



MAHIP INDUSTRIES

*accelerated corrosion testing
at its best*



and the difference lies in details.....

MAHIP

Salt spray corrosion test chamber

.....and the difference lies in details

Salt Spray Testing represents the latest and the most widely accepted international method of assessing and validating the quality and performance of anti-corrosion coatings such as organic coatings (paints/lacquer with pretreatment), metallic coatings (galvanizing/ nickel chrome plating) and other inorganic/conversion coatings such as aluminum anodizing, auto black, phosphating, ceramic coating, etc.

Mahip Salt Spray Machines are one of the most advanced, reliably consistent, and long lasting corrosion test systems. These test equipment, which have been designed by Process Engineering specialists, employ many innovative features to ensure constancy of the process, and hence consistency of the results. Mahip Salt Spray Machines are mature products of in-house design, research and development, and not cheap clones of some international brands.

MAHIP Salt Spray Machines are future-oriented testing systems developed by MAHIP INDUSTRIES. The equipment adheres to the principle of combining technical function, ergonomics and design to provide the user with a superior testing system. This is true for a great variety of technical and practical details as well as for the price/performance ratio, whereby we gave equal weight to capital and operating costs. The Machine series is characterized by its user friendly overall design; it is almost corrosion-proof, has low energy requirements and low requirement of salt solution. The Mahip series of Salt Spray Test Machines provide reliable, consistent and reproducible accelerated corrosion testing complying with the requirements of relevant international standards such as ISO:9227, ASTM B117/368, JIS Z2371, DIN 50021, etc.

The Machine is equipped with a high speed onboard computer (Programmable Logic Controller), that automates the testing process, thereby reducing dependence on a trained operator. The 7", wide format, 65000 color TFT touch-screen provided on the panel accepts interactive inputs from the operator, and displays process data and instructions for operation. (Some instructions provided in Hindi also). The touch screen menu driven user-friendly interactive programming enables even a new user to start testing in a matter of hours. Furthermore, it is equipped with a unique onboard Fault Diagnostic System, that monitors the inputs (water and solution levels, sensors, air pressure, etc.) in realtime, and gives out Audio and onscreen warning in case of failure. This not only ensures consistency and repeatability of the testing process, but also helps in minimizing breakdowns.

The unique Data logging system logs the process temperature every two minutes, for a total of upto 2000 hours, along with date and time. Besides providing information on the process during operator absence, this feature can be of immense use for keeping a tab on the authenticity of the tests conducted by operator/ vendor by OE manufacturers (Check against Doctored Tests). The main screen displays



the duration of Test Duration Planned, and the Actual Test Duration (for the current and last tests).

Our machines are built to outperform and outlast competition, by design. Practicality, ease of use, and maintainability lie at the root of the design. Some of the novel features include:

1. Totally non-metallic construction inside the chamber ensures cleanliness and long service life. Unique atomizer made from thermally stable polymers and high strength glass ensures uninterrupted service life with uniform spray distribution.
2. Innovative Spray Tower located at one end of the chamber enables testing of larger/ longer components. The specially designed proprietary Spray Distributor (after years of research) removes any solution droplets to deliver uniform dense fog, and ensures uniform distribution of fog in the chamber.
3. Automatic Purging of fog before opening of lid, for the benefit of operator and the laboratory atmosphere.
4. External casing made of special corrosion proof, anti-static composite material, to maintain aesthetics over a longer period of time.
5. Touch screen, menu driven interactive programming with graphical logging of chamber temperature.
6. Realtime monitoring of almost all inputs such as air pressure, temperatures, solution and water levels, etc ensures accurate process control.

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**WELCOME TO MAHIP SALT SPRAY APPARATUS
COMBO (DUAL MODE) MODEL**

**India's First Touch Screen Menu Driven, PLC Controlled Salt Spray Apparatus
With Operator guidance. & onboard fault diagnostics - for ACCURATE TESTING**

SUNDAYdd/mm/yyHH:MM:SS

NEUTRAL SALT SPRAY TESTING

After the Lid opens, place the Specimens appropriately. Enter the desired Test Duration and Press 'BEGIN TEST'.

**कवर खुलने के बाद अपने सैम्पल या पुर्जे रखें।
टेस्ट की अवधि भरें और 'बिगिन टेस्ट' बटन दबाएँ।**

DESIRED TEST DURATION####HOURS

BEGIN TESTSTOP M/C

Mahip Salt Spray Chambers are available in three models- Neutral Salt Spray (NSS) Model, and Copper Accelerated acetic acid Salt Spray (CASS) Model, and a COMBO Model, to suit the two types of Salt Spray testing laid down by international standards. The COMBO model is capable of conducting both the above tests, either one at a time. It is suitable for users requiring occasional switching between the two types of tests.

The advantages at a glance

1. Very long life due to corrosion-proof fog chamber, robust construction and meticulously selected parts. One of the lowest life-cycle costs in the industry.
2. Most consistent and accurate testing due to precise adherence to process requirements of standards. More accurate and reliable sensors deployed.
3. Lowest running cost for consumables such as salt solution and demineralized water. Salt solution consumption less than 10 litre per 24 hours.
4. Lowest energy costs - less than 1 KWH in steady state for NSS.
5. Lowest maintenance cost. No AMCs required.
6. Best service & support in the industry. For the first time, a ticket based online complaint redressal and service portal.
7. Easiest to re-setup in the event of change of operator. Most operational instructions, standard requirements, and guidance provided on the touch-screen.

Control and programming

The **Mahip** Salt Spray Test Chambers are equipped with the self-monitoring, digital measuring and control system. This

system coordinates all control functions. Input functions and display of the operating parameters are effected via the graphic color touch panel.

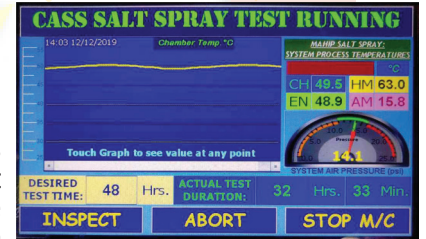
Additional features:

High-resolution color display.

Operating parameter and error display in clear text. The common instructions have been provided in Hindi also.

Operation by simply touching the Buttons/ symbols Menu-guidance

Heater performance, solution levels, sensor outputs, air pressure, etc are being continuously monitored for correct operation. In the event of any malfunction of the above parameters, the machine stops all outputs and gives out an audio alarm, while the HMI screen displays the error message in plain clear language. This helps to prevent any consequent problems such as heater or pump burnouts. A special Voltage Monitor continuously scans the power source for correct voltage range, and in the event of over or under voltage, cuts off supply to the equipment, thereby saving expensive equipment from burnouts.



CONFORMANCE TO SALT SPRAY STANDARDS:

Neutral Salt Spray: ISO 9227, ASTM B 117, JIS Z 2371

CASS Test: ISO 9227, ASTM B 368

PARAMETERS	STANDARDS' REQUIREMENTS	MAHIP SALT SPRAY APPARATUS	CONVENTIONAL SSA
Temperature Control	Of Chamber Atmosphere	Chamber Atmosphere	Salt Solution
Precipitation Rate of Fog	1-2 ml/80 sq.cm./hr.	1-2 ml/80 sq.cm./hr throughout.	Usually, no measurement/Control. At best, point control.
pH of Sprayed Sol.	Should be consistently in Range - 6.5-7.2/ 3.1-3.3	Consistently in Range	Erratic and inconsistent output range.
Humidifier	Necessary. With Continuous Level Control	Present With Continuous Level Control	Usually no humidifier present. Or intermittent control
Heater-Electrical	Not permitted inside the Chamber	Not present inside Chamber	Immersion/fog heaters present inside the Chamber
Construction	No metal permitted inside Chamber	No metal present inside Chamber	SS Spray nozzles, heaters, etc. present inside Chamber.
Capacity	15 cu.ft. / 400 Lt minimum	431 Lt/ 15.2 cu.ft.	150-250 Lt.
Consistency of Results	Consistent throughout the year	Consistent throughout the year	Inconsistent even during day & night.
Recycling of Spray Solution	Solution once sprayed should be disposed off.	No recycling	Recycling
Fog Venting	To be provided	Provided	Not provided.
Digital Temp Display Logging & Control	-----	Provided	Usually Not provided.
Integrated Castor mounted Model	-----	Fully integrated	Fully integrated
Direct Impingement of Spray	Not Permitted	Continuous, deflected, equitably distributed, Superfine Fog/Mist	Intermittent Direct spray of Solution droplets.
Electrical Safety Features	-----	Provided (Multi Step)	Not Provided
Failure prediction*	-----	Provided	Not provided
Test validity check (audit) facility	-----	Provided thru proprietary software.	Not possible.
Dependence on trained operator	-----	Low	High

TECHNICAL SPECIFICATIONS:

MODEL	STANDARD NSS MODEL	STANDARD CASS MODEL
Capacity	430 Lt.	430 Lt.
Chamber Size	1150 x 630 x 600mm	1150 x 630 x 600mm
Chamber Construction	Double walled, insulated polymer construction with composite enclosure	
Chamber Working Temp.	35±2 °C	50(49)±2 °C (ISO and ASTM Stds. resp.)
Temperature Least Count	0.1 °C	0.1 °C
Temperature Control	Advanced PLC based (ambient sensing)	Advanced PLC based
Precipitation rate	1.5±0.5 ml/80 cm ² /hr.	1.5±0.5 ml/80 cm ² /hr.
Atomiser Nozzle	Corrosion/erosion free Polymer/glass construction	
pH control range	6.5 to 7.2	3.1 to 3.3
Compressed Air System	Filter Regulator, with Pressure Display	Filter Regulator, with Pressure Display
Working Pressure	10-17 psi (0.7-1.2 bar)	10-17 psi (0.7-1.2 bar)
Humidifier/ Saturator	700 mm high, temp. regulated & insulated. SS 304. Automatic continuous feed.	
Sample Racks	Adjustable/ removable Flexi-racks (at 20° with vertical)	
Lid	Insulated, Sloping type with sturdy polymer hinge	
Time Record	PLC/HMI based record Audio notifications for test begin & end. No timers.	
Control Panel	65,000 colour TFT LCD Touchscreen Operator Interface. PLC based Process control.	
Machine External Dimensions	1860 X 1210 X 1200	1860 X 1210 X 1200
Electricity Requirements	Single Phase, 230±5% VAC, 6.5 KW	Single Phase, 230±5% VAC, 6.5 KW

Some of our Satisfied Clients:

* Hero Cycles Ltd. (3 machines) * Orient Fans Ltd. (3 m/c) * JBM Ltd. (2 m/c) * Rockman Industries Ltd. (2 m/c) * Neel Metal Products Ltd. (4 m/c) * Allengers Medical Systems * Atlas Cycles Ltd. * Central Institute of Hand Tools * Alcoats Mysore * Alstrong * Deepak Fasteners Ltd. (Unbrako) * Nicks India Tools (3 machines) * International Tractors Ltd. (Sonalika - 3 m/c) * Shiv Engineering P. Ltd. * Mahindra & Mahindra Ltd * Methodex Sytems Ltd. * Godrej & Boyce Mfg Co (2 m/c) * KayJay Forgings * Atop Fasteners * Grauer & Weil (I) Ltd. * Victor Fogings * JVR Forgings Ltd. * Mittal Electronics * Meenakshi Polymers P. Ltd (3 m/c) * Rancon Suzuki Motorbikes * SML Isuzu Ltd. * SKG Engineering * Victor Tools Ltd. * etc



Establish and check/validate your own in-house plating/ painting processes



Compare coatings/corrosion protectives and chemicals from different suppliers



Evaluate the quality of vendors' products or job work.

Manufactured with Pride in India, by:

MAHIP INDUSTRIES

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