



What is required for investment in an automatic system for continuous temperature logging?

Investment requirements

What investments should you count on having to make in order to get started?

How do the costs look over time, and could you perhaps make money by implementing temperature logging?

The thinking behind this document is to give you a picture of the investments that are required and the savings that you may achieve by procuring an automatic logging system. This is the kind of information that you may need to review when making a budgetary decision.

We all understand that implementing temperature logging in a laboratory comes at a cost, but of course, it is important to gain an idea of just how big a cost this will be. It is a matter of fitting your investment wishes into the budget framework for the operation. You will often need to apply for money for investments in the budget work before the next period. For this, the laboratory manager must provide both an estimated cost of implementation of the temperature logging system and an estimate of the operating costs that will be incurred once the system is in place. It is of course important to specify the reasons and arguments for needing to invest in a temperature logging system. We have touched on examples of this in other documents on our website, such as “Management that minimises the risks to lab managers” and “Requirements for laboratory control systems”. However, the most important reasons are as follows:

1. To satisfy the regulatory requirements on cold storage for various operations so as to pass a quality audit.
2. To ensure traceability in case it is necessary to find reasons for certain results (either positive or negative results) at a later date.
3. To be assured that you will be made aware of any deviations from typical values; being alerted in good time can be enormously important from both a financial point of view and in terms of results.





In a discussion about budgets, it may also be useful to give careful thought to how the operation will change when automatic continuous temperature logging is introduced. As well as meeting the basic requirements above, a number of other positive effects arise:

- It frees up work time for the people who previously took the temperature readings
- Paperwork disappears entirely (no loose lists or binders full of temperature readings)
- More employees can gain a good overview of the status of refrigerators, freezers, incubators, etc., by simply logging into the system
- The reassurance gained from receiving an alarm in the event of any deviations will surely have a positive effect on the organisation

By taking this information on board and presenting a picture of the requirements, costs and effects of an investment, you will be able to justify the decision to implement an automatic continuous temperature logging system both to yourself and a potential decision-maker who will be making decisions for the next budget period.

Brief checklist before budget proposals:

- Well-defined overview of requirements
- Cost calculation
- Positive effects of implementation

What does it cost?

The cost of a system obviously depends on the number of measurement points to be logged, but it also depends on a range of other factors such as:

- How many rooms will be logged?
- Is there more than one building?
- How many people will use the system?
- What form do you wish the alarm to take – e-mail, SMS, flashing light, audio alarm or some other form?

The best way to gain a rapid estimate of the cost of a system is to draw up a floor plan of the premises. A floor plan with the refrigerators, freezers and incubators clearly marked will provide the information needed to produce a quotation for the cost of the system. The number of buildings and storeys, and the distances involved, will determine the best possible type of logging equipment. This is usually a combination of wireless



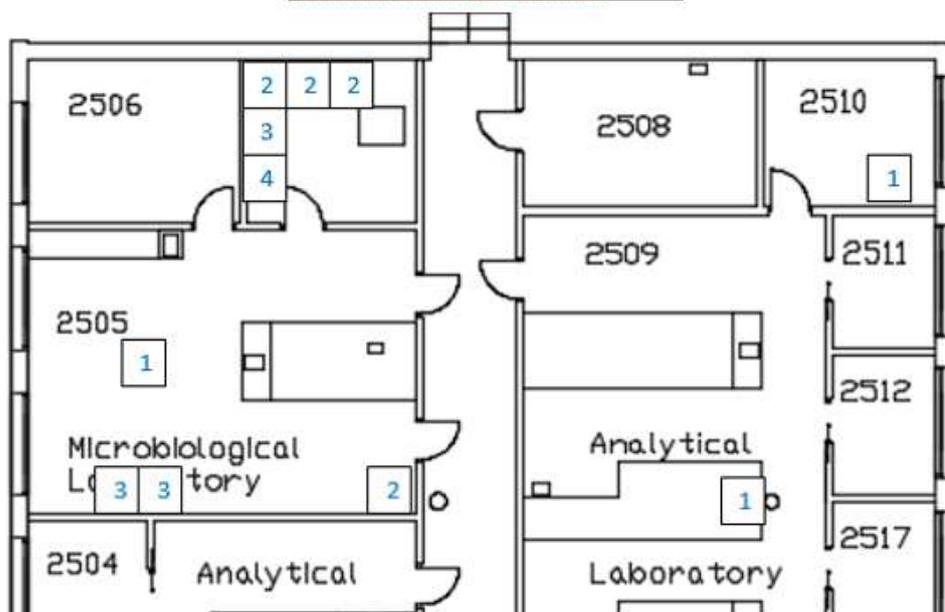


communication and network-based communication in order to optimise the functionality and cost in larger systems. It is also important to know the types of measurement point to be logged, as the prices of different sensors vary: temperature, relative humidity, CO₂, differential pressure or other types.

The temperature range to be logged is also significant, whether it is a refrigerator at +4°C, a deep freezer at -80°C, an incubator at +37°C or you are performing logging in tanks of liquid nitrogen at -196°C. In order for us to be able to draw up a quotation for the cost of your system, you will need to provide the following information:

- Floor plan with all measurement points marked
- List of equipment (ideally showing manufacturer and model)
- The desired alarm options and number required

Example of floor plan



1: Room thermometer 2: Refrigerator/Freezer thermometer 3: Heating cabinet 4: Cooling incubator





Saving time?

However, it is important to remember that, in addition to satisfying the quality and regulatory requirements, automatic temperature logging also makes the operation more efficient. An interesting angle that I sometimes come across is that some laboratories say that they “don’t have any temperature logging costs at present” because they “look after it manually”.

If you think in this way, you really are kidding yourself: work time obviously has a price (except, possibly, in non-profit organisations). It is possible to set up a little arithmetic exercise to quantify the cost that might be involved:

- Let us do an estimate: taking a temperature reading and recording it on a list takes perhaps one minute.
- If we have 25 refrigerators and freezers, it means that 25 minutes’ work is spent every day recording temperatures.
- If we work only on weekdays, this will be 125 minutes per week, which is around two hours.
- In other words, around 100 working hours (two and a half working weeks) are spent recording temperatures per year.

Depending on the internal cost rate allowed for staff, you can then convert this into monetary terms. A typical internal cost rate for staff is between SEK 400 and SEK 600 per hour. Taking the lower figure, the annual cost for temperature recording will be almost SEK 40,000.

However, the work costs do not end there; we need to add the administrative costs of dealing with the lists and binders. Here is perhaps also a good place to point out that automatic continuous temperature logging also includes logging at weekends, on public holidays and – above all – logging at regular intervals 24 hours a day (not just once each morning).





What does it cost when a refrigerator or freezer breaks down?

Sooner or later, most laboratories have to face a breakdown of their refrigeration equipment. This is where an alarm can help you to avert a disastrous scenario. Clearly, the very worst disaster possible would be if vitally important medicine were to become ineffective because it had not been stored at the correct temperature. Depending on the medicine, this could be a matter of life or death. Some of the substances that you store in refrigerators and freezers are extremely expensive, and a breakdown can cost a huge amount of money. Essentially, it is impossible to put a price on research results and samples that are stored in refrigerators or freezers, or on the items stored in biobanks. The only thing we can be certain of is that, if we translated the value of these into financial terms, the sums would be enormously large – astronomical, in fact.

One thing is certain: if a refrigerator is going to break down, it will probably be on a Friday evening when no staff are in the lab... and it will not be discovered until it is too late. If you have an automatic system of continuous temperature logging with alarms in place, you will be notified immediately if the temperature exceeds the alarm thresholds. This gives you the opportunity to save the expensive items that you are refrigerating and to avoid disasters.

If your lab has many refrigerators and freezers, you will certainly have statistics showing how often breakdowns occur and roughly how much they can cost. These figures should also be included in the calculations when you discuss the budget for investment in quality assurance. The cost is not only the actual value of the items/samples; you should also look at how the operation is affected by a breakdown. Can the operation function at all in such a case? If not... what will it cost?

A logging and alarm system can save a lot of money and worry when things go wrong.





Summary

In summary, the budget issue always comes up sooner or later whenever consideration is being given to implementing automatic quality assurance systems. The process of producing a quotation for the cost of investment in the system itself and its installation is quite quick and simple if a clear picture of the requirements is in place (including floor plans and a list of equipment). The regulatory requirements for laboratories and other cold storage operations are often reason enough for a decision to invest. In a prioritisation situation, it may be interesting to include all aspects of quality assurance and the savings that the implementation of an automatic system of continuous logging may involve for your operation.

What should I do now?

If you feel that you would like to take a closer look at a system, by all means look at our demonstration film or speak to one of our sales staff to arrange a demonstration. We will happily prepare a budgetary quotation based on your list of equipment and floor plans.

My name is Per Hammargren and I am the Sales and Marketing Manager at ICU Scandinavia and the author of this document. I am one of the founders of ICU Scandinavia and I have an IT background. Since the start back in 1992, we at ICU Scandinavia have helped thousands of laboratories, hospitals, private clinics, pharmaceutical companies, logistics companies, fertility clinics, etc., worldwide by providing automatic temperature monitoring systems.

ICU Scandinavia AB is a leader in automatic systems for monitoring, log and quality assurance in laboratories and for food safety. Our systems, Boomerang and Coolguard, meet the regulatory requirements for logging and documentation for laboratories, cold storage facilities and food safety. In 1998 we were pioneers in automatic temperature monitoring and log. Today our experience within the field is unbeatable and we work together with world leading customers and partners, in order to assure quality and security in laboratories and restaurants all over the world. ICU Scandinavia holds offices in three countries: Poland, Switzerland and in Sweden where our headquarters is located. www.icuscandinavia.com

