

CELSINEO – Successful test marathon for modular trailer cooling system

- **New CELSINEO system from Liebherr and KRONE already in operation for more than 200,000 hours.**
- **Extensive validation tests and field tests with extremely positive results.**
- **Renowned transport companies in Germany, Austria and France tested patented CELSINEO system in practice.**

KRONE Cool Liners were equipped with CELSINEO refrigeration units for single-temp applications and used intensively by 20 freight forwarders in temperature-controlled transport operations. The tests have been running in various stages since 2017 over a period of three years. This not only enabled the flexibility, availability and efficiency of the vehicles to be demonstrated, but also allowed comparisons to be made with conventional refrigeration units from other manufacturers.

Two factors ensured reliable operation of the cooling system for the fleet operators during the test phase:

- First, technicians from KRONE and Liebherr accompanied numerous test runs to analyze the exact transport conditions and collect data:
 - Type of transported goods
 - Tour description
 - Ambient temperatures and weather conditions
 - Pre-conditioning of the cargo
 - Packing of the cargo
 - Temperature fluctuations
 - Operation by the driver
 - Feedback from the driver or operator

In addition to the various parameters and important insights into optimal cooling under different conditions, 99% of successfully completed transports were recorded. The remaining 1% were standing times for checks and analyses as part of the field tests.

On the other hand, the dense KRONE service partner network had already been equipped with additional CELSINEO competence at an early stage: more than 100 workshop operations in Europe are currently CELSINEO-qualified, and the number is constantly increasing.

In total, more than 200,000 operating hours could be recorded and evaluated.

The feedback from the field test customers was correspondingly positive: Freight forwarder Karlhubert Dischinger, who uses around 100 refrigerated trailers in southern Germany, was confirmed in his decision to use CELSINEO: "We've been testing the system for six months now, and it's running very well."

Liebherr and KRONE are introducing a technologically novel, intensively tested system to the European market. CELSINEO is "Made in Europe," and is manufactured in Liebherr plants within the European Union. Customer advice and the sale of CELSINEO refrigeration units is provided by the KRONE sales team - for a coordinated and harmonious overall package of high cooling know-how and an equally qualitative vehicle including KRONE Telematics and KRONE Fair Care Complete.

CELSINEO trailer cooling with future-proof high-end technology

Three independent refrigeration modules enable a varied control strategy and ensure a continuous cooling capacity. This ensures high efficiency both at full load and during partial load operation, which is frequent in practice. Cooling and defrosting are possible simultaneously with CELSINEO: Two cooling modules cool and one is in defrost mode. This effectively minimizes temperature peaks during defrost cycles. This realizes a stable temperature curve that always keeps the goods in the hold at the set temperature.

The "one-stop store" principle significantly simplifies maintenance and service of the trailer including the CELSINEO refrigeration unit. Both can be carried out together during a visit to the KRONE Service Partner workshop. The use of a certified refrigeration technician is no longer necessary due to the Plug&Play technology. Thanks to its hermetically sealed refrigeration circuit and extremely low refrigerant quantities, CELSINEO also does not require annual leak checks of the refrigerant circuit. Waiting and downtimes are thus significantly reduced and uptime maximized.

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Liebherr - pioneer for future-oriented innovations

The Liebherr Group is a family-run technology company with a broadly diversified product range. The company is one of the world's largest manufacturers of construction machinery, but also offers high-quality, user-oriented products and services in many other areas. The group of companies now comprises more than 140 companies on all continents, employs more than 48,000 people and generated total consolidated sales of over EUR 11.7 billion in 2019. Since its foundation in 1949 in Kirchdorf an der Iller in southern Germany, Liebherr has pursued the goal of impressing its customers with sophisticated solutions and contributing to technological progress.

Krone - first choice for refrigerated semitrailers

Krone is one of the leading manufacturers of truck trailers and semi-trailers in Europe. Krone's refrigerated semitrailers provide the right answer to every transport task in temperature-controlled road transport. They stand for robustness down to the smallest detail and for maximum economic efficiency. A comprehensive, Europe-wide service partner network and close customer proximity ensure the company's international success.

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