

Tank- and hopper weighing

From 1 kilogram
to 1000 tons –

Tank scales
for all applications

This is profitability without compromise: quality, yield and security of process

Weighing applications in industrial production environments

What do the production of colour and lacquer, the production of perfume and the production of animal feed have in common? As far as the production process is concerned they are all batch processes: defined ratios of raw materials are processed in different production steps such as batching, blending, heating and reacting.

In striving for reliable product quality the accuracy of the batching process is a decisive factor. Of course, optimum yield as well as maximum security of process are of the same high importance.

The best method of determining the real quantity of all material is weighing. One possibility is to weigh every single raw material individually. A better way is to weigh the entire process vessel:

- big storage silos and tanks
- mixers, stirrers and kneaders
- dissolvers
- reactors and heating tanks
- ...

Sartorius's complete solution

Our vast experience in the field of tank scales has been used in the development of our extensive range of specialised load cells, mounting kits and electronics. Therefore Sartorius components are perfectly co-ordinated and provide a perfect solution to virtually all vessels.

We offer a complete solution for all your process weighing application requirements:

- Consultation from the beginning
- Outstanding load cells and mounting kits suitable for use in virtually all industrial applications and accuracy requirements
- Ultra- modern transmitters and indicators for signalling, indication and control
- Commissioning and training
- Service during the life-time of the device



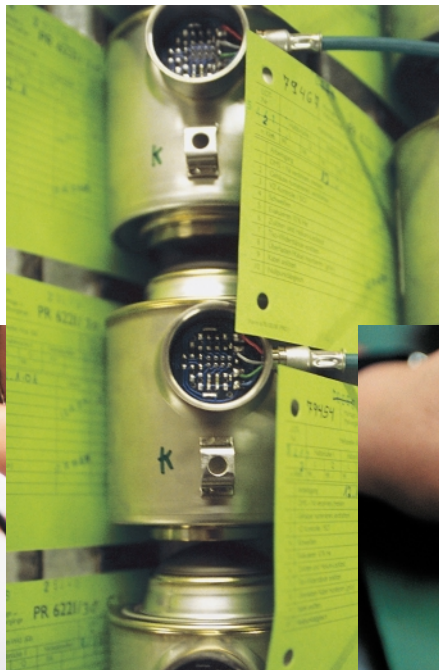
Vessels like to team up with Sartorius: reliable weighing technology with experience

High quality load cells have been developed by Sartorius Hamburg for decades. Our load cells are outstanding because we are experts in all the relevant key technologies and the load cells are developed and produced in-house:

- The most important part of a load cell – the strain gauge is optimised for the geometry of every measuring element. As we produce the strain gauges in-house we can guarantee the high quality of this most important part of the load cells.
- For the production of the measuring elements, Sartorius uses high-quality steel. This ensures that each and every load cell operates in the same manner. As a result there are no variations from one batch of load cells to the next.
- The combination of strain gauges and measuring elements makes our load cells incomparably reliable.

Permanent supervision of all process parameters during the production process guarantees the outstanding quality of our load cells. Therefore you can rely on our products like thousands of customers over the last decades.

The fact that Sartorius was one of the first companies to be certified according to ISO 9000 underlines our confidence in the high quality of our products.



You won't be left alone!

In the design phase

With Sartorius identifying the best solution to your application requirements is the most important point. As soon as the investment phase begins we will support you with help and advice regardless of whether it is the retrofitting of a production plant or the design of a completely new production line. Our sales engineer can study plans or inspect the existing plant. He offers consultation for the optimum positioning of load cells and optimisation of the mechanical construction. He will even find the best solution to weighing applications under extreme environmental conditions (e.g. the escape of caustic chemicals, cleaning with aggressive detergents).

During Commissioning

After the installation our experienced service-engineers will help you with the commissioning of your tank scale:

- They render an expert opinion on the mechanical construction, check the cabling and calibrate the tank scale.
- They will offer consultation for process optimisation, in order to guarantee the expected accuracy.

Introduction and training is provided to the operators by our commissioning engineers. This can be during the commissioning of the system or in special training seminars.

After your system is up and running

A service contract ensures that your production plant works always with maximum accuracy. This way, your investment will bring maximum benefit. Preventive maintenance guarantees maximum system availability and prolongs the life of your system.

Our products designed for harsh industrial environments and normally work trouble-free for decades – but sometimes a device has to be replaced. In the case where a replacement becomes necessary it is good to know that spare parts and replacement devices are available quickly and supplied world-wide.



We communicate all over the world

Only with the help of electronic signal processing can the value transmitted by the load cell be visualised and processed. A modern transmitter must be able to handle the classical communication like for example analogue signal and signal transmission via relay or opto-coupler output: 16 bit analogue outputs with zoom function can transform even the smallest signal into a standard signal as for instance 4-20mA. Beside this the transmitter provides digital inputs and outputs for signalling and release. If local indication is required simply choose an indicator in place of a transmitter.

Sartorius electronics know the standards

More recently signal transmission via digital interface as for example RS 232 or RS 422/485 has become a preferred option. The Sartorius ultra-modern digital transmitters and indicators are equipped with all standard protocols like DUST, JBUS/Modbus, Teleperm.

Sartorius electronics communicate via fieldbus

There is an increasing demand for electronics which can communicate via the various fieldbus protocols. Sartorius offers the optimal solution for all applications, the optimal industrial transmitter, the optimal industrial indicator, designed for comfortable integration in modern fieldbus systems (INTERBUS S, DeviceNet, CANbus, PROFIBUS-DP).

Sartorius electronics have many hidden qualities

Our ultra-modern transmitters and indicators are not only designed for optimal data-processing but also help to make the weighing process as comfortable as possible.

- They allow remote calibration and can be configured via PC or terminal; remote maintenance is also possible.
- They support '**smart calibration**', developed by Sartorius. This means: hauling heavy weights is no longer necessary. With the help of the load cell data you can commission a vessel in minutes in a reliable and exact way.
- With the help of special drivers (DDE and OPC drivers) the weight values can be visualised, processed and saved on a Windows compatible PC. The transmission of the data to the PC is realised e.g. by Ethernet.



We provide solutions for most applications

We have used our many years' experience in the field of tank scales in the development of our load cells. They must meet a number of different accuracy requirements and at the same time they are durable, robust and in tank and hopper weighing applications the best choice.

Sartorius load cells are suitable for silos, tanks, stirrers and dissolvers and many more
We regard load-cells and mounting kits as a single unit. The mounting kits protect the load cells from vibration, wind and dynamic forces of drives. As a result, almost every vessel can be transformed into an accurate process scale.

Sartorius load cells are suitable for many industrial sectors

As our load cells are in stainless steel they can be used in many industrial sectors. The intrinsically safe version of the load cells is used in the chemical industry throughout the world.

Sartorius load cells are suitable for all tank scale sizes

Sartorius load-cells are suitable for the entire range of tank-scale applications - from the smallest batching-vessel weighing just a few kilograms to the biggest storage silo weighing some thousands of tons. Moreover, you can weigh medium sized mixing vessels and complete reactors in an accurate and reliable way.

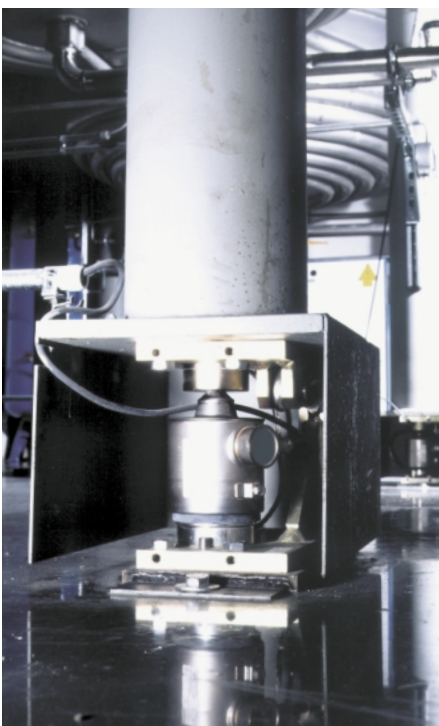


Sartorius load cells meet the different accuracy requirements

Sartorius load cells meet all weighing application requirements. They are available in accuracy classes from 0.008% to 0.5%. One of our load cells will certainly meet your special requirements: whether it be for level control or a demanding batching application.

Sartorius load cells and their "inner" qualities

- **Easy and fast commissioning:**
All Sartorius load cell output signals are matched allowing comfortable, straight-forward commissioning. If a load cell needs to be replaced, re-calibration of the system is not necessary. Our motto: replace the load cell and continue working.
- **Large operating temperature range:**
Sartorius load cells have a standard operating temperature range from -30°C to $+95^{\circ}\text{C}$ making them suitable for virtually all weighing applications and production conditions. There is even a specially designed model available, which has an operating temperature range up to $+180^{\circ}\text{C}$.
- **High reliability:**
Sartorius load cells are reliable and totally maintenance-free. Our load cells can even be immersed in water at a depth of 1.5 m for a duration of 10,000 hours.
- **Extreme robustness:**
Sartorius load cells are robust. The overload capacities of 150% to 200% are used in the steel and coal industry – and in countries with seismic activity.



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