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KARLDISCHINGER LOGISTICS: ACHIEVING CLIMATE NEUTRALITY STEP BY STEP

COMPANY PROFILE *karldischinger-gruppe*

Name: ***kd****-logistikdienstleister,* ***k****arl****d****ischinger group*
Registered office: *Ehrenkirchen, District of Breisgau-Hochschwarzwald, Baden-Württemberg (Germany)*
Industry: *Logistics*
Founded: *1879 (current company), first Dischinger family haulage company certified in 1470*
Employees: *approx. 1,000*
Contact: *Karlkristian Dischinger, Karlhubert Dischinger, Florian Hofmann*
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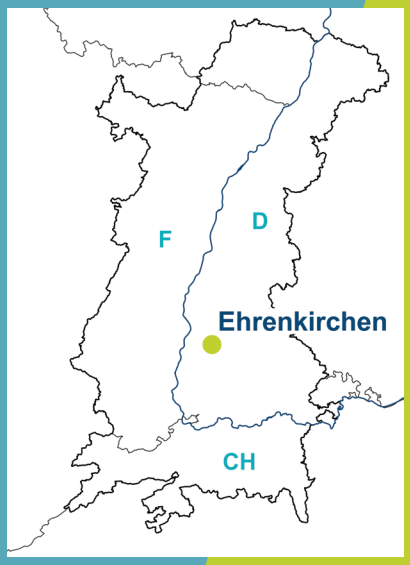
https://www.karldischinger.eu/



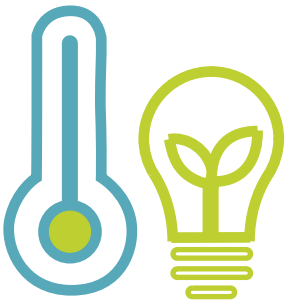
Context and current challenges

The ***k****arl****d****ischinger group is an association of service providers who offer manifold services in the logistics sector. Under the core brand of* ***kd****-logistikdienstleister, they provide transportation, storage and transloading services, contract logistics and comprehensive value-added services.*

The company is active across Europe and headquartered in Ehrenkirchen, about 15 km south of Freiburg im Breisgau, Germany. Documentary evidence shows the company's history extending back to 1470, when the Dischinger family's first haulage company was founded. Its customers come primarily from the automotive, pharmaceutical and food industries as well as from the local food sector. In addition to a fleet of trucks, the company maintains large warehouse facilities at multiple locations, where it is responsible for ensuring consistently cool temperatures for stored food (2–8°C) and pharmaceutical products (15–25°C).

Like many other companies in the Upper Rhine region, the karldischinger group currently faces great challenges that are accentuated by climate change:

- The greatest source of stress is the **increase in energy and fuel prices**. This is a long-term trend that has been severely exacerbated since the start of the war in Ukraine in February 2022.
- Additionally, the **shortage of truck** drivers across Europe has created a problem for the company.
- **Climate change** has led to substantially longer and hotter summers in the Upper Rhine region, in turn enhancing the company's **cooling energy needs**. During the particularly hot summer of 2022, about 15% more energy was consumed during the cooling period of May to September in the 7 buildings studied than in the average-temperature summer of 2021. At an assumed price of €0.30/kWh, this meant that the company had to cover considerable added costs in the tens of thousands.
- Ultimately, demand is rising for **climate-neutral transportation solutions**, and the company would like to increase efforts to meet this demand.



Climate change adaptation and sustainability goals

• Climate neutrality by 2030

In response to climate change, the company is striving to make its business processes climate neutral by 2030. In addition to numerous measures for reducing greenhouse gas emissions in the transportation and building sectors, achieving this goal requires CO_2 offsetting. Finding reliable options for offsetting CO_2 emissions is therefore a key concern for the company.

• Reducing greenhouse gas emissions & fuel consumption

Emissions from fuel combustion make up the largest portion of the company's CO_2 emissions. Fuels are also a central cost factor. Consumption and emissions will be reduced incrementally through a combination of individual measures for improving energy efficiency and the employment of alternative drives.

• Reducing cooling energy requirements & fossil fuel use

With temperatures as they stand now, the company must expect an increase in cooling energy consumption of about 7% per degree that the temperature rises. The proliferation of heat waves which require more intense cooling means that cooling energy consumption will be elevated to above-average levels. The decrease in energy needed to heat as a consequence of milder winters is not as drastic as the increase in the energy needed to cool that we have observed over the past years.

Innovative measures

Patented tri-deck sectioning concept

The focus of innovation lies on efficiency gains in fuel consumption, truck design and alternative drives. One completed, one ongoing and one prospective measure are introduced below.

The development phase is complete for a **trailer concept** *("kd-tri-deck-concept"-registered with the German Patent and Trade Mark Office in Munich)* that could mean about 2,700 fewer trucking journeys per year from the Breisgau-Hochschwarzwald district to the production facility of an automobile manufacturer in the Franche-Comté region of France. Instead of thru-axles, these vehicles rely on stub axles, which allow for additional cargo space.
This was used for an additional transportation level, making it possible to load 66 containers instead of the previous 48. The sophisticated technical design enables quick loading and unloading, and it is suitable for demanding just-in-sequence transports. The project was honored with the BVL Logistics Service Award.

Truck with extended semi-trailer

karldischinger seeks to employ more alternative drive and trailer technologies

Currently, a fixed-term field trial of **a Type 1 Long HGV** *(heavy goods vehicle),* or extended semi-trailer, is underway in goods transportation. The cargo bed of this type of trailer is about 1.5 m longer than a conventional trailer, and with three additional pallet loading positions, it offers about 10% more cargo capacity. While the unit is very lightweight compared to other long HGV types, it features a highly stable design. Therefore, the fuel efficiency of this long semi-trailer truck per transported ton is significantly higher. Moreover, the greater volume means fewer trips. The Type 1 Long HGV thus proves to be a good alternative to the substantially less efficient mega trucks, or Longer Heavier Vehicles (LHVs). Despite the considerable bureaucracy involved in registering new types of trucks like these, the karldischinger group is already deploying the Type 1 Long HGV in multiple pilot projects. General permission to operate on all German roads is expected in 2024.

Envisaged for the future is the use of **e-trailers.** The underlying concept is the combination of an e-truck with a fully electric cooling unit that generates its own electricity while being driven. The vehicle's kinetic energy is converted into electric energy. Relocating the drive to the trailer and generating electricity with a traction battery can massively reduce fuel consumption and CO_2 emissions. Moreover, the range of the e-truck is increased. The project is currently in the pilot phase.

RESULTS :

Ecological and economic data from the "kd-tri-deck-concept" project:

- **Reduced travel: 2,657 transports or 203,268 km per year**
- **Reduction in diesel consumption: 60,988 liters per year**
- **Annual reduction of CO_2 emissions: 172.3 t**
- **Time saved: 27%**
- **Cost reduction for the customer in the hundreds of thousands**

Further savings:

- Deployment of **Type 1 Long HGVs**: less traffic, CO_2 emissions reduced by 10% per ton of goods transported
- **Ongoing driver training** courses on fuel-saving driving practices since 1978: exploitation of additional conservation potential
- Deployment of **vehicles with the latest fuel-saving technology** since the 1970s: reduction of fuel consumption thanks to substantial technical improvement of the engines, tires and aerodynamic properties from a previous 55 L/100 km to approx. 25 or 26 L/100 km.
- Equipment of the first trucks with **a GPS-integrated powertrain** as of 2022: The predictive powertrain control system (PPC) uses predictive geographic data concerning the route and controls diesel consumption via an optimized mode of driving. Further fuel conservation of up to 5% expected with the previously deployed trucks
- Additional diesel and electricity savings for the portable cooling units through the **e-trailer project** (not yet calculated)

Gradual reduction of greenhouse gas emissions in truck transportation through a combination of innovative measures

Further climate protection and climate change adaptation measures

• The following measures have already been carried out:

- *"Cooling with the sun"*: large-scale installation of **photovoltaic panels** atop the warehouse facilities

  The high cooling energy demand is partially covered by electricity produced by the PV modules on site. This is reinforced by the **insulating effect provided by the PV installations** on the warehouse roofs. These shade the building below, thus preventing some heat energy from reaching the air-conditioned warehouses. This reduces cooling energy consumption by up to 38%.
- All-around retrofitting of the truck fleet to feature the latest technologies, e.g. PPC system and intelligent systems to support fuel-saving modes of driving.
- Installation of **LED lights** in warehouses and company buildings, plus use of motion detectors
- Planting of rapidly growing climbing plants such as ivy and hops on company buildings to create **green facades,** which produce a cooling effect during heat waves
- Reduced use of **packaging**
- Setup of an external **training center for driver training** to increase vehicle range

Overall, the company stresses the importance of cultural or "soft" sustainability measures that supplement the technical measures taken.

Positive side effects

- **Reduced pollution from other sources** (NOx, particulate matter), noise and risk of traffic congestion thanks to fewer journeys
- A greener **image** without green-washing
- **Satisfaction of customers and employees** who place more and more value on sustainability and climate protection

Karlhubert Dischinger

comments on the significance of sustainability and climate change adaptation for his company:

"Both small and large steps will help us reach our goal of climate neutrality. So, we invest in innovative efforts, but also to be able to retain excellent employees and stimulate enthusiasm for the profession. Ultimately, the consumer will recognize that increasing logistics costs are more than just an expense factor - they also safeguard the preservation of the standards of living we are accustomed to."

Moving forward

Proposed measures:

- Use of **e-trucks** (for journeys of <500 km) and **hydrogen-powered trucks** (for journeys of >500 km)
  - A project with a reputable German automotive manufacturer is in the test phase
  - The kd group is a founding member of the tri-national hydrogen initiative 3H2
- **Higher energy standard** for new buildings and energy-related renovations, in particular via improved building insulation
- Planting of a **flower field** next to an administrative building to boost biodiversity and bolster the staff's well-being
- Creation of **green facades** on more buildings as an additional layer of insulation

Other measures in the logistics sector that Karlkristian Dischinger deems promising:

- Reduced operating times: How quickly do customers REALLY need their goods?
- Analysis of cooling temperature requirements for storing delicate or perishable goods
- Increased railway transport, especially for freight transport on long routes.

OTHER INFORMATION:

QR code link to info video about the ***k***arl***d***ischinger group

FOR QUESTIONS REGARDING CONTENT:

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«Dépasser les frontières, projet après projet» / „Der Oberrhein wächst zusammen, mit jedem Projekt"

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