CLAIMS

1. System for coating a surface of an object with a spray coating tool spraying atomised coating particles, for example paint, comprising

a coating material supply in communication with the coating tool, comprising a coating material pump setting a coating material flow rate,

a conditioning hood defining a spray chamber and having

- a coating tool mounting end,
- an output end opposite the coating tool mounting end, which output end is configured to be positioned in proximity of the surface of the object to be coated,

wherein in operation:

- the spray coating tool is mounted at the coating tool mounting end, and
- the output end is positioned in proximity of the surface of the object to be coated, and
- the spray coating tool is operated to spray atomised coating particles which travel from the coating tool, through the spray chamber and the output end to the surface of the object,

a carrier gas installation in communication with the coating tool mounting end of the conditioning hood or with the coating tool, configured to provide a carrier gas that in operation carries the atomised coating particles,

wherein the system further comprises

a particle sensor provided in the conditioning hood, e.g. in the spray chamber, detecting the particle size distribution and/ or the particle density,

a central control system communicatively connected to the particle sensor and to the coating material supply and/ or the carrier gas installation, for controlling the coating process based on input data from the particle sensor, such as the coating material flow rate.

2. System according to claim 1, wherein the coating material supply further comprising a heating element for the coating material, and wherein the temperature of the coating material is controlled on the basis of the input of the particle sensor.

3. System according to claim 1 or 2, wherein a spray chamber adjustment mechanism is provided for adjusting the distance between the surface of the object and the conditioning

hood defining the spray chamber at the output end of the conditioning hood, and wherein the distance is controlled on the basis of the input of the particle sensor.

4. System according to any of the preceding claims 1-3, wherein the carrier gas installation comprises a carrier gas pump setting the gas flow rate with which the carries gas is injected into the spray chamber, and wherein the central control system is communicatively connected to the carrier gas pump to control the gas flow rate based on input data from the particle sensor.

5. System according to any of the preceding claims 1-4, wherein the carrier gas installation comprises a moisturizer for adjusting the humidity of the carrier gas, and wherein the humidity of the carrier gas is controlled on the basis of the input of the particle sensor.

6. System according to any of the preceding claims 1-5, wherein the carrier gas installation comprises a heating element for adjusting the temperature of the carrier gas, and wherein the temperature of the carrier gas is controlled on the basis of the input of the particle sensor.

7. System according to any of the preceding claims 1-6, wherein the conditioning hood has two concentric walls, defining an annular duct and the spray chamber inside of the annular duct, wherein a gas extraction installation is in communication with the annular duct, configured to extract gas with residual atomised coating particles adjacent the output end of the conditioning hood, the gas extraction installation comprising a pump setting the extraction rate, wherein the extraction rate is controlled on the basis of the input of the particle sensor.

8. System according to claim 7, wherein the particle sensor is provided in the annular duct.

9. System according to any of the preceding claims 1-8, wherein the conditioning hood has a concentric outer wall, intermediate wall and inner wall, the inner wall defining the spray chamber, the outer wall and the intermediate wall defining an annular outer duct and the intermediate wall and the inner wall defining an and inner annular duct;
a gas extraction installation in communication with the inner annular duct, configured to extract gas with residual atomised coating particles adjacent the output end of the conditioning hood, the gas extraction installation preferably comprising a pump setting the extraction rate; wherein preferably a particle sensor is provided in the annular duct;

a shielding fluid injection installation in communication with the outer annular duct, configured to inject shielding fluid to the outer annular duct which leaves the annular duct at the output end thereof, thereby shielding the spray chamber from the environment, the shielding fluid injection installation preferably comprising a shielding fluid pump setting the pressure of the shielding fluid;

wherein the gas extraction rate is controlled on the basis of the input of the particle sensor and/ or wherein the pressure of the shielding fluid is controlled on the basis of the input of the particle sensor.

10. Method for coating a surface of an object with a spray coating tool spraying atomised coating particles wherein use is made of a system according to any one of the preceding claims 1-9, comprising the steps of:

- mounting the spray coating tool at the coating tool mounting end, and
- positioning the output end in proximity of the surface of the object to be coated, and
- operating the spray coating tool to spray atomised coating particles which travel from the coating tool, through the spray chamber and the output end to the surface of the object, and during operation of the spray coating tool detecting the particle size and/ or particle density,
- controlling the coating material flow rate and/ or the carrier gas flow rate on the basis of the data of the particle sensor.

11. System for coating a surface of an object with a spray coating tool spraying atomised coating particles, for example paint, comprising

a conditioning hood defining a spray chamber and having

- a coating tool mounting end,
- an output end opposite the coating tool mounting end, which output end is configured to be positioned in proximity of the surface of the object to be coated,

wherein in operation:

- the spray coating tool is mounted at the coating tool mounting end, and
- the output end is positioned in proximity of the surface of the object to be coated, and
- the spray coating tool is operated to spray atomised coating particles which travel from the coating tool, through the spray chamber and the output end to the surface of the object,

a carrier gas installation in communication with the coating tool mounting end of the conditioning hood or with the coating tool, configured to provide a carrier gas that in operation carries the atomised coating,

wherein

the conditioning hood has three concentric walls, namely outer wall, intermediate wall and inner wall, the inner wall defining the spray chamber, the outer wall and the intermediate wall defining an annular outer duct and the intermediate wall and the inner wall defining an and inner annular duct,

a gas extraction installation in communication with the inner annular duct, configured to extract gas with residual atomised coating particles adjacent the output end of the conditioning hood,

a shielding fluid injection installation in communication with the outer annular duct, configured to inject shielding fluid to the outer annular duct which leaves the annular duct at the output end thereof, thereby shielding the spray chamber from the environment.

12. System according to claim 11, wherein the conditioning hood has an essentially conical shape with the coating tool mounting end of the conditioning hood at a side of the hood with a relatively small opening, and the output end of the conditioning hood at a side of the hood with a relatively large opening.

13. System according to claim 11 or 12, wherein the three concentric walls of the conditioning hood are provided are parallel to each other.

14. System according to any of the preceding claims, wherein a spray chamber adjustment mechanism is provided for adjusting the distance d_i between the surface of the object and the inner wall defining the spray chamber at the output end of the conditioning hood.

15. System according to any of the preceding claims, wherein an outer wall adjustment mechanism is provided for adjusting the distance d_o between the surface of the object and at least the outer concentric wall at the output end of the conditioning hood.

16. System according to any of the preceding claims, further comprising a particle sensor provided in the spray chamber detecting the particle size and/ or particle density, and a central control system communicatively connected to the particle sensor and to the coating material supply and/ or the carrier gas injection installation, for controlling the coating process

based on input data from the particle sensor, such as the coating material flow rate and/ or the carrier gas flow rate.

17. System according to any of the preceding claims, further comprising a carrier gas injection installation, configured to inject a carrier gas.

18. Method for coating a surface of an object with a spray coating tool spraying atomised coating particles, wherein use is made of a system according to any one of the preceding claims 11-17, comprising the steps of:

- mounting the spray coating tool at the coating tool mounting end, and
- positioning the output end in proximity of the surface of the object to be coated, and
- operating the spray coating tool to spray atomised coating particles which travel from the coating tool, through the spray chamber and the output end to the surface of the object.