



Buying a industrial platform scale involves more than comparison of capacity, platform size, resolution (least count) and price. There are a lot of weighing scales ranging widely in price serving different purposes. What is the difference between them? All scales seemingly work and do the same job. The difference in price lies in the level of sophistication of weighing i.e technology employed & component / steel used, these have direct bearing on the performance and reliability of the weighing scale. The engineering quality will determine performance and accuracy of weighing. The application, where and how the scale is used will decide the type of scale required.



What are the important factors to be considered while purchasing a industrial weighing scale ?

- Environment – effect of temperature, moisture vibration, RFI/EMI, gas/dust, corrosion, requirement of cleaning & wet or dry area.
- Loading / unloading cycles, type of loading, wear and tear.
- Certification, documentation and validation in certain type of industry (viz. Pharma, Food, LPG etc.)
- Feature of electronic indicator like mounting, display, keypad, connectivity with computer, printer & network.
- Down time and support.
- Engineering quality and reliability: How well will the scale function in industrial environment after 3 years? after 5 years? what will be its service and maintenance cost?

To understand effects of above factors on a weigh scale, it is important to know the major components of a weigh scale.

Loadcell –



A transducer which converts load kept on scale to electrical signal and sends it to the weight indicator. Specification of loadcell like effect of temperature, creep, non linearity, hysteresis, protection class affect performance of the scale.

Platform –



It consists of weighing pan (top cover) to keep load (material) and mechanical frames to transfer weight to loadcell. It will also have four adjustable feet for easy leveling and protection for loadcell from overload. Material of construction of top cover / frame, gauge of sheet / HSS used, painting & structural stability. These affect life and reliability of the scale.

Electronic Indicator –

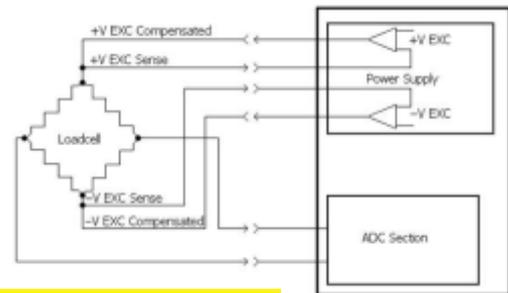


Converts electrical signal received from loadcell to digital and displays the same. Loaded with many features which will help user to take maximum benefit. MOC of enclosure, type of display, keypad, mounting arrangement, computer interface etc. are few important features.

There are fairly a number of points, concerning the interference that need to be considered:

Interferences :

- 1. Moisture :** The cable entry is the most vulnerable to entry of moisture. Moisture can wick up through the cable and cause drift in leading. To avoid this manufacturers use high quality polyamide glands. They are expensive compared to normal glands used for dry area.
- 2. RFI / EMI :** They are electrical noise to the loadcell signal caused by heavy machinery, electro mechanical relays etc. installed in the plant area. They affect weight reading. Low voltage loadcell signal (mV) are isolated from RFI / EMI in well designed indicator
- 3. Temperature :** Wire resistance increases with temperature and causes voltage to drop which results in change in excitation voltage. This leads to indicator displaying different result than the loadcell output. To prevent this six wire technique is used so the effect of temperature on weight measurement is nullified.



Selection factors of weighing scale

Indicator :

Display and keypad -



Bright large red LED performs better in poor and fluorescent lighting verses a monochrome LCD. Red LED has a greater viewing angle compared to LCD. Direct straight view is required in case of LCD.

LCD display is preferred incase of battery operated scale or intrinsic safe scale where low power consumption is major criteria.



Enclosure :

Stainless steel enclosure has special anti corrosive quality that is demanded in food, pharma, chemical industries. Rugged and easy to clean. Because of this advantage it is expensive.

Abs/plastic enclosure are economical in price, but not suitable for all environment. ABS degrades when exposed to acetone. Flammable when exposed to high temperature. Polycarbonate plastic are not suitable for environment with strong alkali and organic solvents. Some plastic are prone to cracking if any heavy objects fall on it.

Few indicator have provision to mount on stand, table or wall. Others require separate accessory which is charged extra.



SS enclosure

Protection against dust and liquid is interpreted as Ingress Protection (IP). IP rating of 54 means "dust protected" and "protected against splashing of water" where as IP rating of 67 stands for "dust tight" and "protection against immersion upto 1 m in water". Higher IP rated loadcells and indicators are recommended for weighing in wet environment or where weigh scales are subjected to wet cleaning.



ABS enclosure

In today's communication age field devices have to be connected to PLC/DCS etc. Scales with RS232,RS422/ RS485, modbus, Ethernet are required.

Platform :

The sturdiness of the mechanical frame and top cover is important because it is constantly exposed to regular loading and unloading. Powder coated MS frame lasts for a longer period in corrosive environment. Available standard SS top cover are of thickness 1mm, 1.6mm & 2mm. Heavy gauge sheet provide better stability though cost more. Stainless steel top cover of 2 mm thickness is recommended for heavy duty weighing.



Hazardous Area :

Common option are Flameproof enclosure and Intrinsic safe scale.

Flameproof -



Enclosure, Zener barrier and loadcell approved by CMRI / ERTL / CCE for specific Zone and Group are used. If ignition occurs inside the enclosure, the enclosure will withstand the pressure and contain the internal explosion. The equipment becomes heavy and in few industries like pharma / food has to be enclosed by stainless steel cabinet for easy cleaning.

Intrinsic safe -

In this case the energy in the circuit is limited to values which do not result in unacceptably high temperature and/or arcs of sufficient energy to cause the explosion. This is suitable when circuit is exposed to flammable gases.

Customer can chose suitable option depending upon the application.

In the license premises where petroleum gases like LPG, CNG are stored, filled and dispensed, it is mandatory to install CCE(PESO) approved weighing scale (not scale manufactured with CCE approved components).

Conclusion -

Buying scales that are sturdy, that feature higher IP rating with stainless steel enclosure, though initially costlier, will definitely save money in the long term.

