What would a world be
without scales?




WIAA
WEIGHING INDUSTRY ASSOCIATION OF AUSTRALIA

What would a world be without scales?

What would a world without scales look like? Certainly not the way we all know it. Various types of scales accompany our daily lives without us always noticing. Scales are a fundamental part of medical and pharmaceutical research, without which the development of drugs would be impossible. Scales are used to perform formulations in food production,

so that our food always has the same taste. Scales are used for quality assurance in industrial production, for example, to detect low-quality parts with air inclusions or missing parts in larger elements. Scales can also assist in counting components – for example, ensuring the correct number of screws in a packaging unit - so that downstream processes run smoothly. These are just a few examples of why accurate and reliable scales have such a big impact.

The Weighing Industry Association of Australia Members , providing and maintaining the weighing instruments that allows Australia to work as itis done now. Companies ranging from large manufacturers to small service providers are continuously working to enable research, improve productions processes and ensure fair trade, positively impacting daily lives all over Australia.

A look back - the history of weighing

The exact date of the invention of the scale cannot be defined, but it is closely linked to the development of civilisation and the need to measure goods with a value. However, the use of scales in medical and domestic use is relatively new and began about 250 years ago. First findings of a beam balance in Egypt are more than 7000 years old. Around 500 BC, the accuracy of the beam balance

was improved by the Etruscans. The Romans used unequal-arm scales around 100 B.C., which had a movable weighing piece on the longer arm as well as a line marking to determine the weight. The advantage of these scales was that one sliding weight replaced a large number of counterweights. In 1669, the Frenchman Gilles Personne de Roberval invented the table balance. The special feature of these was that the position of the goods did not affect the result. In addition to the table scale, the inclination scale was also invented by Philipp Matthäus Hahn in the 17th century. Its advantage was a direct weight indication, which works without moving and placing a weight. Decimal and kitchen scales were then developed in the first half of the 19th century, and around 1895 the first scales with simultaneous price display appeared.

In 1939, two engineers ushered in the age of electronic scales with the use of electrical resistance changes, which was further advanced in 1981 with the first design of a fully electronic scale. In the meantime, the development of the balance has progressed far and is continuously being optimised. The performance reaches into the nanogram range, built-in cameras - e.g. self-service scales at the fruit counter – support the user or weighing data are automatically and wireless-

ly transferred from the scale to different software systems. However, the interesting history of the development of scales is far from over, which will bring us many more exciting developments for the future.

What impact do scales have on our daily lives?

Scales and weighing solutions are more present in our lives than we realise at first glance. A large number of objects that surround us and with which we have daily contact would not exist or would not exist in the form we know without scales. Since the number is so high, we can only give a small insight into the influence of scales on our daily lives. However, it gives a good overview of how extensive and, above all, irreplaceable weighing technology solutions have become. Scales in general accompany the value chain from incoming goods in production, through research and development, the production process itself, to quality control and packaging and logistics.

Incoming goods

When raw materials are delivered, the process begins with the determination of the raw material quantity, usually by means of weighing. For this purpose, scales for trucks or trains, built-in scales or load cells in tanks or silos as well as pallet or floor scales can be

used. Even the moisture content of powders or granules can be determined by means of moisture analyzers (also called drying scales), whose technology is based on the weight loss of the sample by heating.

Production and quality control

During production, weighing modules and load cells in filling, dosing and formulation systems support the correct use of individual raw materials and components. Overfilling and underfilling are avoided and quality parameters such as tightness of packaging, closure torques or the frictional stability of tablets are ensured.

Bench or floor scales are then often used in manual production steps. The scales assist employees in counting pieces so that customer orders can be processed without missing or excess components. At the same time, counting scales can track inventory movements and thus avoid out-of-stock situations.

In quality control, scales play an important role in analytical applications, such as quality assurance for food or pharmaceuticals, but also in identifying incomplete or damaged products – as in the plastics or metal industries. Here, the weight of a component provides information about its quality. On the other hand, in-

tegrated checkweighing solutions ensure the completeness of assemblies, kits or individual delivery units. In filling systems, weighing is the only method of filling control that is not dependent on container shape, density differences, foam formation or air pockets.

Retail

The weight determines the price. Otherwise, the prices at the supermarket checkout would suddenly appear very arbitrary.

Packaging and logistics

Overweight vehicles can damage road infrastructure and cause accidents with serious consequences. Thus, the determination of the weight of a load serves the safety of transport.

Freight costs often depend on weight and volume and are thus essential for accurate invoicing. Integrating a scale into the packaging system for individual packages or even palletised freight automates the processes.

The importance of quality, reliability and safety

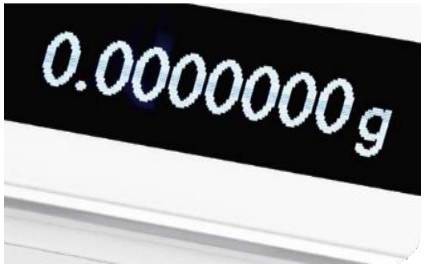
If scales do not work reliably, this can have a significant impact. For example, in the case of pharmaceuticals, only the smallest amounts of active ingredient can have an impact on the life and death of a patient. The effects are of course not always immediately so dramatic, but the user of a scale should always be able to rely on its results - whether in the nanogram or ton range. In this respect, it is important that a scale is of good quality. Only high qual-

ity scale parts, combined with careful assembly, will allow many years of daily use without failures due to broken components. If repairs are necessary, it is important that they are carried out by trained specialists using approved spare parts - preferably directly from the manufacturer. The Australian weighing industry supplies the high-quality scales and carries out the repairs to guarantee the quality of scales.

To ensure accurate results from a scale, it must also be checked or calibrated regularly. This involves determining whether the scale deviates from the true, actual value of the measure. Callibration is done with the help of metrological comparison objects. Only if a balance works accurately is it a reliable measuring and testing instrument. Inadequate measurement results can have serious consequences - from immense costs to significant legal consequences.

Legal framework for weighing

It is important that someone is able to trust the weighing instruments they use. For many years, legal metrology legislation is in place to guarantee the quality of weighing. Currently, there is a comprehensive legal framework consisting of national legislation, international standards and guidelines to protect users and



consumers. Particularly in the area of commercial transactions, medical diagnoses and legal disputes these requirements are strict and not-negotiable. Consequently, the weighing instruments need to meet certain standards when being sold and during its lifetime they need to continue functioning correctly. In Australian states this means the weighing instruments are also obliged to be checked on a regular basis.

For purchasers it is essential to buy the weighing instruments that are compliant with the legislation. Additionally, users need to follow national legislation and ensure the accuracy of the weighing instrument over the years by having periodic re-verifications. This way the legal framework protects users and customers.

Outlook into the future of scale development

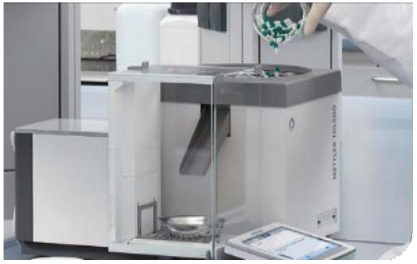
In the last 20 years alone, there have been fundamental advances in the weighing industry, be it in the area of resolution and accuracy, the connection to automatic dosing and control systems, automatic networking in databases, integration in software systems, the combination with cameras or intelligent self-checking functions of the scales themselves. Development of innovative weighing instruments is ongoing and is currently focusing very strongly on the topic of data integration

and facilitation of daily use for the user. Here, the gain in efficiency through time savings in the individual weighing process plays a major role. Tests are also being carried out to find out which media the scales can use to support the user even more in the individual process steps. Virtual reality glasses or intelligent laboratory tables that communicate with the scales play an important role here.

Scales in retail that provide recipes on the smartphone to match the food purchased are also an innovation as well as the implementation of sustainability in the entire production and food industry. In the production sector, rejects due to flawless batches are becoming increasingly important, as is the avoidance of overfilling or underfilling and the complete traceability of results.

At the same time, increasingly strict legal requirements for almost all industries demand appropriate instruments and processes for quality control, in which the scales can support the user considerably.

So, it remains very exciting how weighing technology solutions will continue to support us in the coming years to simplify our daily lives.



Who is WIAA?
About us

WIAA is the Australian Association for National trade organisations representing suppliers and manufacturers of weighing instruments. Founded in 1983, WIAA has today 25 member companies. These include National and small Businesses across Australia.

The weighing industry has gone through tremendous changes in the past decades with new technologies and techniques being introduced in all sectors. Nowadays weighing instruments plays an important role in every industry, contributing to the quality of the final product.

Today, WIAA is playing its role within Australia, striving for common and harmonised standards to be adopted at State and National levels. These standards and legislation should provide safety and quality to both consumers and users of weighing instruments. WIAA aims to provide valuable contributions to improve the quality of legislation and standards.

The mission of WIAA

WIAA´s mission is:

- Promoting a high quality standard in the supply and manufacture of weighing instruments;
- Co-operating with the metrological services in the establishment and amendment of the regulatory environment;
- Reducing the technical and administrative regulations relevant to weighing instruments to those requirements which are necessary not to harm users;
- Ensuring harmonisation of national regulations and the use of established international standards, in order to eliminate barriers to cross-border trade of weighing instruments;
- Promoting a good understanding of modern weighing technology, especially in developing markets;
- Ensuring that national and in-

ternational requirements do not prevent the development of new weighing technologies;

- Liaising with national and international organisations and with end users concerning all aspects of legal metrology including consistent interpretation of requirements;
- Ensuring fair trade practices by all weighing instrument suppliers/ manufacturers.

Power behind WIAA

Australian weighing instrument manufacturers and importers, including members of WIAA, represent over 50% of the worldwide Suppliers. There are 700 companies world wide, active in the production of weighing instruments (many of them being partly or even over 50 % active on related fields as well). The weighing industry in total employs around 1000 people and has a turnover of about 100 Million Dollars.

There is a wide variety of weighing instruments that are produced by the industry. These range from weighbridges and supermarket scales to high-precision scales in laboratories. Reliable and high-quality weighing instruments improve processes and equipment in various ways.

Code of conduct

WIAA believes it is important that its activities are at all times carried out in accordance with the applicable law, especially competition law. WIAA believes that business shall be conducted in an atmosphere of free competition, i.e. on the basis of price and quality. WIAA recognises that competition law intends to stimulate free competition, something which has WIAA's full support. WIAA feels it is important to confirm this by adopting a Code of Conduct. This Code of Conduct shall be binding on all members as well as on other participants when taking part in activities of WIAA. The Code of Conduct aims at providing clear rules to WIAA's members, thus reducing the risk of improper conduct and consequently of fines being imposed.

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www.wiaa.com.au

Our Office

The Managment of the WIAA is located in Melbourne and led by the Finehaus Management. It is in charge of the daily management of the association. In addition, Finehaus coordinates the administration of the Association of WIAA by organising and assisting their meetings.

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