BLH NOBEL
A VPG Brand

HIGH PERFORMANCE, TAILORED CRANE WEIGHING SOLUTIONS

The complete solution you need, from the leader in industrial weighing

TABLE OF CONTENTS

EVERY LOAD MATTERS

Each load that a crane moves impacts safety, efficiency, and equipment longevity. In heavy industrial manufacturing and logistics environments like steel mills, ports, offshore rigs, and paper mills, even small weight discrepancies can lead to increased safety risks, material waste, and unplanned downtime. Stricter regulations in recent years have also raised the bar for compliance, yet many cranes in operation today don't meet the latest standards.

Effective crane weighing demands high precision and reliability. It's about keeping operations running smoothly, preventing costly maintenance issues, and ensuring your cranes perform consistently – day after day, year after year.

The right weighing system makes all the difference

Not all crane weighing solutions are built to withstand the demands of heavy industrial environments. In addition to providing high accuracy, your system must integrate well with existing equipment and operations, endure harsh conditions, and provide consistent performance over time.

BLH NOBEL
A VPG Brand

PROVEN, SINGLE-SOURCE CRANE WEIGHING SOLUTIONS

Engineered for precision, reliability, and safety – and tailored to your unique needs

That's where BLH Nobel comes in. We deliver comprehensive, highly accurate and reliable crane weighing solutions that optimize safety, compliance, and efficiency. With all components developed and manufactured entirely in-house – including load cells, instrumentation, software, and support – we excel in providing customized solutions for complex industrial challenges. Our systems integrate seamlessly with new and retrofit cranes and controllers and deliver long-lasting superb performance, ensuring you get the most from your lifting equipment.

One partner. Full solution.

• Custom load cells • Advanced instrument • Dedicated software
• End-to-end support

Key industries and applications

Steel manufacturing

Accurate weighing of raw materials and finished products

Offshore

Monitoring crane loads for safe and efficient rig operations

Ports and logistics

Optimizing load handling for efficient shipping and storage

Construction

Monitoring crane loads for safe and efficient operations

Paper mills

Weighing for optimal materials handling and production efficiency

Solution overview

COMPREHENSIVE SOLUTIONS FOR CHALLENGING CRANE WEIGHING APPLICATIONS

Complete solutions

Comprehensive, high-quality solutions designed for seamless integration and long-term performance across diverse crane applications.

- **End-to-end, single-source solutions**
  High-quality load cells, amplifiers, instrumentation, and support
- **Fully tailored**
  Load cells, instrument, and software are customized to each application, ensuring seamless integration and performance
- **Unparalleled flexibility**
  Customized standalone components or full systems, for retrofits and new cranes
- **Modular and scalable**
  Easily adaptable to different crane configurations and industry requirements

Outstanding precision and reliability

High-accuracy crane weighing solutions engineered for precise load readings and superior reliability in the harshest environments.

- **High-quality, customized load cells**
  Advanced sensing technology and robust construction provide repeatable high accuracy
- **G6 instrument, with dedicated crane weighing software**
  High-resolution force measurement, advanced diagnostics, and real-time monitoring
- **Rugged design**
  Engineered to withstand harsh environments with high vibration and temperature fluctuations
- **Built-in LCAMP4x0 amplifier**
  Certified for industrial and hazardous environments

Uncompromising safety and compliance

Advanced detection and monitoring capabilities that meet the latest safety regulations for industrial lifting and cranes, and support effective operations.

- **Certified functional safety**
  EN ISO 13849 / EN 61508 certified load cells support overload protection and accident prevention
- **Single and dual-channel system configurations**
  Comply with PLc/Cat. 1/ SIL 1 and PLd / Cat. 3 /SIL 2 safety levels
- **Versatile setup**
  mV/V or 4-20 mA output options support seamless integration with standard safety PLCs for overload protection, enabling rapid reactions to prevent accidents and equipment failure
- **Real-time monitoring, enhanced lifecycle data and diagnostics**
  Support compliant operations and preventive maintenance, reducing downtime

BLH NOBEL
A VPG Brand

Decades of proven performance in crane weighing

A trusted leader in crane weighing solutions, with decades of experience and a global reputation for excellence.

- **50+ years of expertise**
  Deep knowledge in designing and delivering specialized crane weighing solutions
- **Field-proven solutions**
  Trusted by leading industrial operators in the toughest environments
- **Fast turnaround**
  Custom-engineered solutions delivered within weeks
- **Global strength, local expertise**
  Part of Vishay Precision Group (VPG), a worldwide leader in force measurement

The complete BLH Nobel crane weighing solution comprises:

- G6 instrument with dedicated crane weighing software package
- Custom load cells – KOSD, KIMD, KIS
- Built-in amplifiers
- Tailored designs
- End-to-end expert support

All components are available as standalone products or a complete solution, tailored to your application and equipment.

Each installation includes:

- Manufacturing of load cells using varied materials, from stainless steel to super duplex
- Finite element analysis (FEA) and theoretical calculations for all parts
- Type approval or DVR (third-party mechanical design verification), if applicable
- Material certificates: 3.1 with all classification-required parameters at no cost, or optional 3.2 (third-party witnessed)
- Case-specific installation manuals
- Inspection and Test Plans (ITPs), Factory Acceptance Tests (FATs), Manufacturing Build Records (MBRs), and Certificates of Conformance (COCs)
- Measurement reports and all necessary documentation
- Customer or third-party calibration witnessed
- Accredited force laboratory – according to SS-EN ISO 17025:2005 – since 1984

G6 instrument - product details

G6 INSTRUMENT WITH CRANE WEIGHING SOFTWARE

The G6 instrument is a best-in-class, next-generation multi-channel process instrument for high-performance in manufacturing, logistics, and construction. Based on the field-proven G4 instrument, the G6 leverages today's most advanced technologies and an enhanced crane weighing software package, together providing a rich set of standard features and capabilities.

With its modular design, available as Panel Mount (PM) and Rail Mount (RM) units, and customizable software, the G6 is easily tailored to the unique requirements of varied crane weighing applications.

By utilizing an advanced system-on-chip solution and high-performance analog-to-digital converters, the instrument captures force signals with high precision. Advanced features, such as level supervision, motion supervision, diagnostics, and more, provide comprehensive measurement and control functionality.

BLH NOBEL
A VPG Brand

Advanced device that adapts to your system

Exceptionally flexible, and supporting varied input and output modules, the G6 can be configured to work with your target system instead of requiring changes to your system. Although there are numerous settings and options, the instrument is simple and intuitive to use, requiring little training.

High-resolution measurements

Precise, repeatable readings

Advanced diagnostics

Real-time monitoring and fault detection

Flexible integration

Multiple communication protocols and interfaces

Crane weighing software package

The embedded crane weighing software package offers comprehensive capabilities for varied applications.

Advanced features include:

- Crane weighing functions – Summarizes several load cell input channels as a main hoist, while monitoring auxiliary hoists and detecting imbalances
  - Compensates for rolled out rope
  - Obtains stable value even for a swinging load
- Lifecycle measurements – Tracks full load hours, maximum loads, and overload events for maintenance planning
- Remote access – Enables setup and real-time viewing of weight and service information

Applications

Overhead cranes • Gantry cranes • Heavy lifting in manufacturing, logistics and construction

Specifications

Display	Panel mount: TFT color display | Rack mount: 16-character display
Resolution	Up to 16-bit
Interfaces	Ethernet, RS485, analog out, digital in/out
Communication options	Modbus RTU, Modbus TCP, PROFINET, PROFIBUS, DeviceNet, Ethernet/IP
Operating temperature	-10°C to +50°C
Power supply	AC or DC
A/D conversion	Up to 20 kHz, 24-bit
Electrical safety	According to EN 61010-1
Compliance	CE, FCC, FM (pending approval)
EMC	Class A group 1 equipment, industrial electromagnetic environment (according to EN 61326-1 and IEC 61326-1) Class A digital device (according to 47 CFR part 15)

Custom load cells - product details

CUSTOM LOAD CELLS

Delivering functional safety and ATEX compliance

Effective crane weighing systems require robust, accurate load cells that can endure harsh environments and provide specialized capabilities for safe and efficient lifting operations.

BLH Nobel's heavy-duty load cells excel in crane weighing installations. Certified to the latest functional safety and performance standards, they offer lifting capacities up to thousands of tons, while remaining accurate and resilient in the face of humidity, vibration, extreme temperatures, and corrosive substances.

Enhanced safety

BLH Nobel's load cells introduce safety and performance for crane load systems. The load cell provides a reliable signal that can be transmitted securely to a standard PLC as part of an overload protection system, for SIL-compliant functional safety.

Tailored design

Each load cell is customized for the specific crane, ensuring seamless integration and high performance

High accuracy & reliability

Resistive strain gauge technology, with built-in error signaling and diagnostics

Rugged construction

High-grade materials for enhanced durability, compliant to the highest standards

The Kxx(D)-xx(D) line of load cells

Our load cells are built to withstand harsh environments. They provide high accuracy crane weighing as well as overload and imbalance detection. Each model can be adapted to a wide range of dimensions and capacities.

- Available with ATEX/IECEx certification for hazardous and explosive environments
- Certified according to EN ISO 13849 / EN 61508
- Single and dual-channel configurations – PLc/Cat. 1/ SIL 1 and SIL PLd / Cat. 3 /SIL 2 compliance

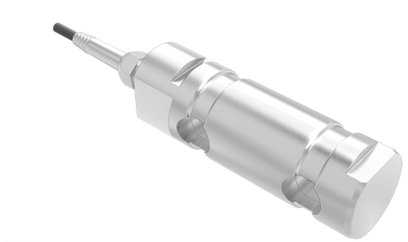
BLH NOBEL
A VPG Brand

KOSD double-ended-shear beam with circular cross-section

- **Designed for overload protection**
- **The cylindric shape makes it easy to replace an axis**
- **Rugged and compact, with high ingress protection**

KIMD double-ended shear beam with I-beam cross section

- **Designed for weighing, force measurement, and overload protection**
- **Withstands very high lateral forces**
- **Cylindric shape enables easy axis replacement**



KISD beam

- **Unique double-ended, double-cantilever design enables a floating load point**
- **Non-sensitive to thermal expansions and vibrations**
- **Unaffected by side forces up to 100%**

Applications

- Overload detection for cranes
- Automated lifting systems
- Heavy industrial lifting operations

Specifications

Analog output	mV/V or 4-20 mA
Operating temperature	-40°C to +70°C
Certifications	EN ISO 13849 / EN 61508 • Single-channel: PLc/Cat. 1/ SIL 1 • Dual-channel: PLd / Cat. 3 /SIL 2 ATEX/IEXEx
Ingress protection	IP67
Capacity	Configurable for unique needs

Crane types and installation

SOLUTIONS FOR DIVERSE CRANES AND APPLICATIONS

BLH Nobel has extensive expertise in the installation of load cells in a wide variety of crane configurations, both in new equipment designs and for retrofit of existing cranes. Our tailored solutions deliver seamless integration, precise measurements, and long-term reliability.

Overhead and other industrial cranes

Crane hook yoke installation

- Direct mounting onto the yoke of crane hooks
- Enables real-time load monitoring and ensures accurate weight distribution
- Compatible with varied hook sizes and configurations
- Wireless communication available

Bogie installation (main or transverse travel)

- Provides precise weight measurements for balanced operations
- Adaptable to both new and existing crane bogie setups

Sheave installation

- Preferred solution for measuring the tension in hoist ropes
- Assists with load measurement and monitoring during lifting operations
- Suitable for cranes subject to high mechanical wear and tear

Double-frame installation

- Installation between double frames to measure distributed loads
- Real-time detection of imbalances or overloads improves safety
- Robust design minimizes the impact of mechanical stress and environmental factors

BLH NOBEL
A VPG Brand

Offshore cranes

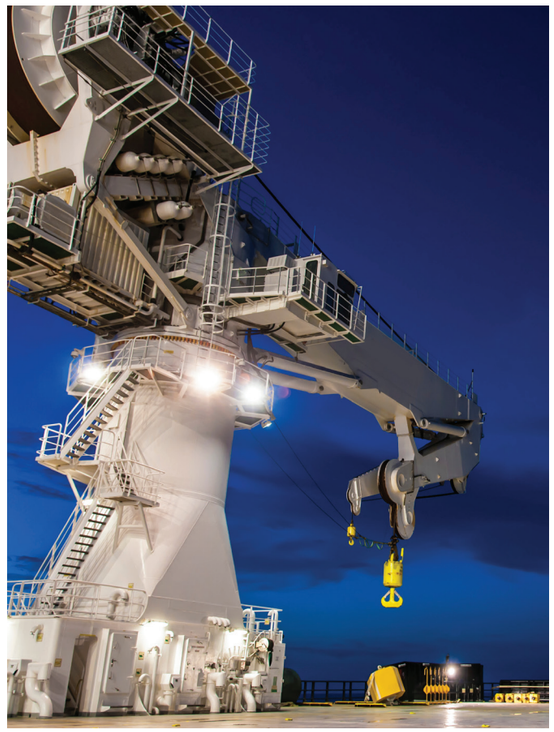
BLH Nobel provides specialized solutions designed to meet the specific requirements of offshore crane operations, certified to the highest regulatory standards. Typically installed in the sheave, our solutions support varied types of offshore cranes, including:

- Knuckle jib cranes
- Lattice boom cranes
- Pedestal cranes
- A-frame cranes
- Colibri cranes
- Gangway systems
- Special cranes

Port and harbor cranes

BLH Nobel also offers tailored solutions for inshore cranes. They are typically installed in the sheave, providing robust weighing for:

- Gantry cranes
- Crawler cranes
- Pedestal cranes
- Shiplift systems



Case study

BLH NOBEL CRANE WEIGHING SOLUTIONS ENHANCE STEEL MANUFACTURING EFFICIENCY AND SAFETY

Background

The customer is a global leader in the manufacturing of high-strength steels and related services, committed to creating a stronger, lighter, and more sustainable world. BLH Nobel has been a trusted partner since the 1990s, providing advanced crane weighing solutions to the customer's manufacturing sites in Sweden, where it operates a diverse fleet of over 200 cranes.

Need

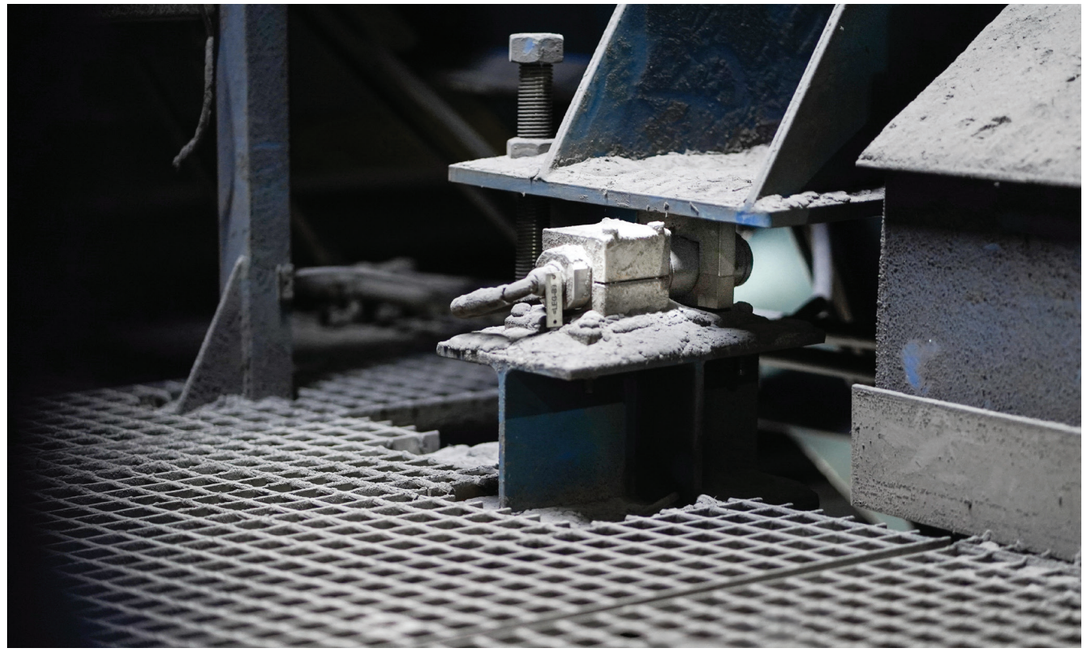
At the customer's steel manufacturing plants, overhead and gantry cranes are critical to lifting and transporting heavy materials, from molten steel to massive steel blooms, slabs, billets, and plates. Reliable and precise crane operation is essential to minimize unplanned downtime and maintain safe production flows.

Key requirements:

- Heavy-duty, highly accurate, and reliable crane weighing systems
- Precision load measurement to optimize material handling, prevent excessive equipment wear, and improve efficiency
- Seamless integration across different crane types and applications
- Connectivity to standard PLCs for overload protection

The customer commissioned BLH Nobel to conduct a comprehensive review of 100 of its most important cranes to evaluate their existing weighing and safety systems. The findings led to a structured plan to upgrade and enhance the weighing capabilities.

BLH NOBEL
A VPG Brand



Solution

BLH Nobel implemented a multi-step program to retrofit the customer's cranes with advanced weighing systems:

- Onsite evaluations identified the best load cell mounting positions for each crane
- Manual measurements were taken for older cranes that had no CAD drawings
- Custom load cells and instrumentation were designed and manufactured for a precise fit
- Optimized for retrofitting – no modifications to crane structures were required
- Installed during scheduled service stops (four to five times per year) to prevent production disruptions – critical for the customer, as each hour of production costs approximately $100,000.

Results

BLH Nobel's high-accuracy crane weighing systems are now installed on more than 100 of the customer's most critical overhead and gantry cranes, including five 320-ton cranes used to lift and transport molten steel.

These systems provide:

- Precision load measurements with 0.25% accuracy
- Real-time load data for optimized process control, helping reduce material waste
- Reliable overload detection, helping prevent excessive crane wear
- Accurate monitoring, enabling preventive maintenance planning

BLH Nobel's longstanding partnership has also led to ongoing collaboration beyond crane weighing, with BLH Nobel supplying over 220 scales throughout the customer's operations to monitor material flow.

Till this day, with a proven track record in precision, durability, and responsive support, BLH Nobel remains the trusted supplier for the customer's high-capacity crane weighing needs.

About BLH NOBEL

A VPG Brand

BLH Nobel, part of Vishay Precision Group (VPG), is the pioneer and market leader in heavy-duty process weighing and force measurement solutions for demanding industrial applications. We design, manufacture, and support high-quality, high-performance, extremely accurate and robust weighing and control systems. Our wide range of standard products and custom solutions are meticulously engineered to optimize our customers' processes and integrate seamlessly with existing equipment. Installed in more than 100 countries, BLH Nobel systems reliably provide precise stress, force, weight, pressure, and current measurements in the toughest environments. Our strain gauge-based load cells meet the most stringent specifications for accuracy and reliability.

Blhnobel.usa@vpgsensors.com

Blhnobel.eur@vpgsensors.com

Blhnobel.asia@vpgsensors.com

www. blhnobel.com