

Sheet level Data sheet

What is sheet level? This is the device that controls the height of the plastic material during the heating process. A version of this is generally fitted to most thermoforming machines with twin heaters.

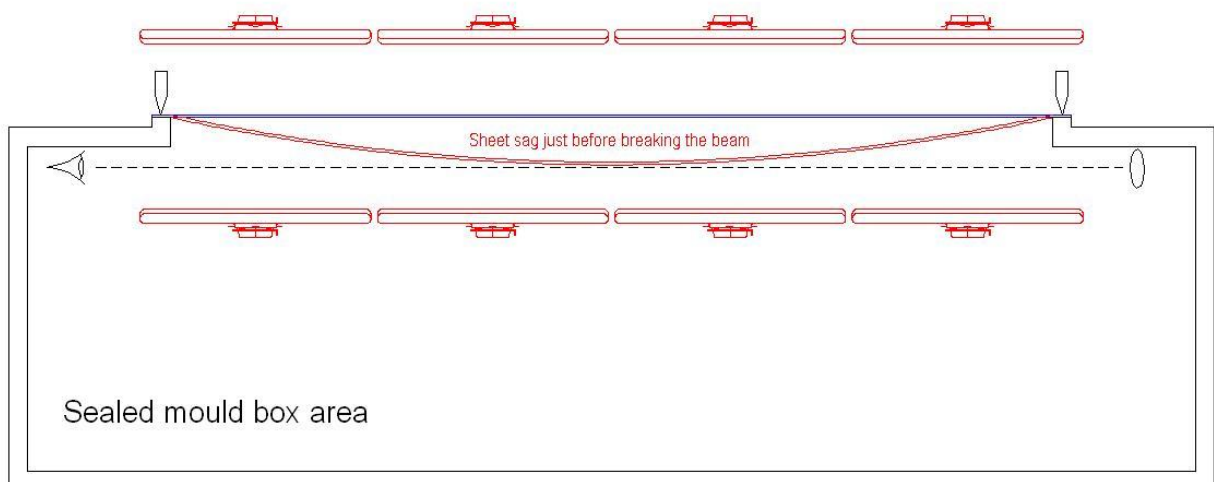
Fibre Optic

By controlling the amount of vacuum and air pressure under the plastic sheet during the heating cycle we can stabilise the sheet. This prevents it from over stretching and helps eliminate webs or folds in the material. This also prevents the material from sagging down onto the lower heater which can potentially cause a fire.

This is achieved by placing a fibre optic projector and receiver just below the sheet. During the heating cycle a small amount of pressure is drawn from under the sheet via the vacuum tank, this insures the sheet pulls downwards and overcomes the expanding hot air in the mould box area. When the sheet breaks the fibre optic beam the vacuum is switched to air pressure forcing the sheet upwards until the sheet is once again clear of the beam. This process may cycle several times towards the end of the heating process.

As a fail safe device the amount of time the sheet is pushed upwards is controlled by a timer. This timer is set so that if the material being heated has not cleared the beam in a set time called the “sheet level timeout error”, the machine program assumes something is wrong and can return the heaters. Normally 1.5 to 2.0 seconds depending on the aperture size. This will happen if a sheet is misplaced or overheated burning a hole; the escaping air is then unable to support the material.

Unfortunately this system does not guarantee full protection of the heater to dropped sheets. This is because by the time the machine realises that it is unable to lift the sheet and returns the heaters, it is possible that the material has already reached the lower heater, this generally happens when a sheet of material is overheated which can cause a hole to appear and the material to descend rapidly. Extreme care should be taken when heating new materials to prevent this problem.

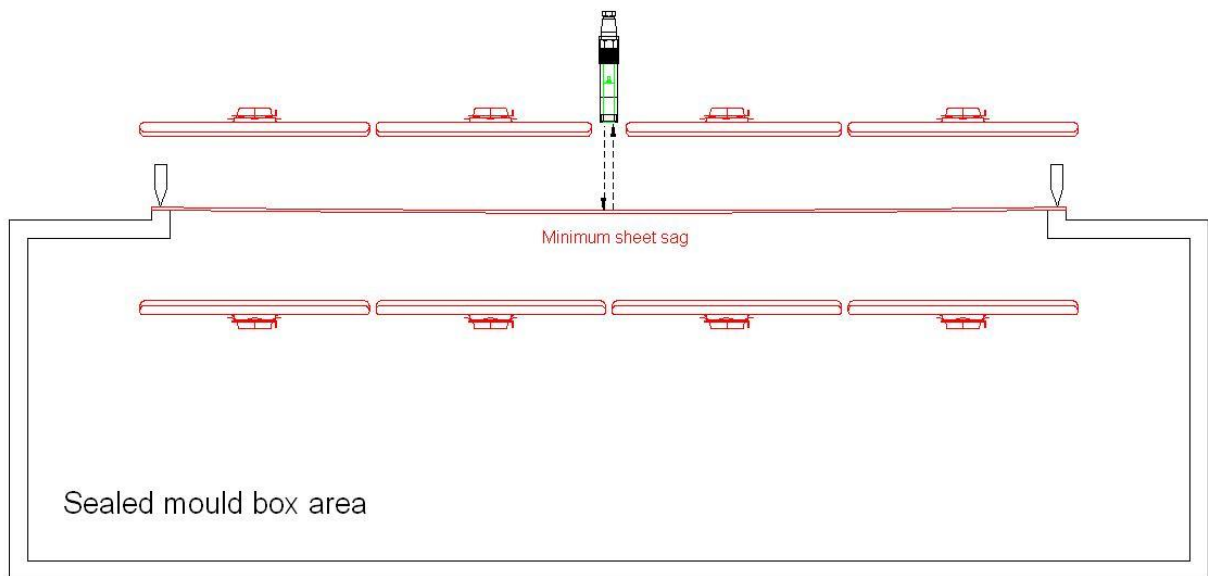


Normally the sensor is placed as close to the flat sheet as possible, but can be limited by frame and plate structures. Additionally a second sensor above the sheet can protect the upper heater from material rising. This can happen when a localised spot is over heated causing thinning of the material, the decrease in weight at this point can cause a bulge upwards, if the material hits the upper heater elements it will almost certainly burn a hole and drop the sheet onto the lower heater.

Ultra Sonic

This is by far the most advance sheet level system on the market. Moving away from conventional type systems we have developed an ultra sonic detection system. The ultra sonic distance detector is mounted in the upper heater chassis looking down giving a feed back of the sheets exact position in relationship to the heaters. Guide parameters can then be set to hold the sheet to a very tight level tolerance.

The advantage with this system is that because we have true feed back we are able to vary the amount of positive and negative pressure in the mould box to hold the sheet much flatter. The system gives instant feed back to a sheet going outside its set parameter position and so can return the heaters in an emergency far quicker than the conventional sheet level beam.



This system uses less air and vacuum as it only uses it if it is required.

This system is only available with a PLC and requires water cooling that can be coupled from a pyrometer if fitted.