SOPEL – dust separating system for viscous dusts

Application

SOPEL dust separator systems are meant for extraction and filtration of dusts arising during processes connected with viscous dust emissions, especially efficient for polishing processes of details of stainless steel-, brass and other materials. The system is foreseen for air filtration in three steps, as well as they provide a complete air recirculation back into the process room.

Basic problem during polishing is the necessity of waste separation and filtration of the pollutants as a mixture of fibres from the felt-cotton polishing discs, particles from the polishing pastes and the mists created by wax vapours contained in the polishing pastes. SOPEL efficiently eliminates all the above mentioned contaminants.

Structure

SOPEL is constructed from a row-assembled separate dust-separating filtration devices:

- OC-1 cyclone separator – flow efficiency from 2 000 m^3/h up to 2 700 m^3/h,
- PW-1 bag prefilter – flow efficiency from 2 000 m^3/h up to 8 100 m^3/h,
- PROTON HV electrostatic filter – flow efficiencies 2 000, 4 000 and 8 000m^3/h up to 8100 m^3/h.

OC-1 cyclone separator captures large fibre particles mixed with particles arising from polishing pastes, representing approx. 90–95% from the total capacity of the total extracted contamination. Therefore it is necessary to empty the waste container from the collected dusts everyday.
PW-1 bag prefilter captures fine dusts that accumulate on the internal surface of the filtration bags that serve, at the same, as waste containers. These dusts make up approx. 5–10% of the total capacity of the dusts. Filtration bags, along with the collected dust, ought to be replaced periodically for new ones.

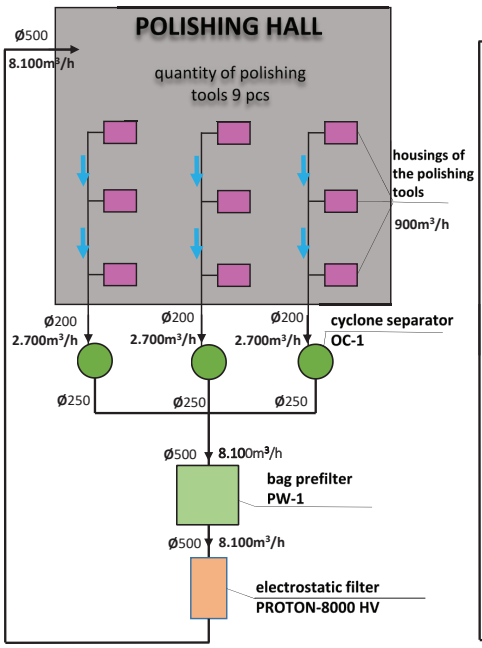
PROTON HV electrostatic filter captures the most fine dust particles, along with the wax vapour. The contamination accumulates on the surface of the plates of the capturer. These dusts do not constitute more than 1% of the total dust volume. Every several days, the capturer should be washed up in a container with water and detergent. Electrostatic filter us equipped with a fan that provides the air flow through all the devices of the system.
The air that is cleaned by SOPEL, can be directed directly from the PROTON HV electrostatic filter back to the process room. Regardless of the SOPEL system, it is recommended to install a small-dimension recuperator to deliver fresh air into the room.

Operational use

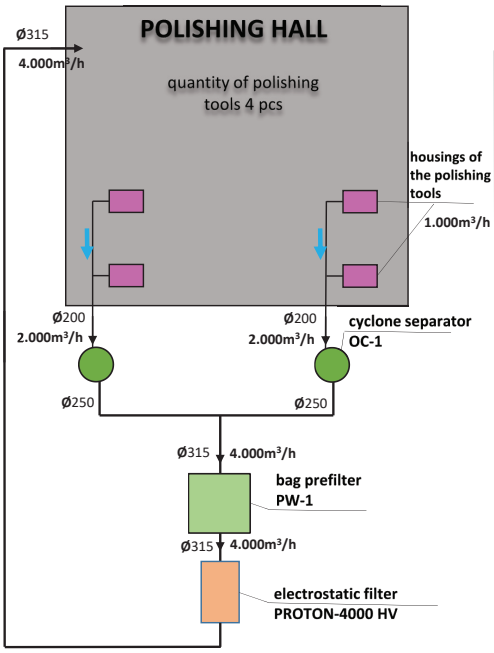
Essential condition for proper function is the efficient extraction of the dust-laden air directly from the polishing tools housings. The connection to the polishing tool should have 125 mm diameter. Depending on the quantity of the polishing tools, it is important to select the right dimension of the conduits that are joining the polishing tools to the OC-1 cyclone separator, and to select the suitable diameters of the connectors of the PW-1 bag prefilter.

The air that has been cleaned in the cyclone separator, bag prefilter and in the electrostatic filter, can be returned back to the process room.

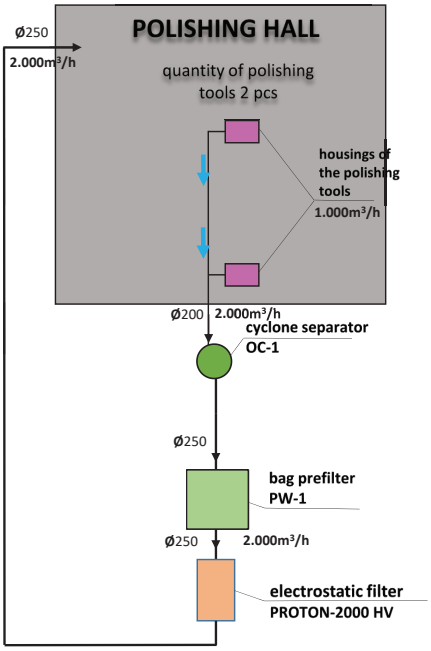
Dust separating system for stationary polishing tools SOPEL-8000



Dust separating system for stationary polishing tools SOPEL-4000



Dust separating system for stationary polishing tools SOPEL-2000



Equipment for the SOPEL system

Type	Maximum volume flow [m³/h]	Maximum vacuum [Pa]	Motor power [kW]	Equipment		
				Cyclone separator OC-1	Bag prefilter PW-1	Electrostatic filter PROTON
				pcs	pcs	pcs
SOPEL 2000	2000	4000	2,2	1	1	1x2000 HV
SOPEL 4000	4000	4000	5,5	2	1	1x4000 HV
SOPEL 8000	8100	4500	11,0	3	1	1x8000 HV

Technical data for the devices of the SOPEL system

Sort of the device	Type	Part No.	Volume flow [m³/h]	Weight [kg]
Cyclone separator	OC-1	802O23	2000–2700	95
Bag prefilter	PW-1	815F06	2000–8100	320
Electrostatic filter	PROTON 2000 HV	800E03	2000	198
Electrostatic filter	PROTON 4000 HV	800E04	4000	218
Electrostatic filter	PROTON 8000 HV	800E05	8100	397