

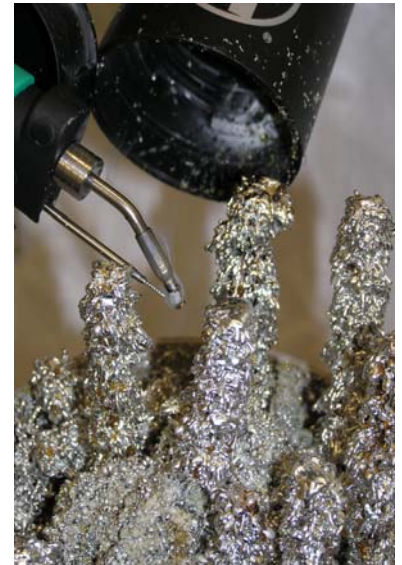


TEST REPORT- Lead-free solder smoke

During May-July 2006, Filtronic AB performed a test of filter life time with respect to clogging and degradation of the different filter steps in the high airflow filter system MG100S. The test was completed in the companies Research & Development laboratory.

The test was performed with a solder wire feeder that continuously fed 15 mm of solder per minute onto a soldering tip. The soldering iron temperature was set at 350°C and 20 kg of 1 mm solder with 3 % flux was used.

The solder smoke produced was caught by a MG100S filter system from Filtronic AB and an extraction arm 3015 with an Alfa nozzle was connected to the filter system. The test ran during daytime hours as the interruption in solder feeding and the changing of solder tips required continuous surveillance.



The test was divided into two parts, the first with a standard main filter and Filtronic pre-filter bags and for comparison, the second with a main filter only.

PART 1, with pre-filter bags

15 kg of solder and 7 pre-filter bags were used. The bags were replaced when the suction capacity dropped to less than 2/3 of the flow of a new filter. When the test was completed the main filter was analysed and it showed that the **gas filter** still cleaned >90 % of the process air but the remaining lifetime is 10 %. The pressure drop in the **micro filter** reduced the maximum flow in the filter system to 90 % of a new filter.

PART 2, without prefilter bags

This test was done with the same conditions and equipment, except the pre-filter was not fitted, and 5 kg of solder was used. After 5 kg the **maximum flow of the filter system** reduced to 2/3. When analysing this filter it showed that the **micro filter** had expired but the capacity of the **gas filter** media was still 100 %.

The results are presented in the diagram below.

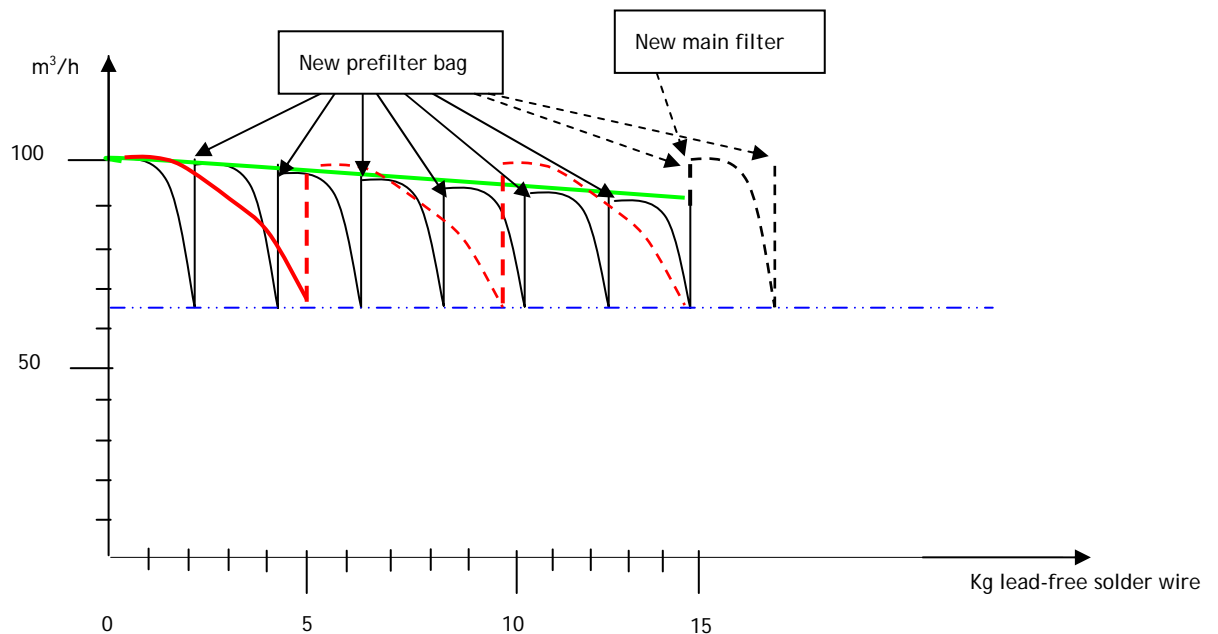
Black line - Test with prefilter bags. Pressure drop in the filter system.

Broken black line - Shows expected capacity increase when changing to a new main filter.

Green line - Shows the pressure drop in the micro filter in the test with prefilter bags.

Orange line - Test without prefilter. Pressure drop in the micro filter.

Broken orange line - Shows expected main filter lifetime and change interval for 15 kg solder.



CONCLUSION:

In applications with heavy solder smoke, the MG pre-filter system is a cost effective investment. The test result shows that the main filter has three times longer lifetime when using pre-filter. The pre-filter system also keeps the suction capacity at a stable level.

Filtronic AB, 2006-08-16

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Melted solder from test



Clogging of flexible suction arm after 20 kg solder



Surface of clogged pre-filter bag