LIQUID USAGE CALCULATIONS

The liquid usage value is calculated in the following manner.

1. Measurement of usage data begins after the first fill cycle after being powered up. If power is lost to a unit without battery backup, measurement will not begin again until after the first fill cycle after power is restored.
2. To minimize the effects of liquid slosh from filling, measurement does not start until at least 15 minutes after termination of a fill cycle.
3. Once the above criteria are met, the level is recorded and a timer is started.
4. The controller then waits for a change in level of at least 0.5" (12.7mm). It uses level data without offset compensation so that changing the offset value will not affect the usage calculation.
5. Once the 0.5" change in level has occurred, the recorded level change and the elapsed time for the change are used to calculate the usage rate.
6. The calculated value is converted to the chosen display units and this value is stored for display on demand as well as for data logging and printer output.
7. After this is done, the controller rezeroes the level sensor and starts the next set of measurements for liquid usage calculation.

Fill activity will terminate the usage measurements, Measurement will restart 15 minutes after fill activity stops. No averaging is done. The displayed value is the result of the latest usage calculation. If the 0.5" change does not occur within 5 days, measurement is restarted. This means that a usage value of less than 0.1"/day cannot be calculated. Liquid usage will not be calculated if the differential between high and low fill settings is at the 0.5" minimum.

As an example:
A customer was concerned that his 1520 Eterne units were not registering a liquid usage calculation and that his controllers must be faulty.
In reality, his freezers were consuming liquid nitrogen at a rate too low for the TEC-2000 to calculate. In house testing has shown that a 1520HE/Eterne with a 2" interval between low and high fill settings would operate for 5 to 6 days between fills. That equates to a usage value between .3"/day and .4"/day. Because the TEC-2000 looks for at least a .5" change in level to calculate a liquid usage value, any value below this will result in a displayed usage value of 0.0".

HE/ETERNE DIFFERENCES

810HE
12-2 rack capacity
-150C
SS turntable tray divided into equal quadrants

810HE+
14-2 rack capacity
-150C
tray divided into quadrants
Increased working height

810 Eterne
12-2 rack capacity
-190C
Aluminum tray divided into equal quadrants

1520HE
13-2 rack capacity
-150C
SS turntable divided into equal quadrants

1520HE Gen2
13-2 rack capacity
-150C
rectangular divider provides more storage space

1520HE+
15-2 rack capacity
-150C
Increase working height
Turntable divided into equal quadrants

1520HE Gen2+
15-2 rack capacity
-150C
increased working height
rectangular divider provides more storage space

1520Eterne
13-2 rack capacity
-190C
Tray divided into quadrants

1830HE
13-2 rack capacity
-150C
Turntable divided into 6 equal sections

1830 Eterne
13-2 rack capacity
-190C
turntable divided equally into 6 sections

1830HE Gen2
13-2 rack capacity
Rectangular divider provides more storage space
-150C

1830HE+
15-2 rack capacity
-150C
turntable divided equally into 6 sections

PLASTIC SHIPPING CARTONS

9719449	SC4/2V, SC4/3V, SC2/1V, MiniMoover
9722149	XC22/5
10537506	Cryoshipper, XC20/3V, CryoMoover
10741726	Cryoshipper XC
11358817	Cryoshipper mini
11545971	IATA
11912460	Arctic Express Dual 19, Doble 20, SC20
11925105	Arctic Express Dual 10, Doble 11, SC11/7
11930861	Doble 28
13027552	Doble 47, XC47/11
13027544	Cryosystem 2000

DATA LOGGERS

Cork/Covers with built in Data Loggers are available for the following dewars:

Cryo-Moover	11554383
Cryoshipper and XC	11371181
SC 4/3V	11554367
SC 4/2V	11554341
XC 20/3V	11554375

CUSTOMER/TECHNICAL SERVICE

For copies of past Tech Tips or for more information on maintaining you nitrogen storage systems please contact Techncial Service:

	Direct	cell
Jim Bachman	758 952-8411	612 382-6678
Gil Edwards	770 257-1270	
	Toll free	
Customer Service	800 482-2473	770 257-1299