

DESIGNING OZONE SPARE CAPACITY

When an ozone system is proposed for any application, some vital aspects of designing spare capacity need to be addressed. How do we decide on the spare capacity? Or do we really need spare capacity.

Whether we need spare capacity or not - will depend on the answers we get to few pertinent questions:

- ▶▶ How reliable is the ozone equipment in its performance?
- ▶▶ How reliable is the service of ozone manufacturer?
- ▶▶ What is the application for, and how crucial ozone is?
- ▶▶ How efficient is our preventive maintenance schedule?
- ▶▶ How easy or difficult is the maintenance/ repair work?

Reliability of Equipment and Service

Often, this is the main consideration. Today, there are many good ozone systems that are so reliable that even for process industry the design does not include spare ozone system. In such cases, more often stores spares are suggested. This will make the proposal more lucrative to the end user as he does not have to plan for spare ozone systems. Reliability will come with experience of the company and the amount it invests in R&D work. Service reliability will also be the key to reduce invest costs.

Application

The application will often determine the requirement of spare capacity. If the end user is not sure of the reliability of the equipment he is intending to purchase, he needs to keep the application in mind. In the process industry, often spare capacity is planned, and also in disinfectant applications. However, there are other applications that do not need spare ozone system, like cooling tower and swimming pool applications. What is more needed here is the spares requirement and what would be the total cost of the spare part package. The spares cost will also increase with the unreliability.

Preventive Maintenance/ Ease of Maintenance

One factor that will determine the spare parts package is - breakdown time should be as low as possible. Clients may need to go deeper into this and ascertain what would be the average down time for a particular make of an ozone system. The more reliable the equipment is, the lesser will be the spare parts package and the lower will be the break down time. There are equipments today that can provide 99.6% ozone availability and with spare parts package of less than 5% of the costs.

Modular System Vs Single Large Unit

No large and reliable ozone company manufactures ozone system in modular forms since they all have the technology to manufacture single large units. Many ozone manufacturers have limitation in their capabilities of manufacturing single large ozone systems. Often their proposal for large systems will be in multiples of the largest system they are capable of delivering. For example, requirement of an 18 kg machine is often proposed as 9x2 kg units, and often taking the stance of spare capacity to increase reliability in the application! Such design would in fact decrease the reliability since it would be very difficult to maintain 9 units at a time, increasing the requirement of spare parts, machine down time, and frequency of preventive maintenance apart from increased CAPEX. If you have the choice to go for a single large unit, why go for modular or multiple units.

Today companies like ITC Bhardrachalam are operating the world's single largest ozone system of 200 kg per hour for their process, without any spare ozone system, but with a foolproof, periodic preventive maintenance schedule.

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