Nitrogen generators for heat treatment applications

Gas generation， Nitrogen， PSA nitrogen generator

Nitrogen is widely used as a gas that can replace oxygen and other undesirable gases. Nitrogen itself is highly selective in its reactions and it is largely inert， which allows nitrogen to be used extensively. Nitrogen is also abundant， with 78% of it present in the atmosphere.

XITE nitrogen generators are based on PSA technology. Where high purity nitrogen is required， for example to maintain oxygen levels at the ppm level， PSA nitrogen generators are used to heat treat metals and alloys to produce parts with the required mechanical and surface properties， as well as to relieve residual stresses after mechanical deformation. Today， the atmosphere required to perform these heat treatments is generated using exothermic and endothermic generators and ammonia dissociators. These generated gases have serious disadvantages compared to atmospheres consisting of industrial gases such as nitrogen and hydrogen. For this reason， many heat treatment companies use high quality atmospheres based on nitrogen.

There are several types of industrial gas atmospheres used for heat treatment of aluminum. Air Products offers industrial gas-based atmospheres， including pure nitrogen or pure hydrogen and nitrogen/hydrogen mixtures， for conventional applications such as annealing， as well as for brazing and sintering.

Producing high quality parts at competitive prices is becoming increasingly important. In some heat treating operations， it is technically possible to use lower purity nitrogen， which means a higher oxygen content compared to liquid nitrogen. This nitrogen can be produced in gaseous form at the customer's site. Depending on the flow conditions and acceptable purity， XITE generated nitrogen can be significantly less expensive than liquid nitrogen.