

# DEFENCE SYSTEM PRESERVATION

- Prevent corrosion
- Increase readiness
- Reduce maintenance cost

## Defence storage

Since the 1960s sorption dehumidifiers have been used by defence forces in countries all over the world to protect various materials, components and critical systems. If relative humidity in the air is not controlled mould and corrosion can easily develop and sensitive electronic equipment can break down. A dehumidifier ensures that the humidity is efficiently controlled, thereby ensuring that valuable material such as on-board electronics remain stays in good condition.

## Corrosion

Dr W.H.J. Vernon identified the relationship between relative humidity (RH) and corrosion in 1929, and since then relative humidity control has been a method of corrosion prevention. In most cases 50%RH is sufficient enough to prevent the corrosion of steel. In coastal areas the desired relative humidity for corrosion prevention is 40%. Desiccant dehumidifiers are also very effective and preferred in non-temperature controlled storages especially those in colder climates. When it comes to managing the relative humidity with a heat source such as a gas fired or electric heater more energy is consumed as compared to desiccant dehumidifier. Static desiccants in bags are only as effective as the vapor seal of the storage. In most cases you need a more continuous dehumidifying process.

## Maintenance costs

Dry air technology is verified by the Swedish defence to 10% savings for operational cost and 40% savings for long term storage maintenance budgets. The US defence confirmed humidity control systems provide a ROI of 9:1 as stated by the US government auditing agency. Energy cost of DST Recusorb dehumidifier is 1.4k W/litre of water removed compared to conventional desiccant dehumidifiers of 2.0-2.6kW.



## Readiness of avionics

The readiness of avionics is improved by reducing or eliminating the moisture content of the air within the aircraft. This prevents circuit board corrosion and electronic cable resistance due to compromised cable insulation. The mean time between failures of the Swedish airplane Viggen was increased from 7 hrs to 22 hrs because of dry air.

## References

Dehumidifiers from Seibu Giken DST AB are used by defence forces in countries including:

Belgium, Finland, France, Germany, Great Britain, Italy, Norway, Sweden, Switzerland and Thailand.