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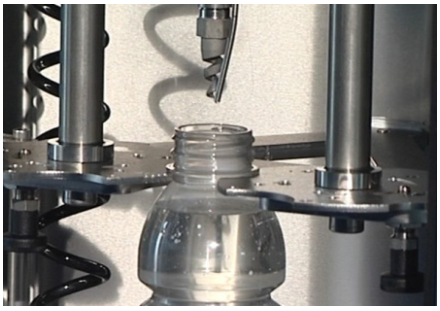


Delta ETS Hot Fill Simulation.

1.0 BASIC MACHINE FUNCTION AND DESCRIPTION:

The Delta ETS is designed to simulate Hot Fill in PET bottles. Typically used in package design and testing laboratories, the Delta ETS is used to access the performance of new bottle designs off line.
The Delta uses precise state of the art filling and control systems to reflect accurately the actual conditions of a typical Hot Fill Line in the test specimen. The ETS is fitted with a universal neck holder for most neck types and sizes. A spiral fill nozzle ensures exact simulation of on line conditions.

The user has control over:

- fill rates
- fill height
- temperature up to 95 Deg C

2.0 Operation/Test cycle:

2.1 Operation:
-An empty bottle glass or PET is loaded by hand into the self-centring neck holder by hand.
-The interlocked safety door is closed.
-Using the operator interface load the required recipe.
-Press START.

2.2 Test Cycle:
-Fill nozzle moves down to a set point.
-Water is circulated thru the nozzle re circulation circuit to purge any colder water back to the reservoir.
-When water in the nozzle reaches set point the nozzle opens and filling takes place.
-Filling takes place at a programmed speed – the cone shaped nozzle causes the water to spray against the inner walls of the bottle.
-The nozzle retracts and the filling speed slows to complete an accurate fill of the bottle.

The safety door can now be opened.

3.0 Operator Interface:

The Rockwell supplied operator interface has a clear graphic display and a large keypad, it is used to input and change the various parameters, operate manual functions, calibration etc.

Page 1	-Re charge –(fill & heat reservoir) -Manual operation -Automatic operation -Continuous or Stand alone operation
Page 2	- Circulating speed - Filling speed - Top up speed
Page 3	- Nozzle Set point - Top up set point - Top up Time - Detect Set Point %
Page 4	- Tank Set point temp. Actual - Nozzle Set Point temp. Actual
Page 5	- Alarms
Page 6 & 7	- Manual control
Page 8	- Calibration
Page 9	- Diagnostics

4.0 Safety Circuit:

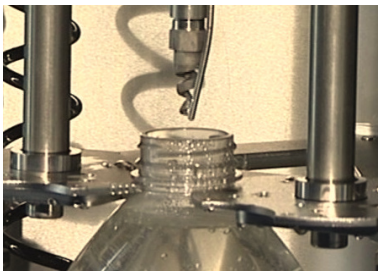
There are several features to ensure access is denied to a container under test.
-The chamber door is constructed from heavy duty Polycarbonate of sufficient dimensions to withstand to withstand high temperatures.
-The door is double interlocked to ensure the cycle cannot begin with the door in the open position. The double interlock also ensures the latch on the door is not released until the fill head is in 'home' position

5.0 Cycle Time:

This varies with the user parameters e.g. Fill Speed etc. As an indication 20 x .5L bottles can be filled in 10 minutes.

6.0 Neck Holder:

Flexible tooling to hold 26mm, 30mm, 34mm, 38mm, neck diameter, (non standard also possible on request).



7.0 Filling:

A multistage pump located in the reservoir circulates the water and fills the sample bottles. From the operator interface panel the user can control the filling speed from 0 – 100%. Typically a speed of 75% is used to initially fill a bottle, the filling speed can then be reduced as the bottle nears full to ensure accuracy of fill. The Fill Nozzle height is programmable, setting range from 0 (lip of bottle) to 35mm (descend 35mm into neck of bottle). The fill height accuracy is nominally 3mm, however a higher level of accuracy can be achieved by reducing the pump speed.

8.0 Water Temperature:

The water in the reservoir is heated using a 6Kw coil, heating time approx 60 minutes. The tank is insulated and temperature control via a thermocouple. Temperature is set using the operator interface panel, maximum water temperature 95 Deg C +/- 1. Prior to filling a sample bottle water is circulated through the nozzle and is only allowed fill the bottle when 'SET TEMP. +/- 1.0 Deg

9.0 Dimensions

Footprint – 800 x 700 mm's

Height – 1850 mm's

Sample loading height – 1300 mm's

10.0 Connections required:

Water supply, ½'' line.
Electrical power, 380V 3 Phase, (10 Amp 220V on each phase, 7 Kw max. power consumption)
Compressed air 6 bar
Weight 220kg's empty, 280kg's full

11.0 Reservoir capacity:

60 Litres, stainless steel, fitted with a drain valve and hose.

12.0 Calibration:

There is a facility within the control system to allow for accurate calibration of temperature

13.0 Remote communication:

The Hot Fill Simulator can be fitted (optional) with a remote communication module which facilitates Somex engineers connect directly to the machine in the event of troubleshooting updates

14.0 Hot water circuit of machine: