



ON-BOARD WEIGHING SYSTEMS FOR MINING APPLICATIONS



INTRODUCTION

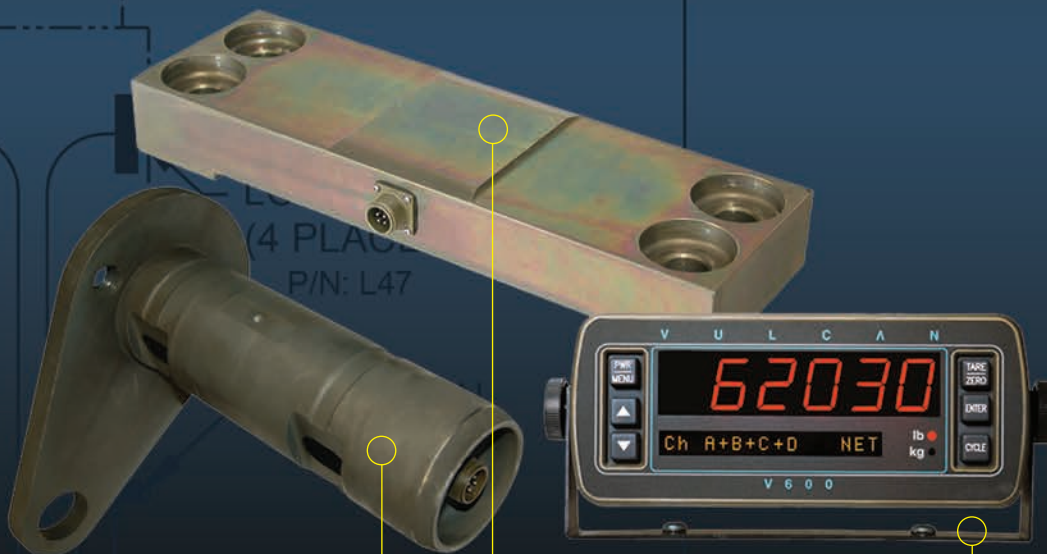
Vulcan On-Board Scales designs and manufactures specific on-board weighing solutions for high capacity dump trucks, articulated dump trucks, and specialty hauling vehicles and equipment.

On-board scales give the driver the ability to monitor the payload weight accumulated during the loading process. This allows control of the haulage weight, minimizing liability issues while promoting hauling efficiency and reinforcing positive driving habits. Managers have the option of setting operational weight limits. The driver can then act on the set weight limit using continual real-time feedback from the in-cab meter. The meter has payload warning options letting the loader know when a capacity target is reached. It is the most basic weight management / monitoring system.

Other forms of information derived from the basic weight data include: number of loads hauled per shift, tons hauled per shift, time between loading and dumping, and carry back weight. All data is stored and can be sent to external computing devices. This information is useful in creating vehicle service strategies and determining overall vehicle service lifetime. The Vulcan On-Board Scale system is a simple and effective entry point for companies looking for a way to monitor and control how much any single vehicle or fleet is hauling to maximize efficiency and vehicle uptime while minimizing safety and liability issues.

HOW THE SYSTEM WORKS

The basic measurement components of the weigh system are the chassis mounted load cells and the rear hinge pin load cells. As payload is added to the dump body, the weight is transferred to the truck frame chassis through the load cells and rear load sensing hinge pins. These components measure the weight and send the weight value as an electrical signal to be displayed by the meter in the cab of the vehicle.



LOAD CELLS AND SHEAR PINS

SPECIFICATIONS

ELECTRICAL: 350 Ohms nominal impedance

CONNECTOR: 4-pin bulkhead, military type

VOLTAGE REQUIRED: 5.0 +/- .1 Vdc

MATERIAL: High grade alloy steel

OPERATING TEMPERATURE: -40 TO +140 degrees F

SYSTEM ACCURACY: Typical error less than 1% Full Scale of actual weight for operating temperature range and normal loading conditions

V600 METER

SPECIFICATIONS

DISPLAY: LED, variable brightness
Primary: (6) .7" high characters
Secondary: (16) .2" high characters

SIZE: 8.0" W x 2.6" D x 3.6" H (including mounting bracket)

RESOLUTION: 10, 20, 50, 100, or 200 lb or kg increments

VOLTAGE REQUIRED: 10.5 to 29.0 Vdc

CURRENT DRAW: .7 to 2 amps

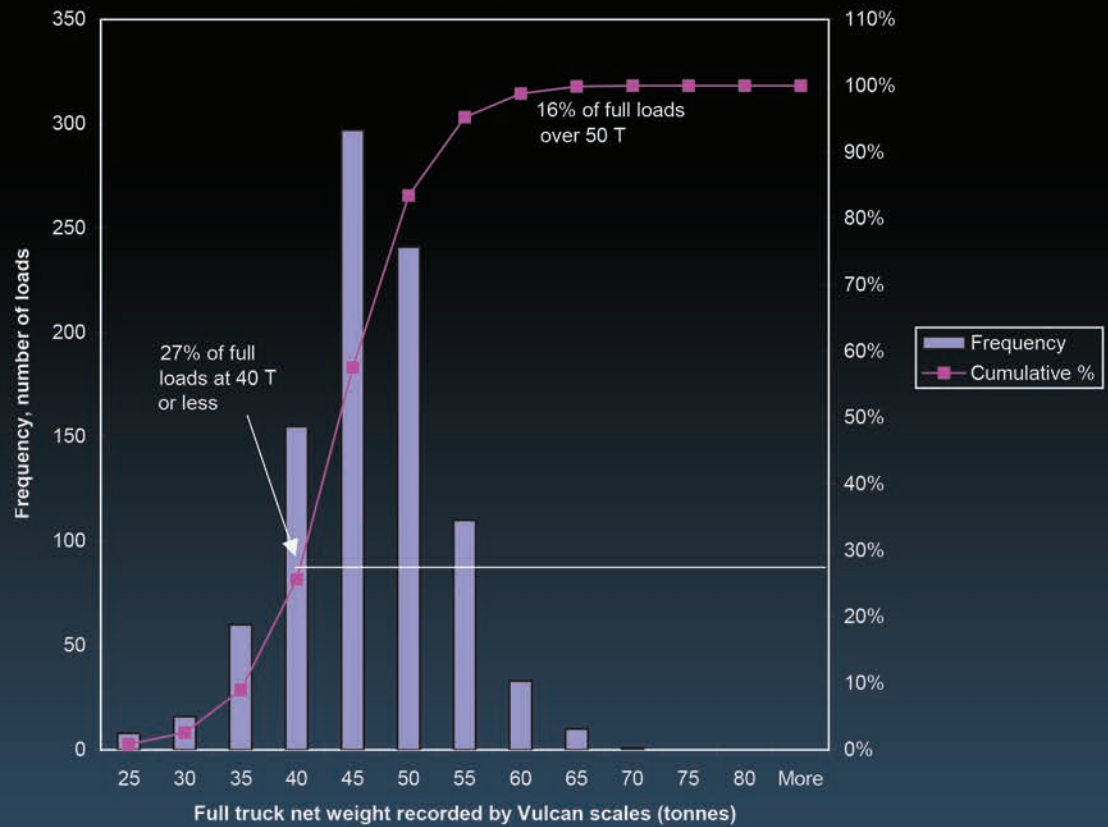
PROTECTION: Inline, 2 amp fast acting fuses and reverse voltage protection

WEIGHT: 27.8 oz (including mounting bracket)

50 Tonne Loading Efficiency Histogram: Truck #931, Thio

Data: August 23, 2005 - October 21, 2005. 35 days, 877 full loads

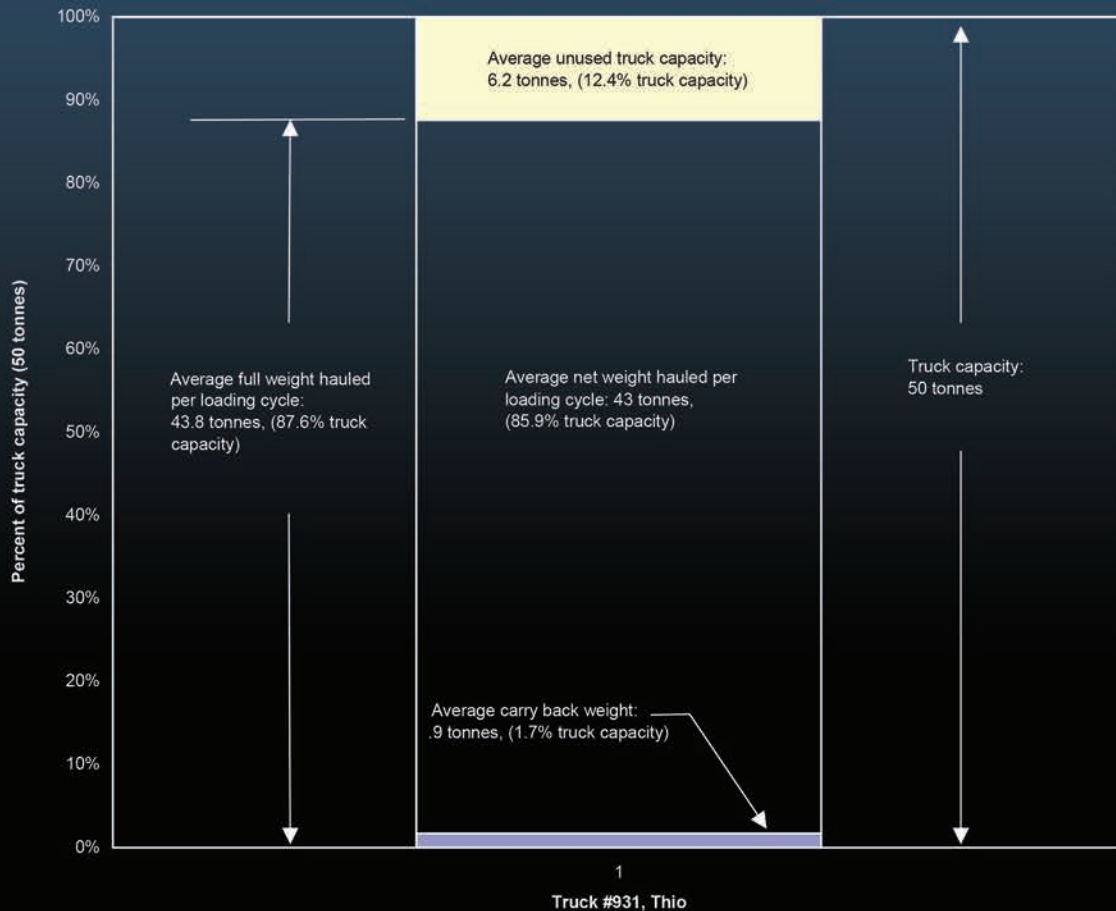
Target full load weight: 50 tonne



Hauling Efficiency Bar Graph #931, Thio

Bar graph illustration of average full loaded weight, average carry back weight and resulting average net weight hauled by Payhauler truck #931 at Thio

Date: August 23, 2005 - October 21, 2005. 35 days, 877 loads



Vulcan On-Board Scales are manufactured by Stress-Tek, Inc, which was founded in 1978 in Kent, Washington, near Seattle. Stress-Tek, Inc. originally provided professional consulting services in the fields of transducer design and experimental stress analysis. Our operations have since expanded to the design and manufacturing of state-of-the-art force measurement devices for the Vulcan On-Board Scales business. Today we provide products to the trucking markets including mining, timber, refuse, aggregate, and general trucking, as well as solutions for the aerospace, marine, medical, heavy machinery and process controls markets.

Our design team has access to the latest engineering tools and techniques allowing us to understand and address customer requirements. We have hundreds of load cell designs and more than fifteen patents, with additional patents pending.

Our modern facility provides more than 45,000 square feet for our operations, including a 9,000 square foot machine shop. Our in-house machine shop has a full compliment of computer numerical control (CNC) machine tools. This capability allows us to control the high standards we have set for Vulcan On-Board Scales.

Our quality control program incorporates standards to satisfy rigid customer requirements such as those of the aerospace and medical industries. Each load cell is tested and calibrated individually using certified test equipment, allowing load cells to be interchanged without requiring recalibration.

Vulcan On-Board Scales are supported by the best sales and service team in the industry. Our goal is 100% customer satisfaction. Our products are sold by knowledgeable dealers throughout the United States, Canada, and worldwide.

Our customers appreciate our continued focus on superior design, manufacturing quality, and customer satisfaction.



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Please call us at 800 237-0022 or go to www.vulcanscales.com to learn how Vulcan On-Board Scales can help you maximize efficiency and vehicle uptime while minimizing safety and liability issues.