



VISHAY  
PRECISION  
GROUP



Product Overview

## Control Systems for Position, Pressure, and Force

Solutions for Electro-Hydraulic Applications

**BLH • Nobel Weighing Systems**

Brands of VPG Process Weighing



**Nobel**  
Elektronik

[www.weighingsolutions.com](http://www.weighingsolutions.com)

## History

VPG Process Weighing is a division of Vishay Precision Group, which produces load cells based on resistive foil technology, load-cell-based systems, and vertically integrated products and solutions for multiple markets in the areas of force measurement, industrial weighing, and process control.

VPG Process Weighing includes products from BLH and Nobel Weighing Systems, providers of process weighing and force measurement systems for decades. We use our advanced Micro-Measurements strain gage technology and foil resistor products and know-how in all our transducers and instruments. Our experience and design capabilities make it possible to provide a wide range of standard and custom-made products and solutions.

For decades we have designed, produced, installed, and serviced advanced systems for positioning and control in various industries. Starting with systems for artillery guns, we have extensive experience using electro-hydraulic components as tools for complex positioning applications.

## Control Systems for Position, Pressure, Force, Rotational Speed, and Angle Position

Electro-hydraulic control systems from BLH and Nobel Weighing Systems provide extremely accurate control and high repeatability. These make possible consistent product quality and optimal use of raw materials. Our electro-hydraulic control systems:

- Provide high production capacity through rapid machine settings
- Withstand great set forces and have wide operating ranges

## Complete System Concept

We work closely with our customers to analyze tasks; propose system solutions; select components; install systems and participate during start-ups; provide follow-up operating assistance, and deliver equipment for serial production.

Our technical and customer service resources enable us to provide high-quality servo assemblies to customers worldwide.

## System Solutions

Our CPU-based electronic systems can communicate with host PC/PLC systems via fieldbus. Control parameters and calibration values are set up through terminal programs in a PC-based environment.

Our control system for sawmill machinery can be found in most countries with a lumber industries. Over the years, we have shipped control systems for thousands of axes.

BLH and Nobel Weighing Systems products for controlling web tension, roll pressure, reeling, and disc gaps in pulp and paper operations and cellulose operations are known worldwide.

Our systems are ideal for use with industrial machines with high set speeds and wide operating ranges that require high set forces.

All systems are factory calibrated and ready to be put into operation immediately after installation.

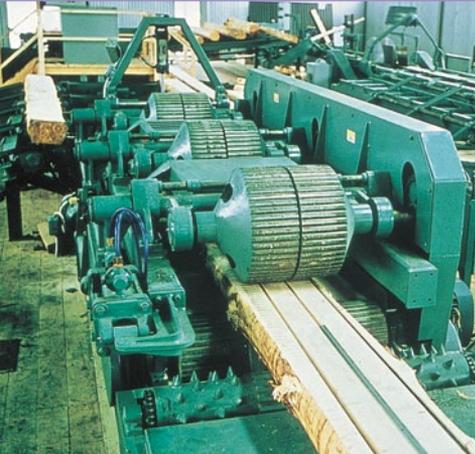
## Experience in Electro-Hydraulics

The development of electro-hydraulic systems started in the 1940s. Initially they were used to control artillery guns (Bofors).

Subsequent development involved systems for sawmill applications.

1974	First system for sawmills
1977	Development of H-2 modules for servo control
1983	First single board system (SBS)
1986	Servo actuator (POS) for hydraulic systems
1989	SBS 30
1992	SBS 40
1996	Digital servo controller, microPOS
2004	New generation of servo controller, microPOS4

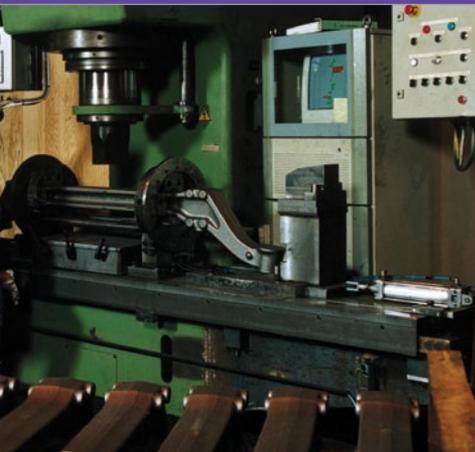
## Sawmill Applications



Our control systems for sawmill machinery can be found in most countries with lumber industries. The systems are found in machines such as:

- Profilers
- Block turners
- Circular saws
- Band saws
- Chipping canters

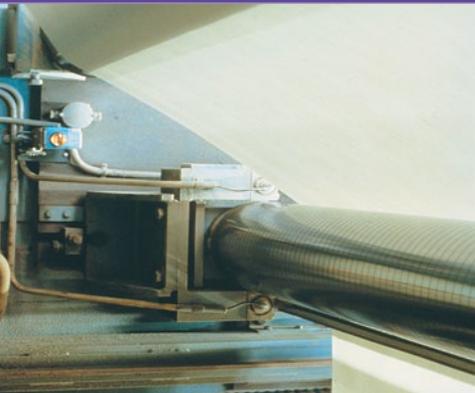
## Industrial Applications



Our control systems are suitable for machine operations that require high set forces with high speed and accuracy. Applications include:

- Hydraulic presses
- Turbines
- Saw mill machines
- Manipulators
- Fatigue testing
- Plastic extruder
- Wind turbines

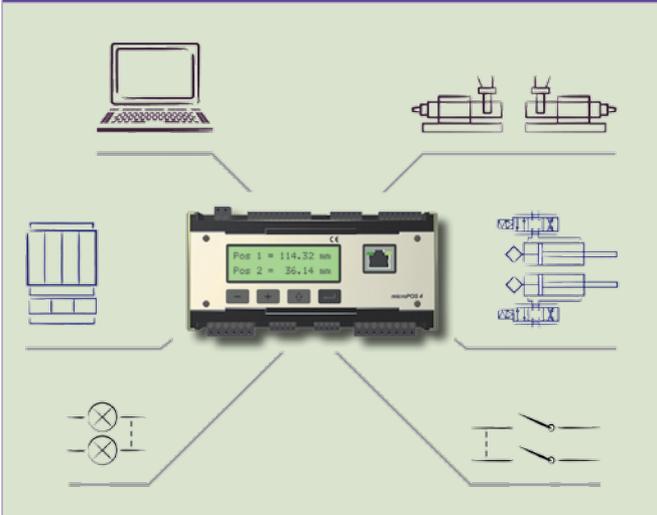
## Pulp and Paper Applications



Our control systems are used in critical processes in the pulp and paper industry. Applications include:

- Disc Gap Control (DGC)
- Reel Optimizing System (ROS)
- Rider Roll System (RRS)

## SCS – Servo Control System



Modular servo control system for hydraulic applications. The system can control between 2 and 16 servo axes. Communication to the main control unit is done with Modbus or fieldbus.

### Typical applications:

- Position control
- Rotational control
- Pressure control
- Force control

## SPU – Servo Positioning Unit

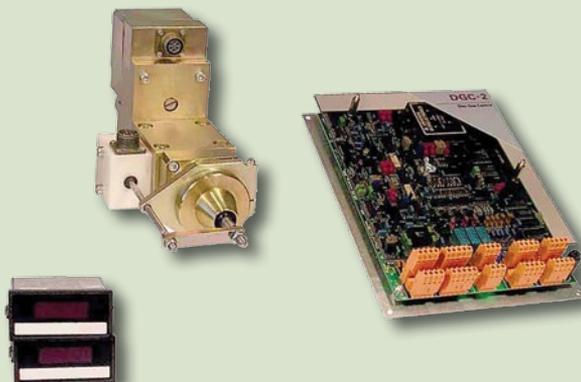


Programmable unit for customer applications including PLC functionality and integrated servo control system.

### Typical applications:

- Dimension and sequence functions in sawmill machines

## DGC II – Disc Gap Control



For production of mechanical pulp in disc refiners, accurate control of the disc gap is required to achieve a satisfying production quality.

- Control of the disc gap, manually or by computer
- Disc position measuring
- Display of the disc gap and the disc wear
- Setting of limits for the working range
- Fast opening of the disc gap in case of emergency

## Control Instruments



- microPOS4 – Digital servo controller
- GATE-3 – Gateway to fieldbus
- LVD-3 – Signal conditioner

## Servo Actuators



### POS Series Hydraulic Servo Actuators

Servo actuators specially designed for rough environments. They can be mounted with front flanges, mid-trunnions, or swivel-eyes. The servo actuator is available with built-in potentiometers or magnetostrictive transducers.

## Control Valves



- Servo valves
- DDV valves
- Proportional valves
- Tracer valves

## Transducers



- RAG – Position transducer
- LVDT – Position transducer
- MTS – Position transducer
- IDA – Pressure transducer
- KOS/KIS – Force transducer

## Force Nip Load

### Winders, Slitters, Rewinders, Calenders, and Press Section Force and Position Control

We have been delivering systems for controlling nip loads for decades. Our experienced engineers design system components such as force measurement blocks, cylinders, valves, and control units. This guarantees optimized performance that is independent of the type of machine on which the system is installed. The control unit is a digital, multi-channel, servo controller that is specially designed for fast force- and position-control loops.

The Rider Roll System (RRS) for winders and slitters is a force- and position-control system with separate controls for each side. The system features soft contact with the core, high nip-load accuracy, and dynamic force detection to prevent roll kickouts.

For rewinders, we can supply a system with correction for variable web width. This system is also available with single-channel pressure control.

The system for calenders is similar to the RRS, but includes correction for the changing angles of the arms.

The press-control system provides pressure and position control of the nip load in the press section or calenders.



microPOS4 Digital Servo Controller



Winder with Rider Roll System RRS



Force transducer KISD mounted in the rider roll



## Reel Optimizing

### Nip Load and Position Control

#### Measure, Control, and Optimize Your Reel

The patented **Reel Optimizing System (ROS)** is a hydraulic force and position control system developed to eliminate wrinkles and cracks during the critical shifting phase, and improve roll density. With load cells in the primary and secondary arms installed close to the spool, the system provides extremely accurate measurement of nip force.

The ROS gives your reel smooth and synchronized movement of the arm, and a correct nip load from the first meters in turn-up position to the complete roll length. This is accomplished by measuring and controlling the nip load forces and cylinder positions in both the primary and secondary arms.

#### Roll Density, Diameter, and Length

Roll density is measured and optimized by controlling the nip load. Online density measurement provides very fast feedback for optimizing the calander after line shut-downs, or when changing grades.

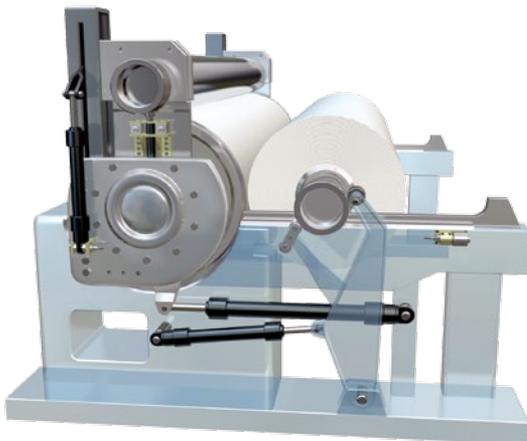
The system provides very accurate length and diameter measurement, and includes a feature for calculating the required tambour diameter for the scheduled winder sets.

#### Optimizing Logger

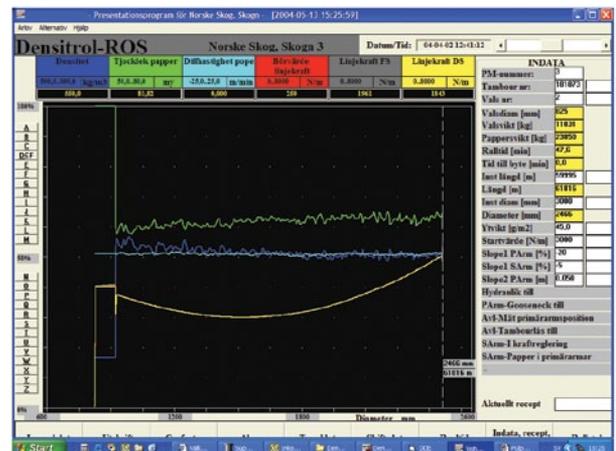
The system's optimizing logger stores data on a PC for analysis.



Reel with optimizing systems ROS



ROS system overview



Reel optimizing logger

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## *The Americas*

**United States** **Vishay Precision Group – BLH**  
3 Edgewater Drive • Norwood, MA 02062  
Ph: +1-781-298-2200 • Fax: +1-781-762-3988  
E-mail: pw.usa@vishaypg.com

**Canada** **Vishay Precision Group – BLH**  
14 Steinway, Unit 10 • Toronto • Ontario M9W 6M6  
Ph: +1-800-567-6098 (toll free), +1-416-251-2554 • Fax: +1-416-251-2690  
E-mail: pw.can@vishaypg.com

## *Asia*

**Taiwan, R.O.C.** **Vishay Precision Group – Weighing Systems\***  
8F-1, No. 171, Section 2, Datong Road • Sijhih District, New Taipei City 22183  
Ph: +886-2-8692-6888 • Fax: +886-2-8692-6818  
E-mail: pw.asia@vishaypg.com  
\*Asia except China

**P.R. China** **Vishay Precision Group – Weighing Systems**  
No. 5 Bin Guan Nan Dao You Yi Rd. • He Xi District, Tianjin 300061  
Ph: +86-22-2835-9605 • Fax: +86-22-2813-1682  
E-mail: pw.asia@vishaypg.com

**Israel** **Vishay Precision Group – Weighing Systems**  
2 HaOfan Street • Holon 58814  
Ph: +972-3-557-0888 • Fax: +972-3-556-8116  
E-mail: pw.il@vishaypg.com

## *Europe*

**United Kingdom** **Vishay Precision Group – Nobel Weighing Systems**  
Airedale House • Canal Road • Bradford BD2 1AG  
Ph: +44-1274-782229 • Fax: +44-1274-782230  
E-mail: pw.uk@vishaypg.com

**Germany** **Vishay Precision Group – Nobel Weighing Systems**  
Tatschenweg 1 • 74078 Heilbronn  
Ph: +49-7131-39099-0 • Fax: +49-7131-39099-229  
E-mail: pw.de@vishaypg.com

**France** **Vishay Precision Group – Nobel Weighing Systems**  
16 Rue Francis Vovelle • 28000 Chartres  
Ph: +33-2-37-33-31-25 • Fax: +33-2-37-33-31-29  
E-mail: pw.fr@vishaypg.com

**Sweden** **Vishay Precision Group – Nobel Weighing Systems**  
P.O. Box 423 • SE-691 27 Karlskoga  
Ph: +46-586-63000 • Fax: +46-586-63099  
E-mail: pw.se@vishaypg.com

**Norway** **Vishay Precision Group – Nobel Weighing Systems**  
Brobekkveien 80 • 0582 Oslo  
Ph: +47-22-88-40-90 • Fax: +47-22-88-40-99  
E-mail: pw.no@vishaypg.com

