

**On-Board Scales
Their Uses and Applications**

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ON BOARD WEIGHING

FACT OR FICTION

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(Estimated time 20 mins)

THE HISTORY

Since the early 1960's, On Vehicle Weighing Systems have presented themselves as a solution to the every increasing problem of vehicle overloading – but did they achieve!!

The systems developed in these formative years were based around early electronic signalling devices, utilising crude transducers to measure a variety of vehicle body components

Some systems incorporated transducers implemented into the axle housing, or axle beam, to measure deflection as weight was applied. Other's simply measured the differential between body and the ground, as the load was applied to the springs, this was then scaled as weight. Crude but largely ineffective. Most of those systems however, relied upon electrical current transmitted from the sensor through a wiring system to a basic Incab Display.

All of these systems developed around this era, provided such data as individual axle weights, accumulative axle weight total – net and gross. Typically 10% was the best accuracy available. **On a Dry Day!! Level Terrain!! Usually just after Calibration!!** Such systems rarely kept accuracy for more than a few days, and few could withstand the rigours of climate changes, humidity variations or impacts of any sorts.

The only single beneficial factor in these system's favour, was the continued need for operators to control weights, and the fact that the number of operators was practically limitless. Many systems were sold around the world, usually on a 1 off basis and rarely through repeat business.

This trend continued through the 1960's up until the early 70's when transducer technology started to improve dramatically.

The race for the skies increased the demand for accurate, reliable transducers which could operate in extreme conditions over a wide temperature range. The aviation industry provided this demand, particularly in the Boeing factories of Seattle and Northwest America. Engineers were working round the clock developing Stress based measuring techniques for use in the development and production of modern airframes.

From the mid 1960's through to mid 1970 over 2000 of the worlds specialist stress engineers concentrated on perfecting Strain Gauge based transducers for measuring aircraft payloads to wing span deflection. The age of precise measurement in extreme environments had dawned!!

ACCURACY ON BOARD

Any On Board systems, to be of long term benefit to the operator, must provide accurate weight information over prolonged periods of time, require little maintenance and must be capable of continuous operation in extreme conditions.

Today, such systems do exist. Loadcells form the basis for many of today's accurate On Board systems. The loadcells still use strain gauge based measurement techniques, described earlier. Incab computerised instrumentation provides the vehicle operator with precise On Board weight data on a continuing basis. Importantly, the system can stand the most arduous of conditions.

THE MARKETS

Logging has always been in the forefront of "On Vehicle" weighing systems developed, and many of today's systems have been developed from this demanding transport environment. Infact, most of today's leading Brand names of systems in the field, were developed in this market sector, with U.S. companies leading the development in this area. It is estimated that over 200,000 Logging vehicles are fitted worldwide with such systems.

The development however, has not stopped there!! European vehicle operators in particular, have utilised On Board weighing systems in a wide variety of applications. Higher degree's of Law Enforcement, Tighter Curbs on Legal Weight Limits for operators, has excellerated the requirements for On Board weighing systems in almost every sector of the Haulage Industry. Legislation of all types is forcing the haulier to protect the environment against damage attributable through overloading.

In the U.K. in particular, On Board weighing systems have been used for nearly 15 years. Not only to protect the operator from overload offences, but to provide accurate payload utilisation! 30,000+ U.K. transport vehicles are fitted to-date, with numbers rising at over

2,500 per year!! Similar figures apply to other European countries. Applications vary from Bulk Haulage on Tipping Vehicles from 17 ton GVW upwards, to Refuse Collection Vehicles of all configurations, Bulk Gas Carriers, to Animal Feed Delivery Vehicles. All operator's benefit from the maximum payload achieved 1st time, everytime. Saving valuable operating time, fuel and drivers hours. In many applications, payload control determines the difference between profit and loss.

It is an interesting fact that most operators require the lightest rigs with Alloy Bodies, High Tensile Steel or even Alloy chassis – Alloy Wheels even!! Everything designed to carry the maximum payload!! And yet they have no means of determining the loading of that payload in the majority of cases!! Particularly in remote locations.

Today's generation of On Board weighing systems are accurate to within tens of kilos on rigs with capacities of 50,000kgs and more, Vehicles of every configuration, shape, size and capacity can be fitted!! - So what does the future bring???

The escalating haulage costs worldwide focus every operator's mind on achieving the maxims. Better fuel economy, Better vehicle utilisation, Lower operating costs, maximum payload!!

It is not only in New Zealand we need to focus on these objectives. It seems that everywhere Hauliers are being squeezed from every conceivable angle. On Board weighing systems allow you to carry the maximum 1st time, every time in the majority of applications, and help ensure that damage caused to vehicles through overloading is kept to a minimum:

The On Board revolutions has not just stopped at payload control, developments in sophisticated weighing systems for Refuse Collection Vehicles is set to revolutionise Waste Collection worldwide. European legislation in particular, has laid down that by the year 2,003 a minimum of 30% of all domestic refuse must be re-cycled, rising to 50% by 2,006. The method used in accounting for this Refuse re-cycling will be through doorstep collections using weighing systems fitted to the Refuse vehicle.

Each and every Bin will be tagged with the householders Key Account details ie. Name, Address, Account No. Each and every collection will be weighed and the data transferred for billing on an "as used" basis. Householders will then be invoiced for the amount of Refuse generated. This is not **Fiction**, but **Fact**. Already in the various city locations, such systems are being trialled for implementation.

The era for approved" systems has already dawned, dispelling the age old myth of 'Not Accurate, Unreliable or a Waste of Time and Money'.

Talking of Money - And what of the cost you may well ask!! These new generation of On Board weighing systems are being fitted in many countries as standard equipment at the vehicle bodybuilders, or during vehicle fit-out, some systems take only a few hours, others days, dependant on application. However, with the advent of Air systems, many systems for overload protection can be easily fitted on Tractor Units and Trailers in less than 12 hours.

It is estimated in U.K., that by the year 2,005, 20% of all vehicles operating from 17 ton GVW upwards will be fitted with such equipment as standard, with the figures growing at a staggering 35% per annum on new build. It is, therefore, conceivable in my lifetime, that On Board weighing will be as standard as tachographs on vehicles worldwide. A sobering thought, as you can see, I'm still only 21!!

Thank you for your kind attention. **END**