C L A I M S

1. Automated coating system for coating a surface of an object with a spray tool having a nozzle emitting a spray of atomized coating particles in a spray pattern, for example paint, onto the surface, preferably an airless spray tool,

wherein the system comprises:

- a motion device provided with a mount on which the spray tool having a nozzle emitting a spray of atomized coating particles in the spray pattern is mounted, which motion device is configured to position the nozzle at a nozzle height relative to the surface to be coated, and which motion device is configured to move the spray tool relative to the surface during coating of the surface,

- a coating material supply including a pump configured to supply a pressurized liquid coating material to the nozzle of the spray tool ,

- an extraction member which is supported by the motion device to move in unison with the spray tool relative to the surface during coating of the surface,

wherein the extraction member comprises an annular housing having an inner wall portion , an outer wall portion , and a bottom side and a top side ,

wherein the inner wall portion of the housing delimits an opening through which the spray of atomized coating particles passes onto the surface to be coated, wherein the inner wall portion is configured to be peripherally spaced about the spray,

wherein the motion device is configured to position the bottom side of the housing in proximity of the surface to be coated so as to maintain a gap between the bottom side and the surface to be coated,

wherein in the housing an internal annular air channel is present,

wherein the bottom side of the housing is provided with an annular inlet slit of the internal annular air channel,

wherein the housing comprises one or more outlet ports of the internal annular air channel,

- an air extraction and filtering device including an air extraction duct, an air extraction fan, and one or more air filters, wherein the air extraction duct is connected to the one or more outlet ports of the internal annular air channel,

wherein the top side of the housing is lower than the nozzle height, and wherein between the top side and the nozzle one or more peripheral air access openings are present,

wherein, in operation, the spray of coating material is emitted from the nozzle in the spray pattern to coat the surface, the spray causing a drag flow of air from outside through the one or more peripheral air access openings towards and then along with the spray, whilst the air extraction and filtering device causes a flow of extraction air from the gap between the surface to be coated and the bottom side of the housing via the annular inlet slit into the internal annular air channel, so that coating particles not adhered to the surface are entrained with the extraction air and passed to the one or more filters.

2. Automated coating system according to claim 1, wherein the housing comprises an annular air guide that extends from an inner edge of the annular inlet slit in a direction angled upward and outward,
or
wherein the housing comprises an annular air guide that extends from an inner edge of the annular inlet slit in a direction angled upward and inward.

3. Automated coating system according to claim 2, wherein the annular air guide is positioned at an upward angle such that a larger portion of air is exhausted from inside of the perimeter of the housing and a smaller portion of air is exhausted from outside the perimeter of the housing,
or
wherein the annular air guide is positioned at an upward angle such that a smaller portion of air is exhausted from inside of the perimeter of the housing and a larger portion of air is exhausted from outside the perimeter of the housing.

4. Automated coating system according to any of the preceding claims, wherein the internal annular air channel is delimited in part by one or more annular air deflectors configured for deflecting the airflow, which one or more annular air deflectors are positioned between the inlet slit and the one or more outlet ports.

5. Automated coating system according to claim 2, wherein an annular air deflector is positioned relative to the annular air guide such that air flowing along the annular air guide is deflected by the annular air deflector, e.g. the annular air deflector being located at an end portion of the annular air guide remote from the inlet slit.

6. Automated coating system according to claim 5, wherein the annular air deflector is positioned downwardly relative to the annular air guide, e.g. perpendicular to the annular air guide in a downwards direction, e.g. at an end portion of the annular air guide remote from the inlet slit configuration.

7. Automated coating system according to any of the preceding claims, wherein the inner wall portion and/or bottom side of the housing comprises an undulating surface with one or more annularly extending undulations, e.g. concentric undulations.

8. Automated coating system according to claim 7, wherein the undulating surface comprises a sawtooth shape in vertical cross-section, e.g. wherein the sawtooth shape comprises two saw teeth .

9. Automated coating system according to any of the preceding claims, wherein the internal annular air channel comprises one or more sharp turns, preferably greater than 90 degrees.

10. Automated coating system according to claims 6 and 8, wherein the annular air deflector internally aligns with the sawtooth shape of the bottom side to form a sharp turn of the internal annular air channel.

11. Automated coating system according to any of the preceding claims, wherein the internal annular air channel is configured such that extracted air flows from the inlet slit in a direction radially outward and upward, which flow direction of the internal annular air channel then is deflected by one or more annular air deflectors to a direction radially inward.

12. Automated coating system according to any of the preceding claims, wherein the internal annular air channel is configured such that extracted air flows from the inlet slit in a direction radially inward and upward, which flow direction of the internal annular air channel then is deflected by one or more annular air deflectors to a direction radially outward

13. Automated coating system according to any of the preceding claims, wherein an air permeable wind screen is positioned over the one or more peripheral air access openings, e.g. the wind screen comprising an air permeable mesh or an arrangement of slats.

14. Automated coating system according to any of the preceding claims, wherein the housing is lower than the nozzle height, when measured from the surface to be coated, by at least 10 cm, e.g. by between 10 and 25 centimeters, e.g. wherein the nozzle height is between 20 and 40 centimeters, e.g. about 30 centimeters.

15. Method for coating a surface of an object with a spray tool, wherein use is made of the automated coating system according to any one or more of the preceding claims.