

**Republic and Canton of Ticino
Territorial Department
Environmental Division
Air, water and soil protection Section
6501 Bellinzona**

**City of Lugano
Urban Service Dept.
Via Sonvico 4a
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Bellinzona, 23rd June 2010

Our ref. C8_LC1146

Your ref.

Systemlife Filtering Station – Lugano: Evaluation of final report

Dear Sirs,

We have received from Fratelli Ghezzi the final report relative to the test period of the Systemlife filter station installed at the Botta bus shelter in Corso Pestalozzi on 26th March 2009 for a period of one year. Please find attached said report concerning which we have made the following observations.

1. The report is complete in overall terms as it includes all the data as requested and agreed during previous meetings and contacts and allows us to evaluate the operation of the filtering station. Generally speaking, all our previous suggestions have been implemented in order to allow the costs/benefits of an eventual purchase to be objectively quantified.
2. The filtering station has operated reliably. It has worked continuously throughout the period in question with no particular problems and maintenance was limited to the scheduled replacement of the filtering coils.
3. The report makes a comparison between the data recorded by the "Grimm" monitoring instrument installed inside the filtering station and the data measured by the cantonal monitoring stations of Vezia, Lugano and Pregassona. The similar performance of the various data shown in chart 2 certifies that the measurements made by the equipment in the filtering station are reliable over time.
4. The continuous measurements made during the test period between 1st December 2009 and 15th February 2010 certify performance levels of approximately 90-95% (see chart 3) which corresponds to the results of previous studies. The subsequent charts (4, 5 and 6) show that particulate abatement can also be observed at a distance of 30 metres from the filtering station though at lower levels of efficiency (approx. 30-40%). In this sense, we can say that the filtering station can effectively retain the captured particulate. The effects on the surrounding air are not easy to assess, but at least in the area of the shelter where most public transport users wait, the filtering effect of the station – thanks to tests performed for periods of several hours – is documented.

5. The analyses also show that not only the coarsest fraction of particulate is effectively captured, but also, thanks to the presence of an electrostatic filter, also the smaller PM2.5 and PM1.
6. We had already pointed out that it was necessary to present a particulate abatement cost assessment in order to determine the cost/benefit ratio of the filtering station. The report presents a cost estimate which, in our opinion, is reliable. According to System life, the cost for capturing 1 kg of particulate amounts to 4210 CHF; this figure is lower than that previously estimated by ourselves and is comparable to that for installing and starting up an integrated traffic management system or filtering air from the exhaust ducts of road tunnels (see our letter of 24th November 2009). As a comparison, abating 1 kg of fine particulate through an anti-particulate filter applied to a new vehicle costs between 50 and 300 CHF; a filter for abating particulate from a wood-fire chimney has an analogue value of 67 CHF per abated kg of PM10. In this sense, we therefore consider that though lying in the higher cost band of the possible measures, the cost for filtering particulate using this filtering station is approximately equal to that of the other "end-of-pipe" type measures, that is, not directly at source, such as filtering the air from road tunnel ducts or traffic management measures.
7. The fight against atmospheric pollution is a long-term battle which is fought against all emission sources. To achieve the objectives and remain within the limits establish in the Ordinance against atmospheric pollution, OIA, there are long-term provisions established by the law itself, by cantonal regulations, by the Air Recovery Plan and by regional plans such as the Air Recovery Plan of Lugano, PRAL. The possible installation of one or more filtering stations should be considered as a provision within a wider sphere comprising a whole series of measures to protect the quality of the air and not as a replacement of measures that have already been decided and/or implemented in the sphere of the PRAL.
8. Should the filtering station be purchased and installed at the Botta shelter, considering the previous studies presented and in view of the future extension of the same, we consider that the equipment would be most efficient if placed at the head of the shelter.

To sum up, we consider that the completion of the data provided in the attached report, as well as the estimate of particulate abatement costs can be an objective basis for assessing the purchase of the Systemlife filtering station. We believe that, despite the fairly elevated costs per kilogram of particulate abated by the filtering station, its use can be justified in densely populated and/or busy areas, such as the location chosen for the test period in Lugano. Moreover, the benefits of air filtration would mainly be in favour of public transport users.

Kind regards

**Office of air, climate and renewable energy
The Department Manager**

Dr. L. Colombo