

Technical Report – *CleverLevel*

Yeast foam detected, overflow stopped – level switch in brewery applications

Yeast is an essential ingredient of the fermentation process for brewers. But yeast can also be a problem for the brewery. Recently Baumer helped the Carlsberg brewery solve a problem with left over yeast from the fermentation process – by using the *CleverLevel* switch.

The Carlsberg brewery was founded in 1847 and is today the fourth largest brewery in the world. The production and distribution center is located in Fredericia (Denmark) and runs day and night. Carlsberg produces 2.2 million hectoliters of beer annually and employs around 45.000 staff worldwide. Every day Carlsberg sells around 120 million beers globally.

Baumer has been supplying Carlsberg with instrumentation for more than 10 years. Initially to the beer production lines near Copenhagen and since the relocation in 2008 to Carlsberg's new production and distribution center in Fredericia.

Fermentation is the process by which yeast converts the glucose in the wort to alcohol and carbon dioxide gas – giving the beer its alcohol content and its carbonation. When fermentation is nearly complete (the process takes around 4 to 6 days), most of the yeast will settle to the bottom of the fermentation tank. The yeast is then removed and reused for several fermentation processes before finally being stored in an excess yeast tank and sold off as animal feed. In this final stage of filling the excess yeast tanks, Carlsberg experienced overflow problems due to the heavy build-up of foam which was preventing triggering of the traditional level vibrating forks.

The solution for Carlsberg was using the Baumer *CleverLevel* switch for detecting the filling level in the yeast tanks. The *CleverLevel* uses the frequency sweep technology and is a level switch universal for all types of media, whether the media is



CleverLevel switch for detecting the filling level in the excess yeast tank



Heavy build-up of foam in the excess yeast tanks

wet, dry, sticky or in this case foam – whereas the traditional fork simply can't recognise the range and condition of media. The *CleverLevel* is maintenance free due to the minimal installation depth of 15 mm and the self-draining sensor tip. It is also



CleverLevel – Level switch LFFS/LBFS and configuration tool FlexProgrammer

approved to both 3A and EHEDG standards. It can be configured visually and easily via the dedicated software and the *FlexProgrammer*.

The switching range can be adjusted as required to ignore foams during maximum or minimum monitoring. This function can also be used when the level switch is supposed to ignore adhesive substances, as for example in tanks with liquid choco-

late. Even when the tank is empty, the sensor and tank wall are covered with chocolate. When configured accordingly, the *CleverLevel* will only be triggered when the tank is actually full or empty. The graphic configuration software also increases user friendliness.

Using traditional forks one version is needed for dry media (powder, grain etc.) one version for wet media and one version for sticky media. The *CleverLevel* can be used through the entire process, from when the barley arrives in the storage tanks to the finished beer.

The change-over from the traditional fork to the *CleverLevel* has completely eliminated the problem with overflow in the excess yeast tanks. The benefit to Carlsberg has been a more environmentally friendly solution, as left over yeast is not entering the sewage system due to overflow. There has also been a cost saving benefit to Carlsberg due to process optimization and less required maintenance.



Lone Højbjerg Petersen,
Maintenance Coordinator
at Carlsberg,
Denmark

“The *CleverLevel* switch has solved our problems with overflow in the excess yeast tanks due to its unique and easy configuration options. We are now considering using the *CleverLevel* switch in our CIP caustic tanks, where we experience similar issues with foam and overflow”.