CASE STUDY

INNOVATIVE STACKER SOLUTION WITH MAXIMUM PRE-ASSEMBLY

FOR REDUCED ON-SITE ASSEMBLY TIMES

To expand production capacity at a quarry in Northern Europe, a high-performance stacking solution was required. SCHADE developed a custom-engineered system with maximum pre-assembly to significantly reduce on-site assembly work, project risks and commissioning time.

PROJECT HIGHLIGHTS

HIGH DEGREE OF PRE-ASSEMBLY
Consistently designed to minimise on-site work.

TRANSPORT-OPTIMISED ENGINEERING
Assemblies designed for transport and installation from the outset.

MATERIAL-SPECIFIC DESIGN
Adapted to the specific properties of the quartz diorite being handled.

INDUSTRY
Quarrying

MATERIAL
Quartz diorite

REGION
Northern Europe

SOLUTION
SStacker with Tripper Car

PROJECT SCOPE
Engineering, supply, installation & commissioning

PARTICULAR CHALLENGE

High labour costs, extreme environmental conditions and short installation windows required a design that allowed most assembly work to be completed at the factory.

THE SOLUTION
MAXIMUM PRE-ASSEMBLY

THE CHALLENGE

PROJECT BACKGROUND

To expand production capacity at a quarry in Northern Europe, a high-performance and reliable stacking solution for continuous material handling was required. Due to high labour costs, short installation windows, extreme weather conditions and challenging site conditions, an exceptionally high degree of pre-assembly became a key factor in the project's success.

WHY MAXIMUM PRE-ASSEMBLY?

HIGH LABOUR COSTS

Minimising on-site work and personnel requirements.

SHORT INSTALLATION WINDOWS

Weather-related downtime had to be avoided.

EXTREME CLIMATIC CONDITIONS

Low temperatures, snow, wind and changing weather conditions placed particular demands on planning and execution.

CHALLENGING SITE CONDITIONS

Site conditions and limited infrastructure placed additional demands on installation and logistics.

HIGH COORDINATION REQUIREMENTS

Transport, installation and commissioning had to be precisely coordinated from the planning stage onwards.

TECHNICAL REQUIREMENTS

Machine type	Stacker with Tripper Car
Material	Quartz diorite
Particle size	0–250 mm
Bulk density	ca. 1.55 t/m³
Conveying capacity	2,500 t/h
Ambient temperature	-20 °C to +30 °C
Snow load	1.5 kN/m²
Wind load	up to 36 m/s

PROJECT OBJECTIVE

To achieve the highest possible degree of pre-assembly in order to minimise on-site installation time, project risks and costs while ensuring fast and safe commissioning.

ENGINEERING AS THE KEY TO PROJECT SUCCESS

ENGINEERING FOCUS

From the initial concept study and 3D design through to factory testing, every assembly was consistently designed for maximum pre-assembly. This significantly reduced on-site installation work and helped minimise project risks.

Each assembly was optimised for transport, handling and installation, supporting efficient on-site installation even under demanding conditions.

3D DESIGN

Digital planning of the complete system for precise engineering and optimised installation.

COLLISION CHECKS

Virtual collision checks ensured accurately fitting assemblies and safe installation processes.

TRANSPORT OPTIMISATION

Assemblies were optimised in terms of dimensions, weight and transport routes for efficient shipment.

LAYOUT INTEGRATION

Optimised integration of the system into the existing infrastructure and local site conditions.

PRE-ASSEMBLY & FACTORY TESTING

Pre-assembly, functional checks and test runs at the factory minimised on-site work.

DETAILED PROJECT SCOPE

- Engineering and project management
- Stacker with Tripper Car
- Hydraulic lifting system
- 180° slewing system
- Dry Fog dust suppression
- Electrical, automation and control system
- Pre-assembly and factory testing
- Supply and commissioning

TRIPPER CAR

Belt width: 1,600 mm
Dimensions: 8 × 18 × 62 m
Weight: approx. 87,500 kg

STACKER

Belt width: 1,600 mm
Drive power: 200 kW
Dimensions: 8 × 27 × 71 m
Weight: approx. 356,400 kg

RESULTS & CUSTOMER BENEFITS

MAXIMUM PRE-ASSEMBLY

Reduces on-site installation time and assembly work.

LOWER ON-SITE EFFORT

Less on-site work reduces personnel requirements during installation.

ROBUST SYSTEM DESIGN

Designed for demanding operating and environmental conditions.

DUST SUPPRESSION

The Dry Fog system is designed to reduce dust emissions during material handling.

OPTIMISED MAINTENANCE

Predictive Maintenance supports proactive maintenance.

ENGINEERING SOLUTIONS FOR TRANSPORT

AN ALMOST FULLY PRE-ASSEMBLED DELIVERY TO NORTHERN EUROPE

To achieve the maximum degree of pre-assembly, the complete system was fully assembled at the manufacturer's facility in the Far East, including a test run and factory inspection.

It was then dismantled into a small number of transportable assemblies. Through systematic transport optimisation, these could be safely shipped to Northern Europe and installed on site within a very short period of time.

TRANSPORT FACTS

Max. assembly weight	120 t
Max. dimensions	L 25 m × H 4.2 m × W 3.8 m
Transport time	45 days by sea
Transport distance	More than 28,000 km

TRANSPORT-OPTIMISED DESIGN

The complete system was optimised in terms of dimensions, weight and transport routes. The objective was to create the largest possible pre-assembled units while minimising the number of transports required.

RELOCATION OF TECHNICAL EQUIPMENT

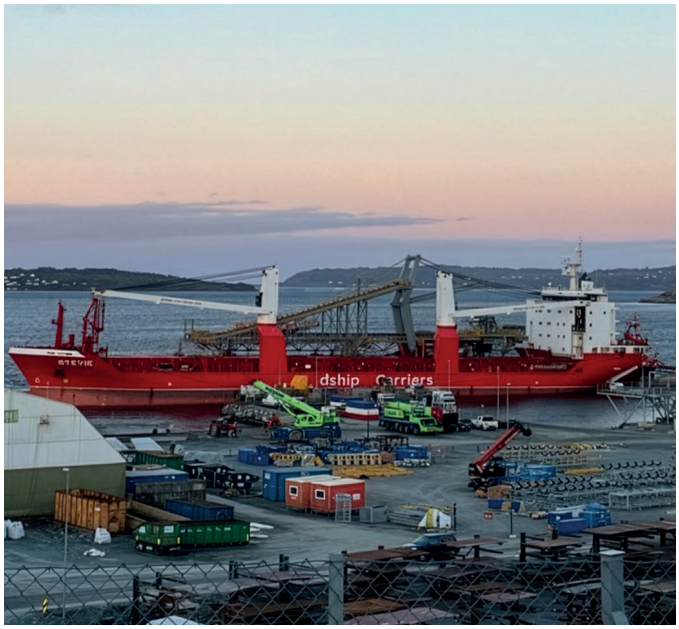
Control cabinets, containers and operator cabins were relocated to the undercarriage. This significantly reduced the electrical installation work required on site.

REINFORCED STEEL STRUCTURE

Structural elements were reinforced for sea transport, bolted connections were reduced, and key structural components were designed as welded structures.

GLOBAL HEAVY TRANSPORT

All assemblies were designed for transport by road, sea and heavy-duty transport equipment and safely transported over more than 28,000 km from the Far East to the site in Northern Europe.



TRANSPORT PROCESS

ENGINEERING Design and planning

PRE-ASSEMBLY Complete pre-assembly at the factory

FACTORY TESTING Test run and comprehensive functional testing

TRANSPORT Assemblies transported to the port by SPMT

SEA TRANSPORT Safe transport to Northern Europe

INSTALLATION Installation and commissioning on site