



## Load Cells and By-Passes of Force

The weight is a force, which directs vertically towards the core of the earth. The load cell transforms the force directly applied (load, weight) into a proportional electrical signal. This is being done with very high precision.

At the mechanical setting ups of dosing systems you often find by-passes of force caused by the design of the machine/scale. Those are located, for example, at reducing sockets/sleeves/collars or flexible reducing pipes (inlets/outlets) and by-pass the load cells with part of the force. The amount of such by-passes increases with the amount of such reducing sockets/sleeves/collars/pipes (inlets/outlets). Both sockets of inlet and outlet cause force by-passes. The flexibility and so the amount of the force by-pass and the error depends on temperature, dirtiness and humidity.

Having a smaller weighing range, an increasing number of material components or rather smaller components' weights, the force by-passes can be noticed better and influence the accuracy of the weighing and dosing process drastically. Even cable connections to the material outlets, pneumatic and hydraulic pipes can be force by-passes. All these by-passes interfere with the free movement of the scale.

Pneumatic influences on the weighing bin, e. g. material from/to weighing bin through vacuum or compressed air, although they are not force by-passes, can influence the accuracy negatively and can cause faults.

These influences mentioned above or rather their amount is not constant or proportional and cannot be compensated in the connected load cells or electronics.

