Questions & Answers from the Webinar April 21st

Thank you for attending our webinar.
We have received several great questions.
that we have answered below.

Does the light filter depend on the type of product treated?

The light filter will not change with different products. The light filter is designed to match the UV lamps and the wavelength characteristics we are looking to exploit.

What is the overall temperature uplift from input to output?

This depends on the required UV dose. The systems are air cooled so most heat is removed, but some residual heat makes it into the product. The increase is anywhere from 0.5 - 6°c

Is it possible to add the CPS to a current setup of pasteurization, only to eventually achieve ESL? How does the milk respond to a CPS treatment and a pasteurization?

Yes – it is fast and efficient to install a CPS system into a current setup due to the plug and play nature of the system.

A combined solution increases the shelf life of the product and the specific performance depends on the initial microbial load of the product. The ideal way to achieve this is by using cold pasteurization first, then followed by the thermal pasteurization step. This can be achieved without any negative organoleptic impacts. We have a customer case where this exact solution provided ESL of 32 days for skimmed milk when stored at 6°C.

If I have a filling machine that stops downstream, how long time can the product stay inside the unit, or shall it go to the drain?

Since the machine is air-cooled, the system will not overheat if there is a stop in product flow. Depending on the product and the duration of the production stop it may or may not require, the product to be sent to the drain. The holding volume of our systems is low, so if you get overexposed product, then it will only be the small amount of waste. If the system is installed for product recirculation, then this option can also be used for some products.

How much product is in the CPS at any moment in time?

Between 7-10 liters, depending on the capacity [m3/h] of the CPS.

What are the limitations of your UV-technology?

Fluids with lower viscosity can be processed with a cP value between 1 and 300. Also, UV transmittance and TS values of the fluid in question are important to determine whether it is possible to successfully UV treat with our technology.

How will cold pasteurization differentiate your production from the competition.

LYRAS

What is your solution if the customers are used to homogenized milk, and the Dairy is not interested in going away from the homogenization?

The customer can choose to homogenize and cold pasteurize the product, as one does not rule out the other.

Is it possible to reach more than 7.000 m3/h?

Yes. The capacity of a CPS module can be increased up to 14m3/h, however it depends on the type of product. Further increase in capacity is achieved using a parallel setup. By doing this the systems are able to reach any capacity necessary in your production line.

Can raw cow milk be treated with Lyras UV systems?

Yes, we have well documented results with this product. This is what our technology is mainly made for and it therefore is extremely efficient when treating raw milk and can save you a lot of internal infrastructure in your production, especially if implemented at an early stage, as well as a large decrease in energy use, water use and chemical use.

Do you have experience in handling the HACCP concept? With standard pasteurization the temperature is the controlled parameter. What is assumed here?

Yes. We use a measurement of the UV dose over time just like you would measure temperature over time. Depending on the application we know what is required and we measure and log this to live up to the requirements.

What is the residence time in the CPS?

7 – 14 seconds, depending on the UV dose required for the media.

Milk separates better at 140F (60 C°). Do you have information about how well it separates at 37F (2,7 C°)?

Yes, a milk separator has a higher capacity at higher temperatures, but it also makes it necessary to CIP longer and more frequent. For many of our customers and to my knowledge ~95% of Australian dairies use cold separation at approximately 15°C. I do not know the exact efficiency our customers achieve, but I am told that the capacity is reduced down to approximately 50%, but at the same skimming efficiency.

This makes it easier to control micro levels and increases up time while reducing CIP requirements. Cold separation is especially well suited to be used in extension of our technology, however we typically recommend using our CPS system on the raw milk before it is separated.

How is the critical control point monitored as with a conventional pasteurizer?

We have many sensors in our UV units monitoring UV light intensity, flowrate of the media treated, temperature control etc. Hence, we can very accurately control the induced UV energy [kWh/m3]. Thereby we achieve the UV dose and retention time required for the specific microbial inactivation desired by the customer as long as we stay within the predefined boundaries for these values just like you would monitor temperature and retention time for thermal pasteurization.

What is the regulatory standpoint for this process with respect to beverages/fruit purees?

As long as the microbiological requirements are met, then this is considered safe to consume. The Regulations are therefore not an issue when treating beverages and fruit purees, etc.

How effective is this treatment for viscous liquids like fruit pulps and beverage compounds?

It is very effective. The technology can easily treat products within this category. However, the efficiency falls with high viscosity and the more solids we are working with.

Is it compliant to FDA and/or ISO standards?

Our technology is able to produce microbial inactivation results in excess of what can be achieved with the majority of thermal pasteurization treatments, while maintaining a non-existent thermal history, thereby maintaining the characteristics of the product being treated. Specifically, we can achieve microbiological results in excess of log-6 reductions on aerobic plate count and other specific microbiological groups like entero etc.

In the US, UV light is approved for use on liquid foods and the FDA regulation CFR 21 179.39 defines the use of UV for the processing and treatment of food.

Our system meets the HACCP requirements and its laboratory tests have demonstrated a minimum 5-log reduction in the pathogen of concern. We already have verified data in place, however, we can offer you to rent a pilot unit, to be used as verification before proceeding with installation of a commercial unit.

We currently have a big emphasis on non-legal pasteurizer steps – what is referred to as thermalization steps – e.g. the treatment of whey or a skimmed milk permeate to mention a few examples, as well as applying the technology as an add on to thermal pasteurization to achieve a better shelf life with a low thermal history.

We know and precisely control how many kWh/m3 are required for a given microbiological log reduction for a wide variety of liquid food products as long as the initial microbiological load and the viscosity is known. Our systems are designed with multiple and variable sensors, to continuously measure and ensure that the UV exposure, UV dose distribution, flow rate etc. are correct, while unnecessary wavelengths emitted by the UV lamps are filtered away.

How stable are beverages with UV treatment specifically for red colors?

We can normally treat beverages without any impact on the color of the product. There are very few exceptions to this, though to be 100% certain that we have no impact it is necessary to do a test.

Do you have any experiences with cold pasteurization of skimmed milk concentrate?

Yes. We are currently working with a customer on this specific application and the results are looking very promising. The performance is defined by the UV transmittance (opacity of the product at 254nm) and the viscosity of the concentrate.