

*Nova Weigh have a nationwide team of on-site engineers available for calibration and emergency support, 24-hours a day.*

*Calibration and on-site support agreements are available to ensure that your weighing equipment meets the quality standards required by your process.*

*Nova Weigh will provide an on-site survey and discuss the most suitable method of calibration for each process vessel.*

See us on the web:  
www.novaweigh.co.uk



BS EN ISO 9001:2000  
Cert No: FM 11445

## BEWARE OF "ELECTRONIC CALIBRATION" METHODS!!

Some suppliers of weighing equipment are offering so-called "Electronic Calibration" of process weighing systems.

Their sales claim is that the procedure has a minimal effect on production because it is quickly completed. It is claimed to be traceable to National Standards and a "calibration certificate" is provided.

The method is to add a known weight to the vessel and measure the increase in output from the load cells. This increase is then extrapolated over the complete range to full capacity.

The facts are:

- the only calibration achieved is in the range over which the test weights are added - usually only a very small part of the overall weighing range of the system:
  - that is the only traceable part of the calibration**
- this procedure assumes that the weighing system is linear - it may not be
- it overlooks the fact that any inaccuracy in the original loading is multiplied and compounded in the extrapolation process - this could be significant when based on such small percentages of the range to be calibrated
- the "Calibration" Certificate **claims** traceability and implies that this is valid throughout the full range of the weighing system. Traceability is limited to the range of application of the test weights
- One company could not work out why they had stock discrepancies every year - it was because they were using different and inaccurate methods of calibration throughout the year.

## NOVA "FORCE REFERENCE CALIBRATOR"

March, 2003

## Driving down the cost of calibration

**The regular calibration of a process weighing system is a necessary, sometimes statutory requirement.**

**Traditional methods of calibration are usually time-consuming and therefore expensive, and difficult to fit in to a busy schedule.**

**The new Nova Weigh Force Reference Calibrator saves more than two-thirds of the time normally taken and removes many of the problems.**



Nova Calibrator in operation

Briefly, the new system consists of a set of high-accuracy reference load cells, calibrated to a "Weights & Measures approved" weight indicator, and a set of hydraulic jacks.

The calibrating load cells are carefully placed under the vessel and arranged symmetrically with reference to the working load cells. They are then raised in stages by the hydraulic jacks so that the weight of the vessel and contents is gradually transferred from the working cells to the calibrating cells. The increase in weight recorded by the calibrating load cells is compared with the decrease in that recorded by the working cells. If the vessel is full, then the whole working range can be calibrated in this way.

### The BENEFITS

- The down-time involved is significantly reduced with obvious savings in time and money
- The vessels do not need to be empty
- The system is traceable to National Standards with the reference cells calibrated to an accuracy of 1:4,000

Alternatively, the hydraulic jacks can be used to press down on the vessel, so simulating an increasing load. This "weight" is recorded by the calibrating load cells and can be compared directly with that of the working cells. This method is particularly useful if the vessel is almost empty, when, once again, the whole working range can be calibrated.

- The load cells and instruments are ATEX approved for use in a hazardous area
- The problem of the supply and disposal of large volumes of water, required in calibration using flowmeters, does not occur

Inside this issue:

Reference Load Cells	2
Reference Indicator	2
Installation	2
Reduce production down-time	3
Process vessels do not need to be empty	3
Environmentally friendly	3
Beware of "electronic" calibration methods	4

## The Reference Load Cells

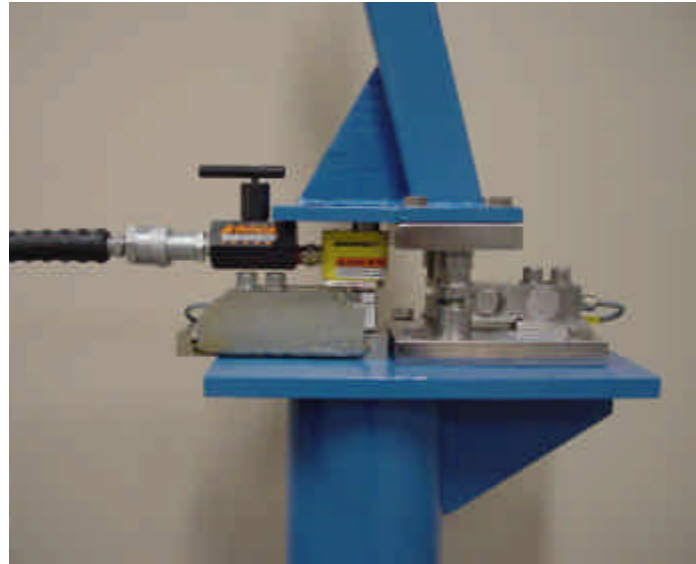
Two sets of load cells have been pre-calibrated to the weight indicator so different capacities of vessels can be calibrated by the same system.

The four 2,000 kg load cells provide a calibration range of 0 – 8,000 kg to an accuracy of 2 kg

The four 5,000 kg load cells provide a calibration range of 0 – 20,000 kg to an accuracy of 5 kg

The Nova Reference Calibrator can be used on vessels with three or four legs.

The reference load cells have ATEX certification to be used in a hazardous area and have been calibrated on a test rig that is traceable to National Standards.



The Reference Load Cell is on the left and the Working Load Cell is on the right. In this application the hydraulic jack will be lifting up the vessel

## REFERENCE WEIGHT INDICATOR

The Reference Weight Indicator is "Weights & Measures Approved" to provide a high level of confidence in the long-term performance of the calibration equipment.

The Reference Weight Indicator is also ATEX approved and powered by a 24 vDC supply so that it can be used in hazardous areas.

*"Dramatically reduce your down-time for the calibration of your process weighing systems"*

## INSTALLATION Requirements

Nova Weigh will provide a site survey to advise you on the most suitable methodology of calibration for each vessel and any modifications to the vessel brackets to take the Calibrator.

The requirements are to be able to press the vessel down, or push the vessel up - and space will be required for this to be achieved.

If any brackets are required to be manufactured, it would be expected that the investment would be recovered after the second calibration.

Special points:

- The down-time is significantly reduced with obvious savings in time and money
- Fast
- Efficient
- Accurate
- Traceable to National Standards
- Environmentally friendly

## Reduce Production Down-time

Two advantages of using the Nova Force Reference Calibrator are:

- The time taken is less than a third of conventional methods
- The process vessels do not need to be empty

The time is considerably reduced because the load is applied using a hydraulic jack rather than by test weights, substitute material or a flow-meter.

As the process vessels do not have to be empty during calibration, co-ordination with your production schedule is greatly simplified.

All Nova Weigh site engineers will provide a Calibration Certificate before they leave, and therefore the paperwork can be completed at that time - rather than taking up time at a later date.



Nova Calibrator pressing down on the vessel

## PROCESS VESSELS do not NEED to BE EMPTY!!

It is recognized that fitting in the calibration of a vessel to a busy production schedule is difficult at the best of times, but, at the same time, insisting that the process vessel needs to be empty before a calibration can take place provides an additional problem.

**The vessel does not need to be empty for the Nova Force Reference Calibrator to work!!**

The Nova Calibrator can be used to **pull down** on the vessel to verify the accuracy up to the full range of the working weighing system, and to **push up** on the vessel to verify the accuracy down to the zero load of the vessel.

*"Quick, accurate and traceable process weighing calibration system"*

## Environmentally friendly

The operation of the Nova Force Reference Calibrator is more environmentally friendly than the traditional method using a flowmeter and water.

The supply and disposal of this large volume of water takes time, and in some industries can be a costly operation. The Nova Weigh Calibrator does not use water and so this problem does not arise.

*"Saves time, saves money"*