

# Single Stage Clean Pretreatment (SST)

## Summary

Pretreatment of metals is a costly process and consumes significant resources such as energy and water. SST technology runs at near ambient temperatures and consumes very little fresh water, other than that to replace what has been lost due to carry out.

It is important to recognise that for a SST bath to function correctly, any oils and greases washed from the parts being processed must be removed. There must also be a filtration system to remove solid contaminants from the treatment tank.

If these contaminants are not removed, the life of the pretreatment bath will be severely compromised.

## Natech SST

Natech SST technology is a metal and polymer free conversion coating system that will clean and conversion coat parts in a single stage at temperatures circa 25C.

This technology uses valence bonding to create a very thin layer on the underlying metal, this layer essentially becomes part of the metal itself.

The product is designed for spray application with a process time of 100 to 200 seconds. After treatment, parts should be dried.

Once dry, parts can be painted with any type of paint system.

Natech SST technology is versatile and suitable for use on all types of steel, aluminium and galvanised surfaces.

## Bath Control

SST baths are best controlled using redox potential or ORP. There is a direct correlation between redox potential and salt spray performance so the bath concentration should be optimised to maximise salt spray performance. Other control parameters normally include titration, pH and conductivity.

Baths can be auto dosed using ORP, pH or conductivity as the auto dosing control parameter.

## Expected Performance

Salt spray performance of coated parts is highly dependent on the ORP of the bath when parts are processed. If ORP is maintained above 200 mV then salt spray results in excess of 1000 hours should be achievable. ORP levels are maintained by adding product to the tank.

## Expected Savings

Compared with a standard 3 stage pre-treatment line, savings of around 40% of energy and 80% of water usage should be expected. Larger savings can be obtained against processes with more stages, for example – when compared to a 7 stage pretreatment line expect to save in excess of 80% of energy consumption and 90% of water consumption.

## Suitability

Natech SST should be used in a stainless steel tank with a process time of 100 to 200 secs. Optimum bath temperature is 25C. Temperatures above 30C and below 20C are not recommended. Operating concentrations of 0.5% to 1% v/v are recommended.

Tanks must be fitted with oil separators to maintain solution oil level below 4000 ppm and filtration to remove solids.

Baths can be controlled using pH or conductivity, however if salt spray performance is important then ORP must be used as the primary control parameter.

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