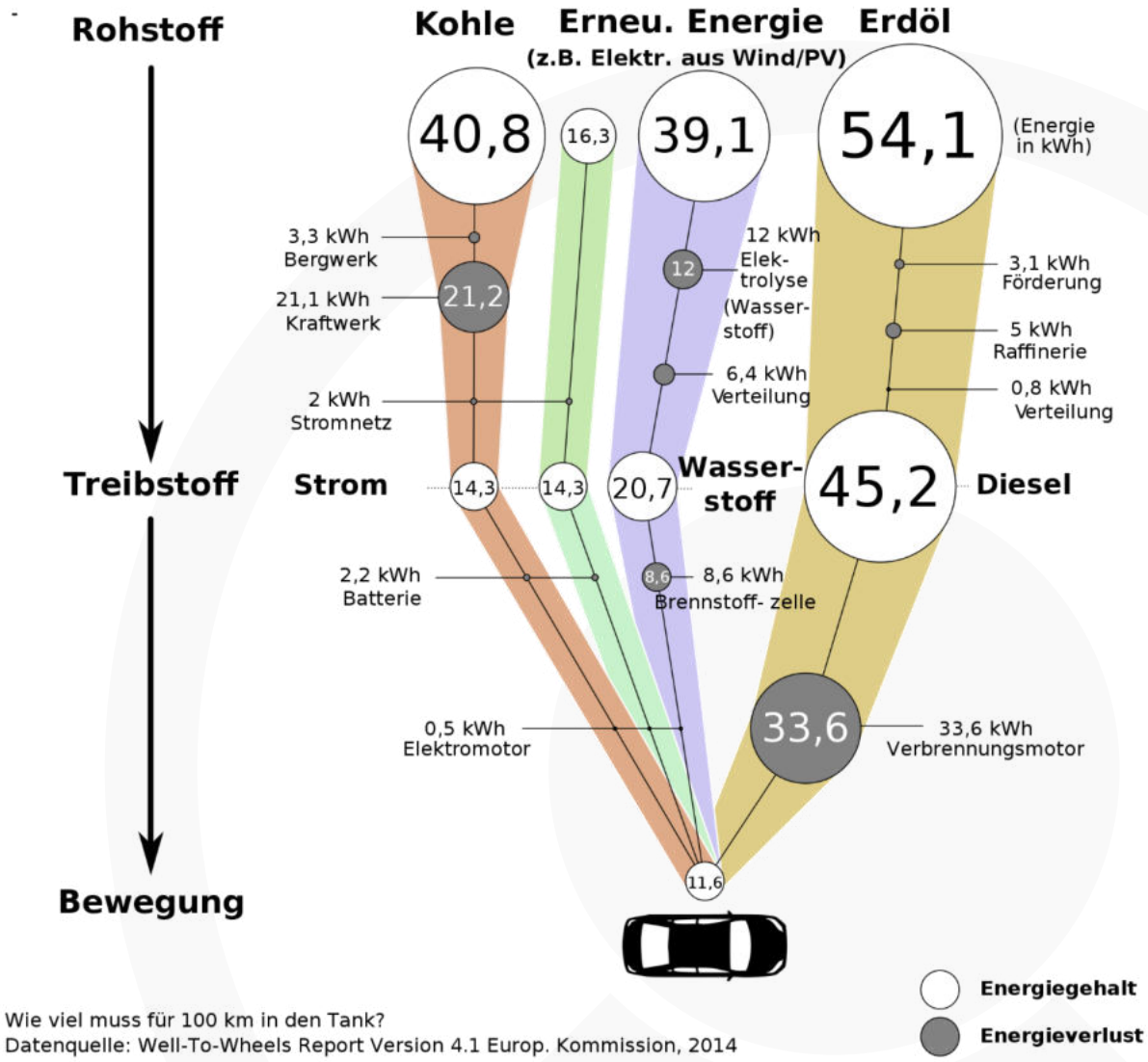

Wie viel muss für 100 km in den Tank?
Datenquelle: Well-To-Wheels Report Version 4.1 Europ. Kommission, 2014

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Mehr als die Hälfte der Wertschöpfung geht verloren

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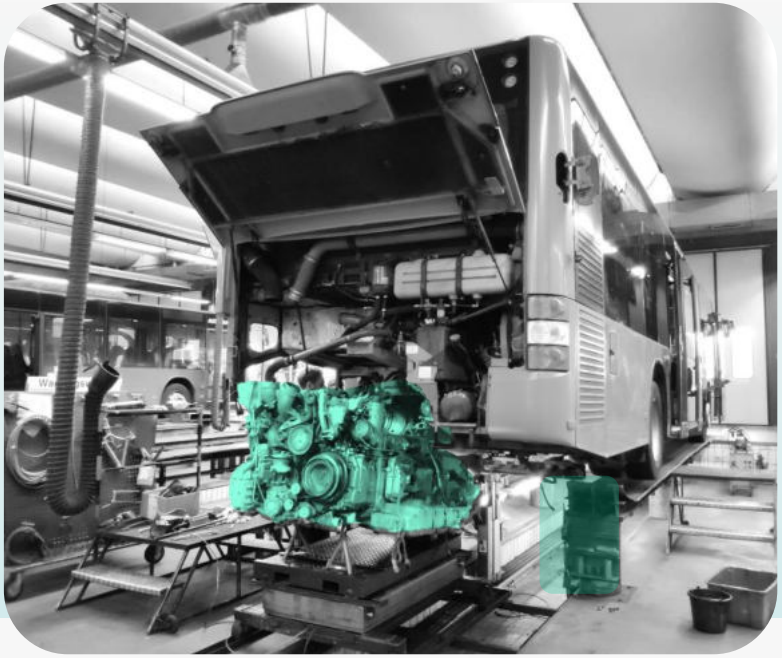
THE SOLUTION

Converting today's on-the-road buses from diesel to electric drive.

Removal of diesel engine, gear box and tank



Installation of the TO-ZERO KIT – fully converted

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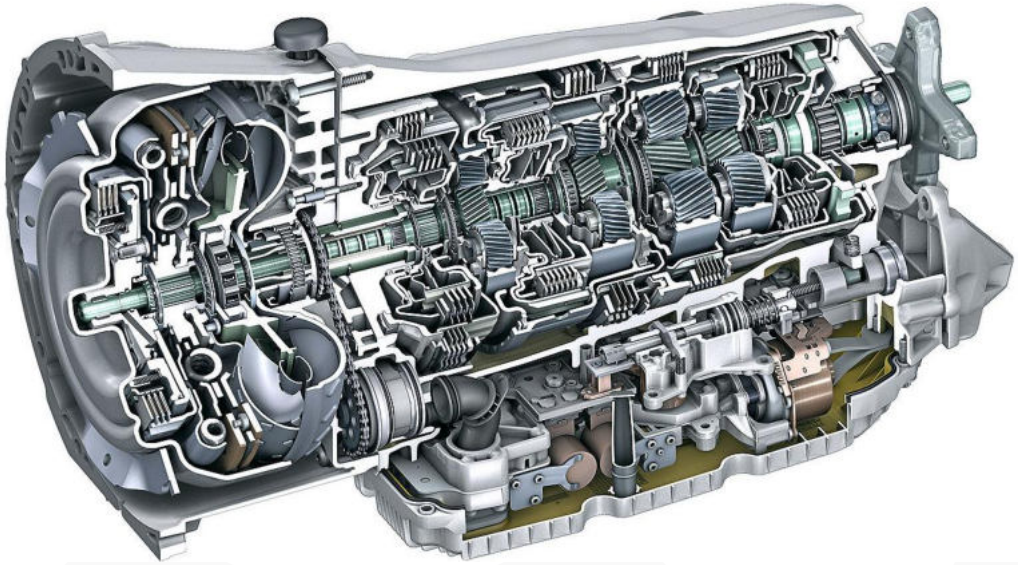
Motor

Getriebe



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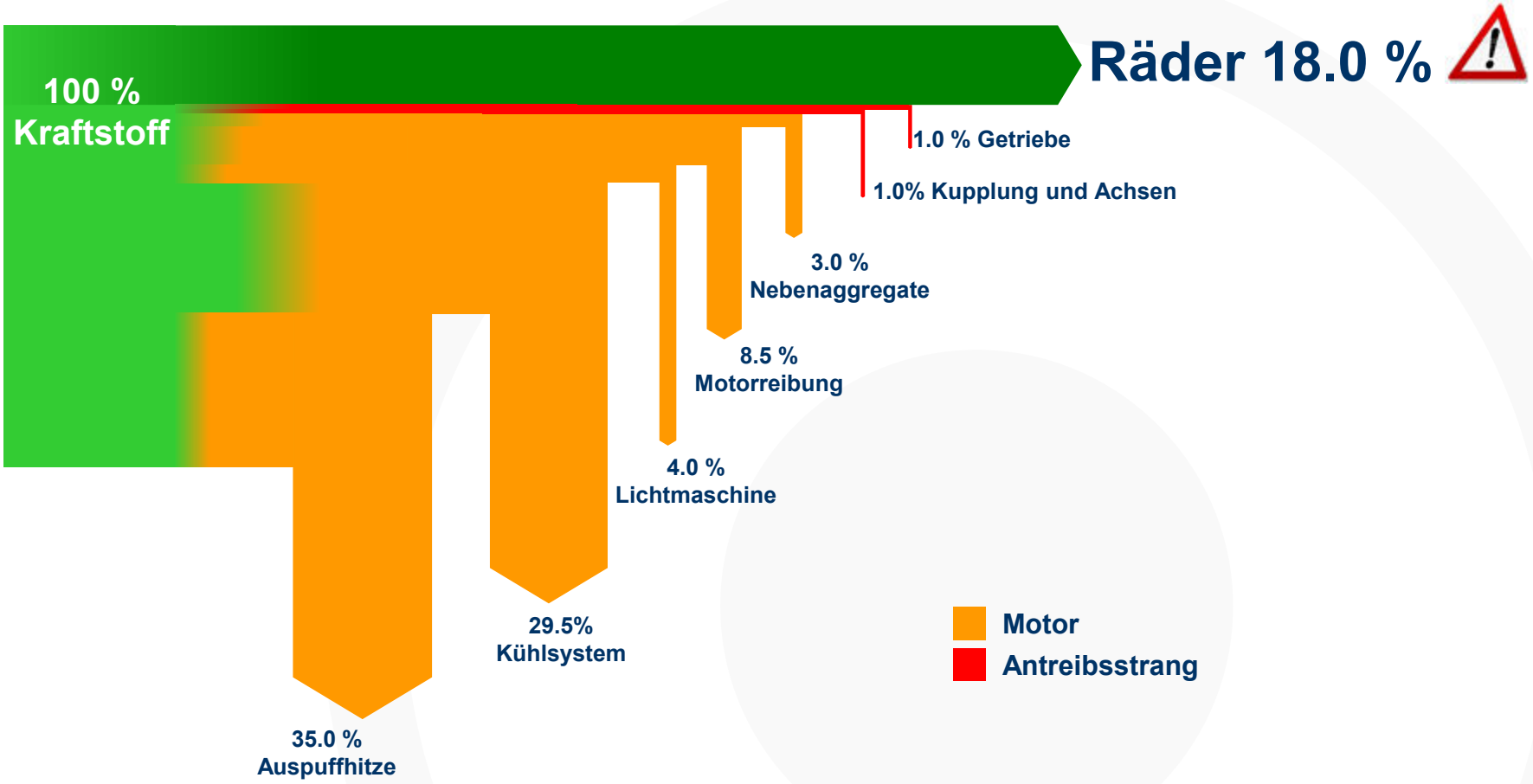
Energiebilanz „Verbrenner“



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SOME IMPRESSIONS