TECHNICAL ARTICLE · SAMPLE TRANSPORT

Iron ore samples: automatic transport to the laboratory

SV50-1d and HLK-50 · Australian applications



SV50-1d sample transport trolley on a monorail - visualization

SV50-1d and HLK-50 systems automatically transport iron ore samples from the conveyor sampling point to the analytical laboratory, with installations in Australia.

Connecting sampling and analysis

Rapid analysis helps operators respond to changes in the bulk material. Automated sampling and laboratory analysis therefore need a reliable transport link. KLANN's article describes the automation of batch transport to the laboratory, a task that had previously required considerable staff time.

The KLANN project report documents the transport of pellet and lump ore samples over several hundred metres to the central laboratory at Roy Hill Mine. The 2014 technical article describes the Port Hedland installation, commissioned in 2013, carrying samples of approximately 30 kg per trip.

Process, technology and operating experience

Automatic transport cycle

KLANN SV50-1d and HLK-50 sample transport systems connect the conveyor sampling point with the analytical laboratory. They are used at iron ore mines such as Roy Hill Mine and at the iron ore export port of Port Hedland in Australia.

The system is based on established core sand transport technology. A bucket trolley travels beneath a monorail from the loading point to the laboratory. After automatic bottom discharge, it returns to collect the next sample.

Rail guidance and power supply

The technical article on the Port Hedland installation describes a friction-wheel drive, internal conductor rails and radio control. The trolley therefore requires no trailing cable. The track can accommodate curves, inclines and declines; a chain-hoist version is described for larger height differences.

Yes. The technical article describes a DEMAG KBK rail with curves, inclines and declines. A chain-hoist version first lifts the bucket before horizontal travel continues. The route is designed for each project.

Technical data from the 2014 article

Bucket capacity	**10-100 l**
Travel speed	**up to 60 m/min**
Route length	**5-200 m**
Lifting height	**1-8 m**

Historical system values, not a general specification for current systems. Each project requires its own design.

Safety and integration

The article mentions bucket locking during travel and safety hoops for collision protection. The specific safety design depends on the planned installation and its operating conditions.

The article identifies retrofitting as a possible application. The compact design and suspension of the rail from steel beams facilitate integration. Available space, the supporting structure and transfer points must be assessed for each project.

A proven principle from foundry technology

The design described in the original article is based on core-sand transport systems used for decades. In foundries, these convey sand-binder mixtures in batches of 10-50 kg from the mixer to elevated feed chutes on core shooting machines. This figure relates to the original application explained in the article.

Port Hedland: historical case report

The system at the ore-loading terminal was commissioned in 2013. The 2014 article reports thousands of journeys after more than one year of operation, at temperatures up to 55 °C and in dusty, corrosive ambient air. Its statement about high availability reflects historical project experience and gives no quantified availability rate. The Roy Hill Mine application announced for 2015 is complemented by KLANN's later project report.



Sample transport system operating at Port Hedland - original photograph

Practical questions

Application, operation and control

01 Which sample transport systems does KLANN supply for iron ore?

KLANN uses the SV50-1d and HLK-50 types. They automatically transport iron ore samples from the conveyor sampling point to the analytical laboratory, including at installations in Australia.

02 How does automatic sample transport work?

The sample enters the open bucket through a chute. The trolley travels to the laboratory, automatically empties the bucket through an electrically operated bottom flap, and then returns to the loading point.

03 Where are KLANN sample transport systems used?

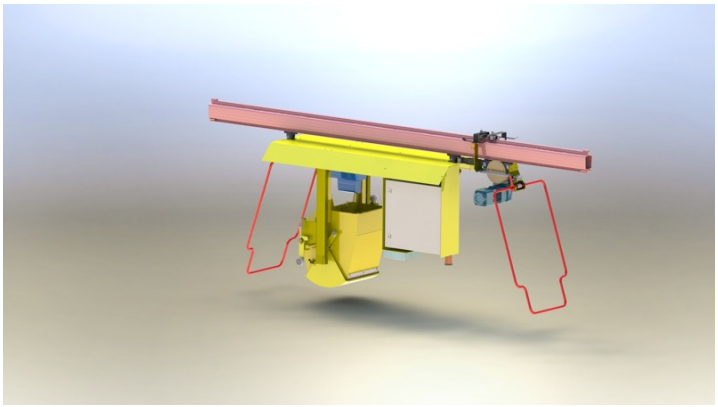
Documented installations include Roy Hill Mine and the iron ore export port of Port Hedland in Australia. The project report and technical article describe the automatic transport of iron ore samples to the laboratory.

04 Can the route include curves and height differences?

Yes. The technical article describes a DEMAG KBK rail with curves, inclines and declines. A chain-hoist version first lifts the bucket before horizontal travel continues. The route is designed for each project.

05 How are the drive and control system supplied?

In the system described in the technical article, internal conductor rails supply power to the drives. Signals are transmitted by radio, so the trolley requires no trailing cable.



HLK-50 with lifting equipment - manufacturer rendering

Practical questions

Design, integration and operating conditions

06 What technical specifications does the article give?

The 2014 article gives a bucket capacity of 10-100 litres, travel speed up to 60 m/min, route length of 5-200 m and lifting height of 1-8 m. These figures describe the system at that time and are not a universal specification for every current SV50-1d or HLK-50 installation.

07 Can the system be retrofitted into existing facilities?

The article identifies retrofitting as a possible application. The compact design and suspension of the rail from steel beams facilitate integration. Available space, the supporting structure and transfer points must be assessed for each project.

08 Which safety features are described?

The article mentions bucket locking during travel and safety hoops for collision protection. The specific safety design depends on the planned installation and its operating conditions.

09 Is operation in dusty and hot conditions documented?

The article reports operation at Port Hedland in ambient temperatures up to 55 °C and in dusty, corrosive air. This is an operating report for that installation; the design for a new location is agreed separately.

10 Which work step does the system automate?

It automates batch transport between the sampling point and the laboratory. Laboratory staff no longer need to collect samples at the sampling location. Sampling and analysis themselves are upstream and downstream processes.

Sources and image notes

Editorially redesigned edition based on KLANN's supplied article "Inbetriebnahme eines vollautomatischen Erz-Proben Transportsystem" (2014), supplemented with current type designations and KLANN's Roy Hill project report (2024). The original remains available separately. Cover: AI visualization based on manufacturer references. Port Hedland photograph and HLK-50 rendering: unchanged manufacturer sources. Edition: 12 November 2026.

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