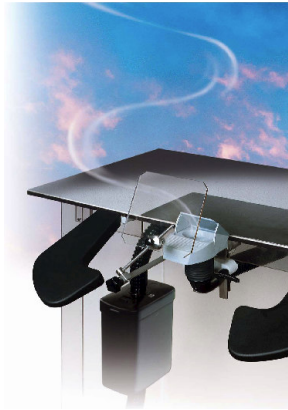


The problem of dust suction in the dental technician's laboratory

Silicosis, asbestosis, talcosis, graphitosis, pneumoconiosis from hard metals or rare earth compounds, are some of the respiratory diseases caused by dust inhalation.



Aspiration for laboratory work benches

It is inevitable to inhale dust as it is part of the atmosphere. Our respiratory system is equipped to protect itself from this but, with technological progress i.e. road traffic, house heating, tobacco smoking, etc. the quantity of particulate matter has increased and its size has become smaller (PM10 indicates particulate matter with diameter under 10 micron) and more dangerous because it remains suspended in the air indefinitely, there is now way of trapping it and it will reach the deepest part of the lungs: pulmonary alveoli.

Like fish in a bowl swimming in dirty water, modern life already imposes a very high level of pollution and, in addition to this, some professionals are subjected to more pollutants: for example, it has been calculated that dental technicians will inhale in a year up to 12 kg of dust (silica, heavy metals, plaster, methacrylate, etc.)

Fortunately today we can defend ourselves well because filtration technology in air systems has made a lot of progress and has adopted new materials with excellent results:

- high/very high filtering efficiency (according to international standards HEPA from H10 to H14 and ULPA from U15 to U17).

Filters with:

- low pressure drop,
- easy maintenance,
- low sound pressure.

For many years Cattani has been producing everything that is needed for this application including the aspirators:

- The smallest ones are Aspi-Labor or Mono-Labor, mobile units for one surgery, that can be equipped with filter paper bags for low retention (Cattani Catalogue Code 050180) or fibre bags for higher filtration (Cattani Catalogue Code 050199).
- Centralized suction systems for dental technician's bench for 1, 2, 3 or more workstations, or for sanders, cleaners, etc. are equipped with filters made of layers of glass fibre and cellulose. Their deduced permeability ratio (according to European Community Directive DIN EN 60335-2-69) is lower than 0.005% on dusts with 90% under 1 micron, which is a requisite for class H classification. These filter types do not normally need to be replaced regularly because they can be cleaned by shaking them manually or, more conveniently, using compressed air.
- Filter paper bags (Code 050180) have 95% dust retention (in compliance with DIN 44956 T2 regulations)
- Filter cloth bags (Code 050199) have 0.03% penetration (in compliance with UNI EN 779-2002 regulations requiring dust tests with granulometry between 0.2 and 2 micron). These characteristics place the filters in class F8 (in the particulate matter rating it is at level 8 on a scale from 5 to 9).



Mono-Labor & Aspi-Labor

These units and these filters are the product of extensive research and long experience: for each application the best solution was adopted taking into consideration many factors (sound pressure, head, suction volume, absorbed power), meticulously balancing them in a reactive way with the use of high technology: an inverter automatically adjusts motor speed to keep suction flow constant under every condition.

A very important variable may escape our control and cause us to consider the filtering action insufficient: this is the operator's attention. If the point or direction of dust emission is not properly captured by the arm or "work peg with shell", the air in the room will be charged not with dust that went through the filter but with dust that was not aspirated. The "work peg", which may be fitted with a "shell", is a device for capturing particulate matter (including precious metals) which required very careful designing. The result is a highly efficient, extremely flexible device that does not affect the working posture (which is very subjective) nor the visibility needed to perform good work.



75 lt Dust separato tank

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Before concluding a final consideration is in order: every dental lab has peculiar needs that must be respected whilst maintaining the necessary technical features.

The first choice to be made is between a mobile bench system, to be kept in the room, and a centralized system. The crucial element here will be the number of surgeries to be served: the higher the number the more important it is to adopt a centralized system with advantages in terms of cost effectiveness, noiseless operation and cleanliness.

- Cost effectiveness: a centralized system will cost less than “n” mobile systems if “n” is large enough.
- Noiseless operation: a centralized system is housed in a separate room and therefore keeps the surgery free of motor noise.
- Cleanliness: apart from the space takeup of certain number of machines near or under benches, the dust collection tanks will need to be emptied out regularly. This is a dirty operation and is best carried out in a separate room with a single filter.

A second option regards the inverter on motors: opting for this solution means to start saving right away, because smaller, lighter motors can be used, and to keep saving in time, because of reduced energy consumption, reduced maintenance costs and increased durability of the machines since they are not subject to excessive demands and unnecessary, harmful overheating. In other words, from the point of view of sustainability this means reduced used of aluminium and copper in machine construction and a smaller quantity of kW which turn into heat instead of ending up in the air breathed during operation.

Our technicians will be able to examine the cost/benefit ratio that best adapts to the peculiar needs of each laboratory.

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