IT'S A HEAT WAVE!

With record temperatures all across the United States there is a hidden danger to air station operators. Filter processing capacity is severely reduced when high temperatures are present. As you should be well aware, filter processing capacity is affected by a number of parameters. Pressure, temperature and flow rate are the governing factors on how long filters should be kept in any given purification system to allow the safe production of compressed breathing air. Due to the extremely high temperatures affecting most of the United States, the importance of properly calculating filter life due to high temperatures is critically important. A 20 degree F. Rise in the temperature will cut a filters processing capacity nearly in half. Yes! You heard right a 50% reduction in filter life with just a 20 degree rise in temperature. A filter system that has a normal change schedule of every 20 hours now will have to change those same filters every 10 hours due to the extreme heat. Based on the current heat wave that is covering the majority of the United States, most areas are at least 20 degrees F. hotter than their average yearly temperature. Most manufacturers rate filtration system processing capacity based on a given pressure at a given temperature. As in creative marketing this data varies from manufacturer to manufacturer. This can give a false illusion that some manufacturers systems will process more air, utilizing a lower inlet temperature, than another manufacturers system who uses a higher, more reasonable temperature in these system processing calculations. Be aware of creative marketing. If you purchase a compressor and they tell you the filter system will process 40,000 cubic feet of air you must be aware that is at a given temperature of 68 degrees F. Now if you are in the Caribbean where the temperature is 80 degrees F, that same system will only process approximately 26,000 cubic feet of air. If the temperature is 95 degrees F the system will now only process 18,200 cubic feet of air which will mean more frequent filter changes to insure safe breathing air. That is the same system at different operating temperatures resulting in a dramatic difference in how long the filter will last.

Here is a quick guide to temperature conversion calculations. First, you must understand what temperature the manufacturer of your system uses to calculate published processing capacity.

If the manufacturer uses 68 F. Then here is your 0 calculation table. (e.g. Bauer)

- 50 F multiply the system processing 0 capacity by 1.81
- 68 F multiply the system processing 0 capacity by 1.00
- 80 F multiply the system processing 0 capacity by .65
- 86 F multiply the system processing 0 capacity by .58
- 95 F. multiply the system processing 0 capacity by .455
- 104 F multiply the system 0 processing capacity by .34

If the manufacturer uses 80 F. Then here is your 0 calculation table. (e.g. L-Factor)

- 50 F multiply the system processing 0 capacity by 2.8
- 68 F multiply the system processing 0 capacity by 1.54
- 80 F multiply the system processing 0 capacity by 1.00
- 86 F multiply the system processing 0 capacity by .88
- 95 F. multiply the system processing 0 capacity by .70
- 104 degrees F multiply the system 0 processing capacity by .523

Inlet gas temperature; where is it measured from? Some say it is at the inlet of the compressor and others say at the inlet of the chemical bed. For the sake of simplicity, we are using the air temperature as it enters the intake but for true accuracy, the manufacturers of the chemicals tell us to use the temperature as it enters the chemical filter bed. This is another story altogether.

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