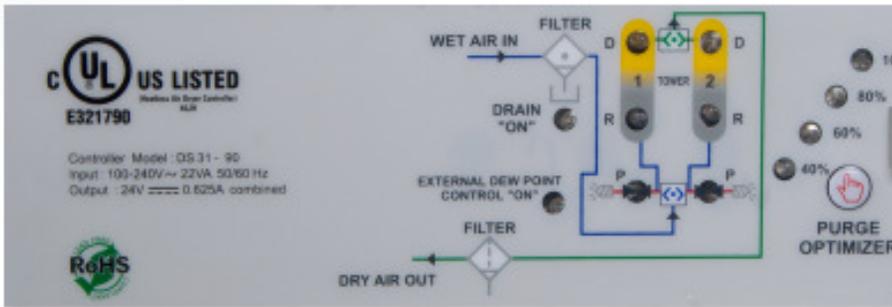




## Lasting Values



## Dryspell Plus Controller - Purge Optimizer

Reduce purge air without reducing quality

- Reduces purge loss and energy according to load requirements.
- Accepts dew point meter signal to dynamically adjust purge loss.
- Easy front panel setting of purge.

## Principle

Pressure swing adsorption dryers purge 15% compressed air at 100 PSI pressure and 100°F inlet compressed air temperature. This is required to regenerate the bed of adsorbent. The requirement of purge is from basic physical laws and cannot be altered substantially. Purge loss is a function of Dew point required, Inlet air temperature, Operating pressure and rated flow. These parameters have certain values as per standards and Dryers are designed for same. The common standards are ISO 7183 or CAGI which specifies the standard inlet conditions for the dryer as air temperature 38 deg (100°F) C and pressure of 7 bar (g) (100 PSI). In practice this is very different. Further a dryer will never be used at its rated flow.

When a dryer is not used at its rated capacity the purge still happens at 15% of the rated capacity. For e.g a Dryspell Plus 100 would purge 15 scfm at 7 bar irrespective of the flow through the dryer. Hence the above dryer with a 80% flow ie 60 scfm would still be purging 15 scfm making the actual purge loss to 25%. This is a common problem with all dryers. Dryspell plus series dryers come with a front panel purge economizer. Select the Purge economiser switch and the purge flow is correspondingly reduced. This is done changing the purge time. The purge flow requirement is governed by the Flow rate, Inlet air temperature, Air pressure and dew point.

## Through Dewpoint controller - Dynamic Conditions

The second method of saving purge is to interface the Dryspell controller with a dew point switch. A potential free contact of the dew point switch is connected to the controller terminals. The controller purges correct quantity of air and stops purging. It remains at this state till the dew point at the outlet of the dryer falls below the set value. At this point the controller changes over to the fresh desiccant tower and starts purge to regenerate the saturated tower. With this interface highly fluctuating load, varying temperature and pressure can also be factored to save purge air. Please refer user manual for terminal details. This interface also guarantees dew point.

## Applications:

- To reduce purge loss and energy in accordance to load.
- To scale down Dew Point and hence reduce purge loss, energy in accordance to Application requirement.

## Setting the Purge economizer

### Through front panel - Steady conditions

To set the purge economizer please refer the tables below:

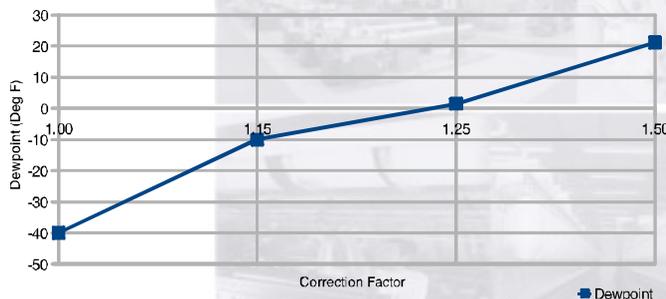
#### Inlet Pressure Correction Factor

psi (g)	60	80	100	120	140	160	180
bar (g)	4.1	5.5	6.9	8.3	9.7	11	12.4
Factor	0.65	0.83	1	1.18	1.37	1.52	1.7

#### Temperature Correction Factor

°F	90	95	100	105	110	115	120
°C	32	35	38	41	43	46	49
Factor	1.35	1.16	1	0.85	0.74	0.64	0.56

#### Dew Point Correction Factor



Purge optimizer setting = Percentage of rated flow/ (Pressure correction factor \* temperature correction factor \* Dew point correction factor)

e.g In a given system the Pressure is 120 PSI, Temperature is 100°F, Dew point requirement is -40°F and flow is 80% of rated flow.

Purge optimizer setting =  $80 / (1.18 \times 1 \times 1.15) = 58.9 = 60\%$ . This saves 40% of purge air.

When conditions are not known or stable set purge optimizer at 100% to ensure dew point.

