

# Considering the Product in the Chamber

It is important to inform the chamber manufacturer of the type of product being test in the chamber. However, if all the details are not given to the chamber manufacturer, the resulting selection may not be best for your application and could cause safety risks. The chamber manufacturer should understand your test objectives as well as you do. The more information he has regarding your product and your test requirements, the better equipped he will be in either selecting a standard product to meet your needs or proposing a custom chamber designed to meet the special requirements of your product testing.

For example, hydraulic valves under pressure are being test at various temperatures. Hydraulic lines enter and exit the chamber through an access port. Rarely, if ever, a fluid leak occurs in the chamber. This does not concern the operator since the warmest temperature achieved in the chamber is well below the auto-ignition point of the fluid. However, if a leak occurs the chamber will be at risk for an explosion. This is due to the fact that the standard nichrome wire heater used in most chambers can exceed 1000°F surface temperature. For this type of application temperature limited sheath heaters must be used at a minimum. Depending on the application, a classified explosion proof chamber may be required. There are many scenarios which could be used for examples, but the bottom line is to make sure you have given your chamber manufacturer all the details of your tests.



## **Product Load**

How much space do I need around my product? CSZ as well as many MIL-Standards specify approximately 1/3 product and 2/3 empty space around your product for adequate air flow. This may slightly vary with the design of the chamber. In some custom chambers, the work area is effectively an air duct and is almost 100% filled with product. Again, this is another area underlining the importance of the chamber manufacture understanding as much as there is to know of your product and test objectives.

## Static (Dead) Load

The static load is any mass that is in the chamber that does not produce added heat. In order for CSZ to size the correct system to meet your needs, we have to determine the dead load mass of the DUT along with any shelving, fixturing, etc. We would also need the type of material the DUT is made of to determine the specific heat. This will determine how easily your DUT gives up its heat during transitions from hot to cold and helps us accurately size the refrigeration system to meet your specific performance requirements.



### Live Load

The live load is any mass that is in the chamber that produces heat. Any live load that is in the chamber will have to be measured (watts) to determine the correct refrigeration system to overcome that added load.

- *What is your maximum dead load?*
- *What is your maximum live load?*
- *What type of material is your DUT?*
- *How many shelves would you be using to support your DUT?*
- *Do you have any fixtures to mount your DUT?*

The more information that you can supply to the manufacturer will assure that your chamber will meet your specific applications requirements with a system that is not oversized, which can have a significant impact on price.

