



# Cryogenic Installations and Biobanking



**Cryo Solutions BV have wide experience in designing, building and servicing cryogenic installations - ranging from bulk tanks to an end unit such as the biological storage tank itself. We can also supply nitrogen bulk tanks in a large number of sizes and volumes – and with or without a switch-over device. In fact we can even supply the liquid nitrogen itself. Cryo Solutions is your partner for turnkey cryogenic installation - “one stop” shopping as they say!**

Our experience ranges right through degas simultaneous filling systems for cryo/biobank biorepositories, nitrogen backup systems for -80 freezers, filling stations, switch over devices, automatic filling units, emergency stop / O<sub>2</sub> detection all the way to alarm and monitoring systems.

**Our solutions fall in the following main groups:**

- LIQUID AND/OR GAS SUPPLY
- BIOLOGICAL STORAGE
- FILLING APPLICATIONS
- SAFETY
- ALARMS AND MONITORING
- INSTALLATION, SERVICE, MAINTENANCE, TRAINING AND 24 HOUR BACK-UP
- EXTERNAL BIOLOGICAL STORAGE





## → FOR LIQUID/GAS SUPPLY AND WITHDRAWAL

We can supply either a bulk tank, transportable pressure tank to 1,000 litres or you can choose to have a switch over device with more than one pressure tank. This switch over device measures the liquid level and pressure in the first tank and if it comes below a pre-set value it automatically switches to the next tank.

The idea is that you will have a small "bulk" tank. We can install this, including vacuum insulated piping (VIP), a filling box outside and emergency stop / O<sub>2</sub> detection.



## → BIOLOGICAL STORAGE

With wide experience in designing Cryo/ Biobank (biorepository) systems in all sizes and configurations, we can supply either a small unit with one pressure tank or several larger units connected to a bulk tank. The main feature needed is a degas system, which ensures the best control of the temperatures in your biological storage tanks, the lowest possible nitrogen consumption and the safest conditions in the room where the biobank is situated. The degas unit can work with biological storage tanks and also function with a -80 back-up system for mechanical freezers and in conjunction with a simultaneous filling system ensures the optimum use of you nitrogen.

And alongside any biological storage solutions we can also supply equipment for the controlled rate freezing of your biological samples.

## → FILLING

There are several options for filling your tanks and they depend on the type of tank.

For pressure tanks we have two types of systems: the first is a semi automatic unit where you start by hand and it stops automatically: the second is a fully automated system where we measure the liquid level in the tank and it starts filling by itself. For open, non pressurised, Dewars we have a semi automatic unit. On this we can also fit a "deadman's" handle". If this button is not pushed, the liquid flow will be shut off. Both units can be for one or more pressure tanks, open Dewars or a combination of both and we can also supply cabinets suitable for outdoor purposes.

For biological storage tanks we can deliver a different kind of system for automatic filling. This, if needed, can include temperature measurement and alarm/logging options. In addition to this we also have an independent "over filling" stop/ alarm unit.





## → SAFETY

When working with liquid gases it is highly recommended that you use an Oxygen depletion unit and in many cases the law even states you have to have this security device in place. We have several types from small portable to bigger fixed units. The larger systems (GWZ) can be used for more than one sensor and can activate external devices such as alarm lights or a remote alarm system. Next to the gas measurement we also recommend a mains shut-down valve at the bulk tank and an “emergency stop” system if possible.

When working with liquid gases we also advise you to use personal protection such as cryogenic gloves and face protection.

## → ALARM AND MONITORING

Just storing your samples is not quite enough; you also need to ensure that samples are stored safely and stay at the right temperature at any time. There are several ways of doing this depending on the kind of storage you have. In liquid nitrogen storage, you can check and alarm on liquid levels (low level alarm) not temperature for example. In “dry” and gas phase storage it is essential that you monitor the temperatures in the system as well.

In addition to all this you might be interested in monitoring data from the storage tanks (TEC Alert/ Mowden software) or its surroundings. In that case you would need a full alarm and monitoring system which we also can supply. This can be a hardwired system (assure24seven) or wireless (data-later) and depending of you needs and budget we can install more or less complex systems.



## → INSTALLATION, MAINTENANCE AND TRAINING OF CRYOGENIC STAFF

Cryo Solutions is an independent specialist: we install and service cryogenic equipment of all brands. As an extra service to our normal installation of, and instruction in, cryogenic equipment we can carry out IQ/OQ procedures to ensure that your installation is fitted in the best possible way and that you should be able to comply with GMP/GLP or FDA standards.

It is recommended that you annually service and maintain your equipment. We are the perfect partner for this - and we can supply you with a 24 hour back-up contract offered for 365 days a year. We try to ensure the maximum safety for your equipment year round.

**The contract includes the following:**

- 1 **24 hour technical assistance/support by telephone, 365 days per year.**
- 2 **Guaranteed availability of a biological storage tank or a controlled rate freezer.**
- 3 **Response time within agreed maximum hours; within this time span we will deliver a spare machine for a period of several weeks - so you can proceed with your research or production as soon as possible.**

And finally..... Cryo Solutions can help you in training your staff, both on the technical side and on the safety side of working with cryogenic liquids, gases and equipments.



## → EXTERNAL STORAGE AT CRYO SOLUTIONS 'S-HERTOGENBOSCH FACILITY

We now offer an independent storage facility your biological materials here at Cryo Solutions; and not only cryogenic storage but also storage in mechanical freezers (-80 C).

External storage may be required for a number of reasons but the most common ones are to spread risk and a shortage of space at one's own premises. Additionally, storing back-up materials allows an external location for storing materials not required for immediate use, optimising use of other valuable space.

You may use your own storage vessel for storing your materials at Cryo Solutions, but vessels are also available for hire. The storage facility includes 24 hour surveillance.



## Replacement of Ultra low freezers

Replace ultra low freezers in the range from -80°C and/ or -140°C for "dry" storage vessels, the idea behind this is to cut back on operational costs whilst increasing the safety of the storage system.



Temperature gradient within storage space (top box to bottom box) is between 2°C and 5°C

### THE ADVANTAGES ARE:

- Greater security based on the fact that the cooling medium is still in the vessels when there is a failure in power. When the ultra low freezer itself fails there is no cooling anymore and one has to fill it with liquid nitrogen as back-up or even have a second freezer fully in operation as back-up unit.
- The running costs are much lower
- One needs no additional air conditioning for the room as there is no heat exchange as with mechanical ultra low freezers
- It is more pleasant to work with nitrogen as there is much less noise
- Another fact is that the maintenance costs are much (no expensive mechanical parts) lower
- The lifespan of a nitrogen vessel is much longer (less moving parts and no compressor)