



Check Weighers for burden and alloy hoppers: **Process control at the highest level**

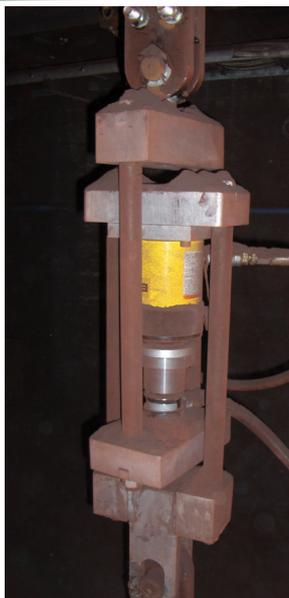
For burdening and alloying every steel plant works with a big number of hopper weighing systems for sinter, coke, additives and the various alloying elements. These hopper scales are especially used for the material composition, which means they are responsible for the security and the quality of the chemical processes inside the Blast Furnace, the Converter and the EAF, finally leading to the required quality of pig iron and finished steel.

That short description already explains, why this kind of hopper scales must work especially precise and reliable at every moment of time.

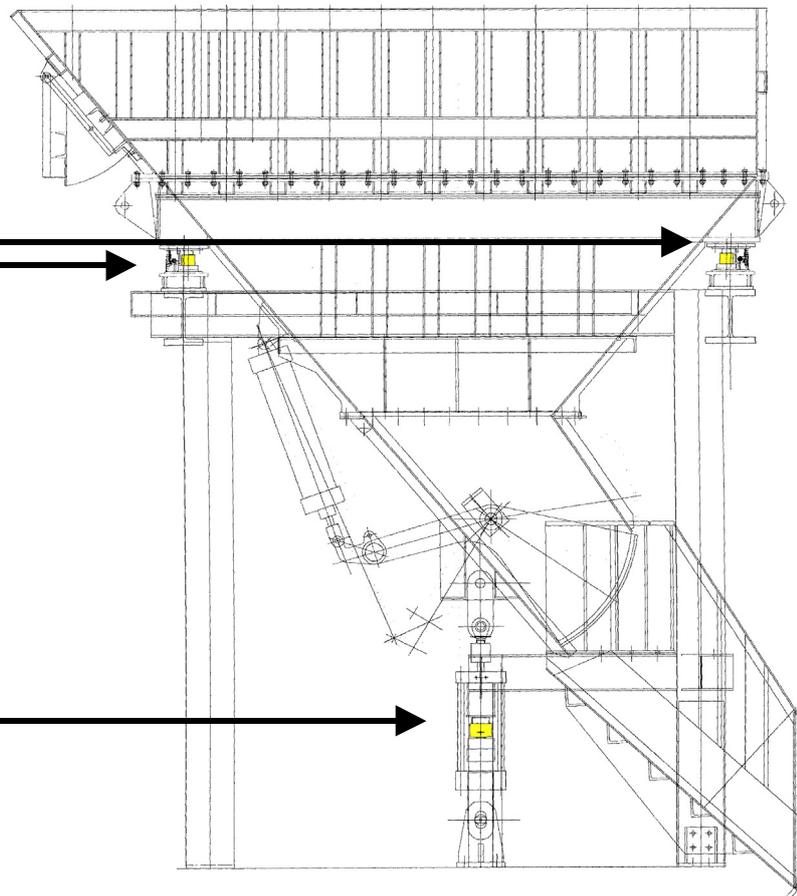
Although the high quality of the modern Loadcells principally guarantees these performances, nevertheless functional disturbances of the weighing systems after long years of operation in the harsh environmental conditions (for example caused by cable damages or raising shunt forces) cannot be completely excluded. Therefore we feel growing interest of our customers to verify the proper performance of these especially important hopper scales with minimum effort of manpower, time and material: for that task we recommend Schenck Process Check Weighers for hoppers in a mobile or fixed installation according to the principle arrangement represented on the figure below:



Hopper scale with
three Loadcells
RTN 10t 0,05 and three
Compact Mounts VKN10



Suspended
Check Weigher with
one reference Loadcell
RTN 22t C3 and one
hydraulic jack



The here presented Check Weigher consists of

- a force directing steel frame,
- one reference Loadcell and
- one hydraulic cylinder.

The upper connection of that compact unit is fixed onto a central point of the tested hopper. The lower connection is fixed to the ground by the combination of a fixed pin and a slotted hole inside the frame. During normal production the zero - position of the cylinder and the slotted hole guarantee, that the Check Weigher cannot transmit any vertical force. At the moment of checking, the hydraulic cylinder lifts the lower flange of the frame against the fixed pin (by hand pump or coupled system pressure). From that moment further pressure generates a control force transmitted identically

- over the Loadcells of the hopper scale, and as counter-reaction
- over the reference Loadcell of the Check Weigher.

The verification of the scale is executed by the comparison of the display changes of the two weighing electronics, that are caused by this control force.

From the weighing point of view that procedure represents a **linearity check** of the sensitivity, that may reveal the following functional problems:

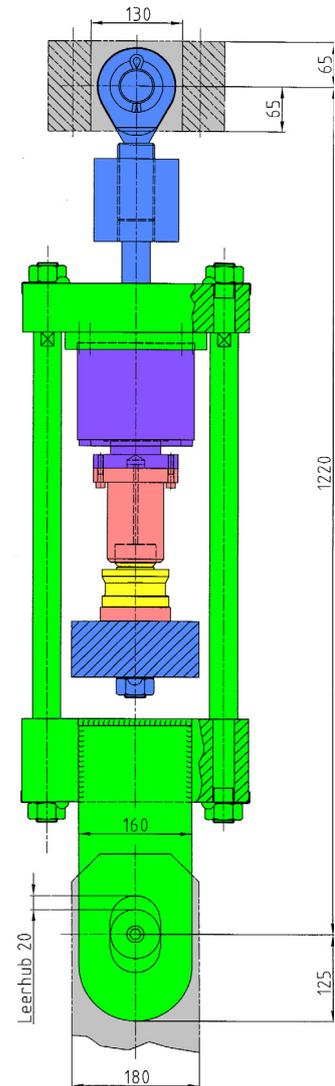
- Load depending shunt forces, caused for example by compressed dust or additional mechanical installations between the weighing and the non - weighing sections;
- partly improper function of Loadcells and Mounts.

Under normal performances of the hopper scale that check very quickly and clearly confirms the expected high accuracy of the entire measuring chain with a linearity deviation of maximum $\pm 0,1 \%$ of the applied control force impressively.

Additionally the Schenck Process DISOBOX offers the possibility to **check the zero-point** of every single Loadcell automatically after every total evacuation of the hopper.

This combination of a regularly **check of zero-point and linearity check** for the most important hopper scales contributes at a high extent to the optimi-sation of both process safety and availability.

Compared to the conventional time and effort consuming check methods with standard masses (see photo at the right side) this kind of preventive maintenance with Schenck Process Check Weighers repre-sents a reasonable and economical investment in various respects.



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