

FOOD-Lab-International Interview with ...

Konrad Schäfer, Managing director , Funke-Dr. N. Gerber Labortechnik GmbH, Berlin

Mr. Schäfer, thank you for welcoming FOOD-Lab International here at the Funke Gerber Labortechnik headquarter in Berlin. We will talk about latest developments. You have developed a new device for the automatic counting of bacterial colonies.

That's right. It has nothing to do with the actual crisis. However, we have already been working for two years on an automatic colony counting device being able to learn intuitively. It is an assistance system for the quick and precise colony counting. Once the device operator has

marked one colony the assistance system will select automatically similar colonies and mark them automatically. That means similar colonies will be identical if they are comparable in terms of color, contrast, size and form to the colonies pre-marked by the operator.

By this means petri dishes can be evaluated very quickly in dialogue with the device. You can train this device

in a way that you can evaluate for example 10-15 petri dishes. The determined training profile can be stored under a name such as „Salmonellae“. Later on, similar colonies corresponding to that profile can be evaluated automatically. Fully automatically means that the petri dish is positioned under the measuring head; you push the „count“ button and the device will display the number of corresponding colonies. The agar used is part of the said profile. In order to achieve reliable results during the automatic mode the identical agar as during the training step shall be used. The name of the agar should be part of the documentation. The petri dish will be positioned manually. We may be considering a conveyor for fully automatic loading in the future.

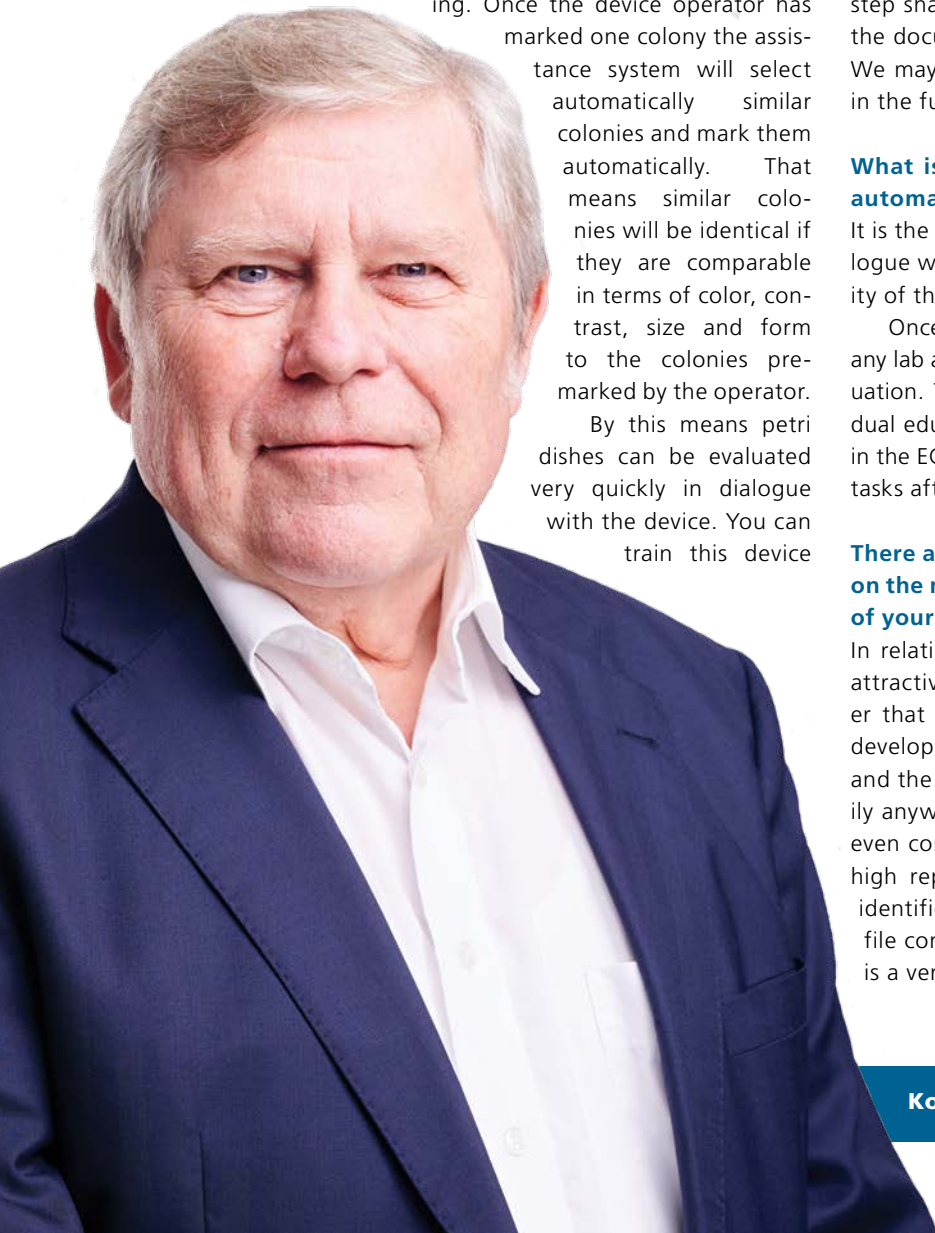
What is the unique selling point of the new ColonyStar automatic device?

It is the assistance system which evaluates the petri dish by dialogue with the device. In addition, there is a certain learning ability of this intuitive assistance system.

Once the device has been trained on Salmonellae for instance, any lab assistant should be able to carry on with the further evaluation. That is important for many countries where there is no dual education system in place. But it will also assist companies in the EC and Germany as educated staff will have time for other tasks after "training" of the ColonyStar on specified colonies.

There are already a number of automatic cell count devices on the market. What is the advantage compared to systems of your competitors?

In relation to the performance of the device the price is very attractive. The evaluation is performed by a tablet computer that is available at affordable market conditions. We have developed a qualified software; the connection between tablet and the ColonyStar works via WLAN which can be realised easily anywhere in the world. The very powerful software ensures even complex calculations. The image processing shows a very high reproducibility of 97% once the operator has correctly identified the colony on the touch screen and stored the profile correctly in the computer. In the area of microbiology this is a very good value.



Konrad Schäfer

ColonyStar^{automatic}



Equipped with camera and wireless screen for quick and easy evaluation of Petri dishes

Three modes of operation:

✓ **Manual mode:** "Single Shot Mode"

✓ **Assistance mode:** In dialogue with the device the Petri dish can be evaluated quickly and easily, i.e. colonies of the same type are automatically recorded, marked and counted when tapping on one colony.

✓ **Automatic mode:** The device is "trained" with some Petri dishes and then can evaluate similar Petri dishes in seconds, "Fully automatic"

Storage and sorting of results, including evaluated images

In Germany the law requires labs to apply for a specific permission by authorities for enrichment of pathogenic bacteria i.e. everything that grows on PC-Agar can be evaluated without special permission. But if you wish to use selective agars for suspicious, potentially pathogenic bacteria you need to have special permission. Does the ColonyStar change that situation?

No but it does facilitate the evaluation. For operating the device there is no special permission by authorities necessary.

On another subject: personnel costs are an issue in many companies. How do you assist the food industry in that regard?

Petri dishes are subject to rapid spoilage after incubation. Actually, immediate evaluation would be desirable. However, this is not possible in all situations. In this particular case a batch operation is possible: the petri dishes are positioned one after another under the measuring head, a picture is taken and stored. The batch program will run overnight and in the next morning the evaluation result of colonies according to species and count is displayed.

The work efficiency increases because highly educated microbiological staff is only required at the beginning of the training process of the device

Yes but only in case the device is trained and is operated in the fully automatic mode. But also in the semi-automatic mode (assistance mode) the identification will be operated much faster as compared to manual evaluation of each petri dish. This however requires qualified staff again. You can evaluate each petri dish by 10-12 touches on the screen..

How long does the training process take?

I would suggest approximately 10-15 trials provided that the same agar with the same color and the same colonies are used and identical other conditions apply.

If I incubate colonies on a PC agar everything will start to grow. How does the device behave then?

In this case the fully automatic mode will turn off. The assistance mode is still a precious tool. When operating other devices you will very often need to work along intensive question/answer catalogues for ending up at a fully automatic counting. Questions may include: what is the minimum diameter? What is the maximum diameter? Color of the agar? etc. We do not need all these questions because the system is trained on the evaluation of the petri dishes automatically.

Obviously it is a device that increases labour efficiency in the lab significantly while being capable to be operated in three modes.

Yes it is easy to use and ensures great safety of results based on the intuitive intelligent system. It is suitable for all petri dishes within the food industry and beyond such as the medical sector and therefore has a broad field of applications. The device can be operated in the single-shot-, semi-automatic or in the fully automatic mode. Single-shot means single evaluation of the petri dish with the option of image enlargement. In this case one colony is touched on the touchscreen and

marked with a color. Colonies marked by error are deleted by touching again.

In the semi-automatic mode more colonies not yet marked in regard to size, form, color, contrast and brightness will be marked until the petri dish is fully evaluated Colonies marked by error are deleted by touching again.

If the device has been trained and respective profiles have been stored it may be operated in the fully automatic mode. In the fully automatic mode the device is capable to count the petri dishes fully automatically without manual assistance.

According to European law the documentation has to be stored in an appropriate manner.

The question arises what an „appropriate“ form of storage is. Our imaging system ensures a safe and reproducible documentation. Manipulations are very difficult. Heads of labs will be relieved.

Thank you.

Funke-Dr. N. Gerber Labortechnik GmbH

Founded: 1904

Managing director: Konrad Schäfer

Milk analysis

Since 1904 Funke-Gerber has been an important partner of the domestic and international dairy industry. Outstanding activities include the manufacture of laboratory devices for the analysis of numerous dairy and food products. Ever since the company focuses on the manufacture of centrifuges together with butyrometers and other equipment and accessories for the Gerber method of milk fat content measurement. Beyond these classical activities the company develops and manufactures modern electronic devices for milk analysis.

The freezing point determination units of the „Cryo-Star“ series, world-famous for their high precision and reliability, have been established in numerous dairy plants and institutes globally for years. With the new „LactoStar“ und „LactoFlash“ devices a new era within the routine milk analysis sector has been opened.

The achieved „Know-how“ and the continuous research and development demonstrate Funke-Gerber's importance for the dairy and food industry worldwide.

15 years ago, based on the experiences and competences with milk testing Funke-Gerber has established a device for the analysis of beer quality parameters. The latest development of the „FermentoFlash“ allows the measurement of alcohol content and extract as well as the values derived from them such as density, apparent extract, original wort and osmotic pressure. The range of products is supplemented by lab articles such as glassware, hydrometers etc.

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