The milk cooling tank outlet – is it time you took a closer look?

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The milk cooling tank outlet is quite a rare subject in dairy literature. And yet this is the interface point between the milk producer and his customer – the dairy plant.

This article will touch crucial elements from the point of view of the different interested parties – milk producers, milk hauliers, dairy plants and milk cooling tank manufacturers.

The accumulation of observations done on site (milk farms) and bacteriological surveys, invite dairy farmers to better understand the stakes concerning the milk cooling tank outlet.

If he is looking for milk quality, the producer has to ensure that the milk tank outlet is properly cleaned after each collection. This may be his task or the milk haulier's one, but at the end of the day it is the producer that gets paid (or not) for his milk quality. Today, there are two ways to clean the tank outlet – manual brushing or self cleaning tank outlet.


1

Manual brushing

Manual brushing of the tank outlet (75% of milk cooling tanks in the EU do not have a self cleaning tank outlet) relies on a greater discipline from the milk producer and/or milk haulier. Let's not forget too that even if the tank has a CIP (see photo 1), the cleaning of the thread and exterior of the outlet is not done by the tank CIP as you need a special casing on the tank outlet.

Being a manual process quality in the brushing operation may vary. The brushing will be more efficient if it is done right after emptying the milk (hence the milk haulier doing this operation). But this takes time and the haulier is not financially interested in cleanness. In some places, the driver even has to 'rinse' the farm tank outlet properly before the suction pipe is attached. All of this is boring and uneasy (see photo 1) for the haulier. From the milk haulage department (dairy plant) point of view, it also takes time especially when the number of tanks to collect is high in a collection trip.

Self cleaning outlet

Self cleaning tank outlet exist on the market (25% of milk cooling tanks fitted in the UE) is more frequent on bigger milk cooling tanks (>5000 litres). It uses the CIP system

Continued on page 15


2


3

Continued from page 13
of the milk cooling tank, that is started by the haulier as soon as the tank has been emptied.

The cleanness level of the tank outlet is more stable compared to the manual brushing, thanks to the repeatability of the automatic process and also the hot water and chemicals used by the milk tank CIP.

When implementing self cleaning outlet systems, a study, done by YB Consultant, measuring biological contamination at the milk tank outlet showed dramatic improvements. ATP (RLU) level is divided on average by 10 on the interior of the outlet, by 100 on the seal and by 125 on the thread!

Similar results are found on the milk haulier's suction pipe end. Coliform when they exists are reduced to less than 5cfu/ml.

Not only does the self cleaning tank outlet clean, but it also protects from outside when the environment is not that clean, or from friendly (and not so friendly) animals (see photo 2). Of course, if the milk producer partially empties his tank (using the tank outlet) between milk collections, we are back to the manual method.

Weak points

Most of the time, milk producers are not available when the milk haulier comes to empty the tank. So most producers do not pay much attention to milk collection.

So, if not because of dairy plant regulation, at least to ease the milk haulier's job, the milk producer when changing a farm tank should always check for thread, gender and diameter of the tank outlet or equip it with a self cleaning outlet.

He may get a 'return on investment' one way or the other from the grateful haulier.

However, OEM systems could be improved in many ways. With the coming of bigger sized tanks, the diameter of milk tank outlets is also getting bigger.

With actual OEM systems, the haulier needs his two hands to unscrew the big cap (see photos 4 and 5), so he also needs to drop his suction pipe on the floor.


4

Some milk producers help the haulier in removing the cap some time before milk collection.

On some systems, as the water drain outlet is not located on the lowest part of the system, some CIP will stay once the tank has been cleaned (see photo 5).


5

It also happens to the selenoïd valve of the tank CIP to leak. So water will go into the tank as the cap stays on the outlet. Instead of doing the required maintenance on the selenoïd valve, the 'lazy' milk producer will remove the cap (as in photo 4) so that the water can evacuate and not go into the milk tank.


6

Today, a system (see photo 6) exists where kneeling down, screwing and unscrewing is not required – it can be just flicked with one foot.

The cap can also be kept ajar if required. It is also universal (adaptable to any tank outlet and tank CIP).

Cost improvements

Some milk producers do not always properly use their outlet self cleaning systems. It has a bad effect concerning the average cleanness of the milk cooling tank and affects milk quality in terms of biological contamination.

Dairy plants (milk hauliers) do not enforce presence of milk tank outlet self cleaning systems. They then lose both in productivity and quality. Another issue would also be who will get the money back, when payment for milk collection is a flat rate? Trials demonstrated that with an adequate system 4-10mn can be won per tank collected.

Standardisation of milk collection operations using universal self cleaning outlets also allows suction pipe connection to be mechanised and, in return, further improve operations.

This would also greatly facilitate the milk haulier's job on the farm, reducing strain, repetitive movements (hands and back) and a laborious job in general. ■

References are available from the author on request