TDS and Salt Levels

There seems to be some confusion about TDS, salt levels and what the proper level is when a chlorine generator is installed.

There are two separate issues: **Draining and Saturation Index calculations.**

When you are trying to decide when it is time to drain part or all of the water from a vessel, it is wise to determine the amount of chloride or salt in the water and subtract that from the TDS as determined by a suitable TDS meter. Then, you should consider draining when the TDS is 1500 ppm over starting (without salt)for spas and hot tubs and 2000 to 2500 over starting for a pool. Here is an example:

A pool. Source water TDS 250 ppm. Salt or chloride in pool water as determined with a suitable chloride or salt test kit 4000 ppm. TDS of pool water sample 6000 ppm.

TDS 6000 less salt of 4000 = 2000 TDS not from salt.

TDS not from salt less starting TDS of 250 ppm = 1,750 ppm TDS increase.

Not exactly time to drain but getting close - somewhere between 2000 and 2500 ppm increase.

The other issue is the calculation of the Langelier Index or the Saturation Index. You must use all of the TDS for this calculation. The reason is that the LI & SI both consider the ionic strength of the solution to determine calcium saturation. All of the TDS is needed to know the ionic strength of the water.

In the above example, we must use the 6000 ppm TDS in calculating the LI or SI.

Many of the charts for getting the factor for TDS only go to 3000 ppm. However, you can use these amounts:

TDS Factors for the new SI Calculation	TDS factors for the Old SI Calculation
500 - 12.20	0 - 999 = 12.1
1000 - 12.29	1000 - 1999 = 12.2
2000 - 12.39	2000 - 2999 = 12.3
3000 - 12.45	3000 - 4499 = 12.4
4000 - 12.50	4500 - 5999 = 12.5
5000 - 12.53	
6000 - 12.55	

You will know if your index is the old or the new because the new SI calculation factors are the same for alkalinity and for hardness. In the Old version, there were different factors for alkalinity and hardness.

Note: Both Old and New versions require that you determine the cyanuric acid level and subtract 1/3 of it from the total alkalinity before looking up the factor.