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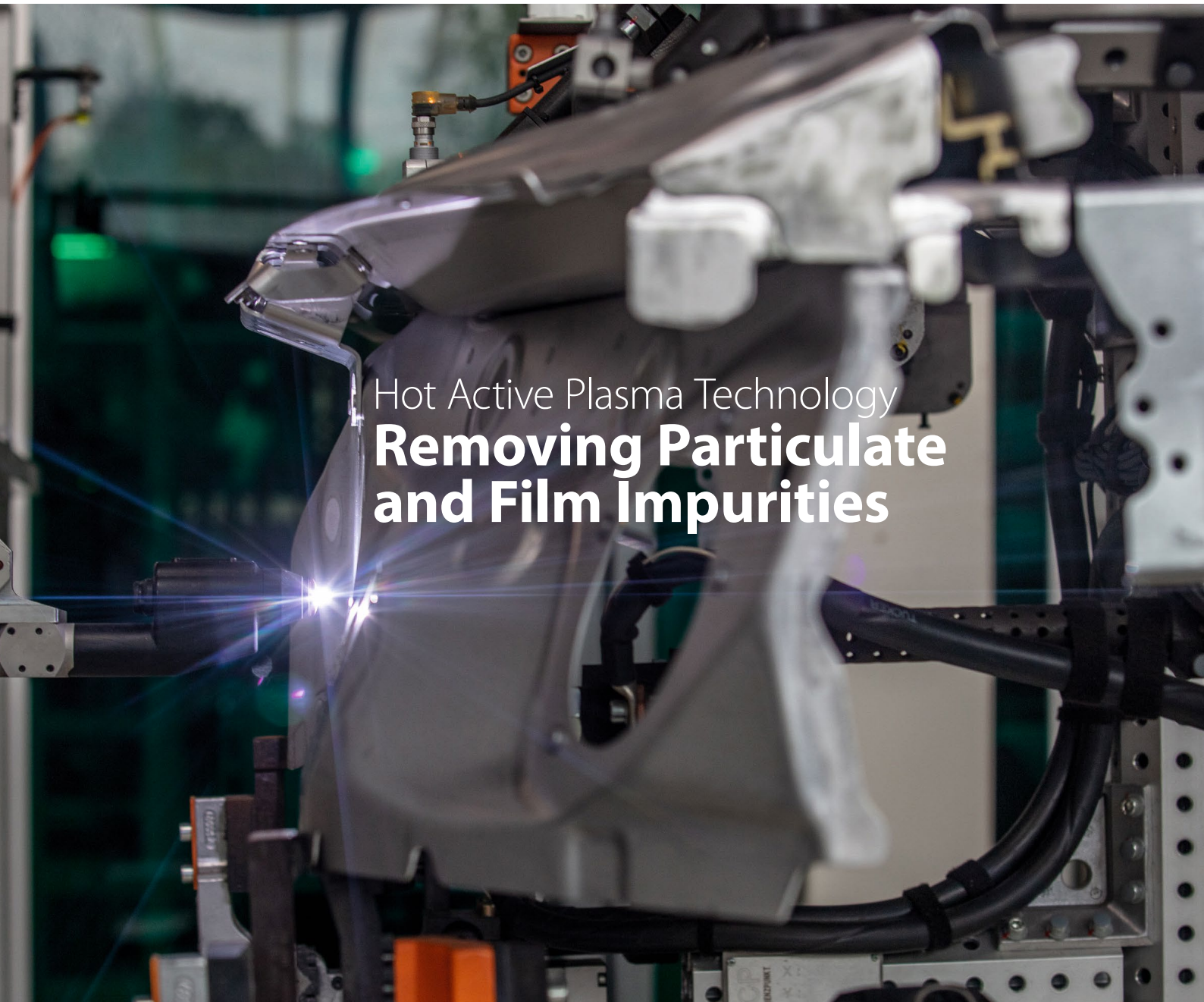

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In Eleven Steps to Properly Coated Objects

Beside technical details, economical and qualitative aspects play important roles in coating processes and shouldn´t be neglected. To disregard these aspects can have negative effects on the process reliability and cause unnecessary expense. This essay points out eleven steps to optimise coating processes.

Michael Ruppik

An optimal coating process must always be understood in its entirety, because it has to satisfy economical and technological needs as well as the quality of the coating. Coating processes can be optimised, if the eleven Steps (*Figure 1*) are followed strictly. Unfortunately many companies don't pay these steps much attention or ignore them completely. This bears very often negative effects on the process reliability and leads to unnecessary expenses.

Although the amount of time and effort to follow all the steps seems to be high, but experience shows that the necessary amount of time and effort is much less than expected, if the planning process of the eleven steps is repeated and becomes routine. A very good documentation of procedures and processes as well as the collected knowledge about products, requirements, vendors, required resources or technological requirements allow better calculation of coating costs and the amount of time needed in coating processes. Based on this reliable information every single step of planning and factoring processes can be optimised precisely and the current costs can be reduced.

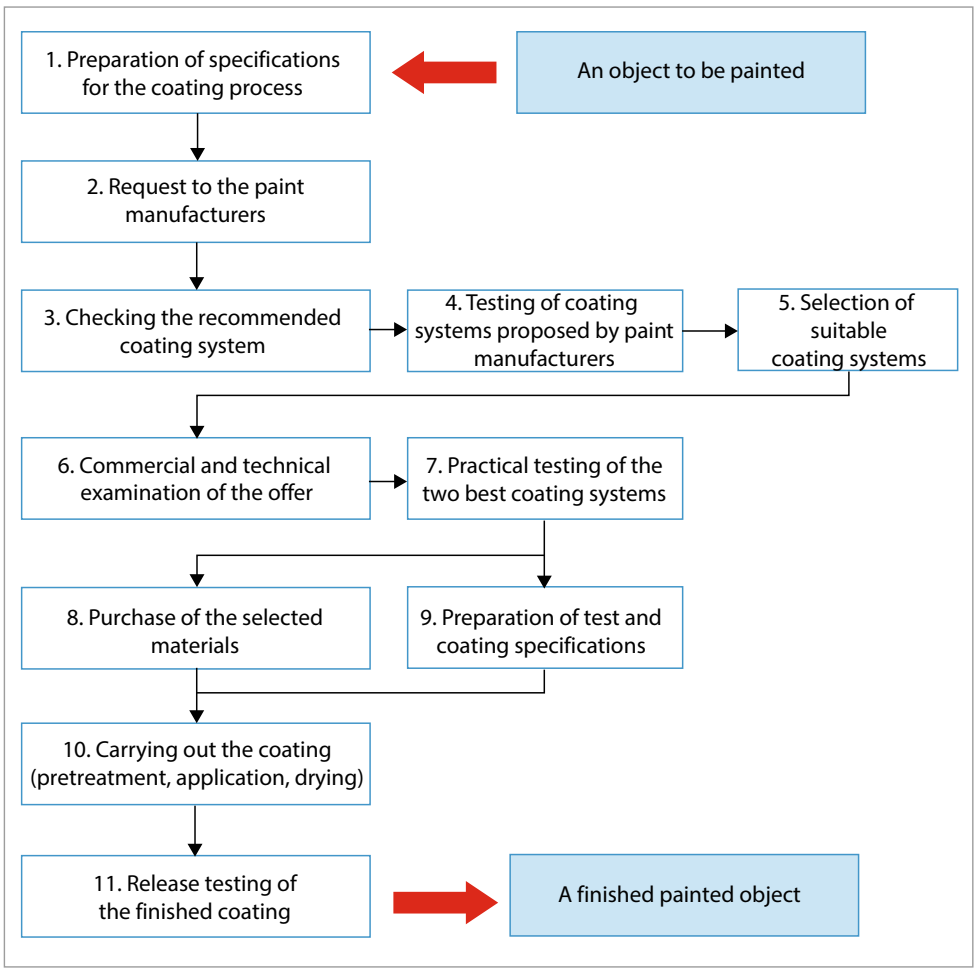

Figure 1 > The eleven steps of the coating process.

Specification sheet

Every coating process begins with an uncoated object und some ideas about the

purpose of the coating. All characteristics the intended coating must fulfil can be summarised in four groups of requirements:
a) Design specifications of the object / construction itself:

- Of which material consists the object?
- Where will the object be attached and which strains must it endure?
- Which additional requirements are requested?

b) Technical requirements concern the technical properties that the finished applied coating should fullfil:

- Anticorrosive requirements
- Which mechanical stress has the coating to endure?
- Which chemical resistance is required?
- Which resistance against atmospheric influences is necessary?
- Other possible requirements

c) Decorative requirements are important, if the surface of an object is visible permanently or an object will be attached in visible areas:

- Colour shade
- Gloss
- Surface structure

d) The technical equipment and law can limit the possible coating systems:

- Current possibilities of pre-treatment
- Existing coating equipment
- Existing coating and drying options
- Compliance with legal requirements

All the requirements and conditions the coating system has to satisfy are notified in the specification sheet. The specification sheet builds the strict fundament for every following step.

Request to the paint manufacturers

On the search for appropriate coating systems the specification sheet is fundamental for the paint manufacturer. Based on the specification sheet paint manufacturers can ideally offer a coating system that satisfies all the requirements. If there isn't any appropriate coating system available that satisfies all requirements, the requirements must be prioritised to find a coating system closed to the specification sheet.
A well build specification sheet prevents frequent query. This step compares the requirements mentioned in the specification sheet with the possibilities of the paint manufacturer. The product price will be discussed at a later date.

Checking the recommended coating system

In the next step it should be checked, if the recommended coating systems fits to the requirements of the specification sheet. That means, paint manufacturers have to prove all product properties and

have to deliver all the documentations like test results, technical data sheets, safety data sheets, necessary approvals and external tests.
The receivables of the recommended coating system concerning pre-treatment, application parameters and conditions of drying will be extracted from the documentation delivered and the coating system will be tested on the current production line.

Testing of coating systems proposed by paint manufacturers

After all the coating systems the paint manufacturer recommends have been compared to the specification sheet two at most four of the best fitting coating systems should be chosen. That means, either these coating systems match best to the requirements of the specification sheet or they offer a technological advantage. Thereafter the chosen coating system will be proved economically and a quote request will be made.

Selection and request for quotation

After all coating systems proposed by the paint manufacturer have been compared with the specifications, two to four systems should be selected that best match the specifications or offer technological advantages. For this selection, the economic examination is then carried out in the following steps and the price quotations are obtained from the paint manufacturers.

Commercial and technical examination

The appraisal about the best offer is not only a matter of a price quote. Additional and following costs like transport, pretreatment, application and drying conditions must be taken into account. Very often the cheapest offer is not the best choice and turns out to be more expensive than a coating system with a higher price. Due to the total costs a more expensive coating system maybe the better choice.

Practical testing of the two best coating systems

Especially in large-scale projects is important to check the theoretical requirements of a coating system mentioned in technical data sheets in practical testing to avoid later problems in the production process. Furthermore the practical testing is fundamental for the later coating instructions given to the personal. The results of the practical tests replace the theoretical data of the technical data sheets.

Test instructions and sourcing of material

Based on the specification sheets and the results of practical testing will be established a number of test instructions. These test instructions contain the necessary information in which way and at which instant of time a coating will be checked and how the results will be documented. Additionally there are to assemble detailed coating instructions concerning material type, coating thickness, processing and application as well as drying time. These instructions will be handed over to the personal responsible for testing and coating processes.
Parallel to the tasks mentioned above the necessary materials can be procured. At less the amount of ordered materials should be big enough to carry out the currently planned coating processes. However the amount of ordered materials shouldn't too much, otherwise a lot of money will be trapped in the storage and causes additional storage costs. Due to practical experience the amount of stored materials should last for one month of production. Furthermore the decay time of the stored materials should be as long as possible.

Coating and release

This step next to last concerns the physical proceeding of the coating. If all the steps already mentioned are carried out precisely the necessary information is completely on hand and the materials are tested. In this case the coating process shouldn't cause any problems. Because the steps 1 to 9 have already taken care about possible problems like unsuitable materials, faulty technical Information, missing documents or admissions. Because the coating process is mostly one of the last production steps delays and problems concerning the quality can be previously avoided.
After the coating and drying process the coated object will be checked according to the test instructions. Only if the test results are satisfying the object is properly coated and the coating process ends.

Why so much effort?

The steps 1 to 8 optimise the coating process automatically with regard to technological requirements and economical aspects. Unfortunately many companies neglect these steps for saving costs and concentrate on step 10 only for optimising. Another advantage to carry out all steps concerns the process reliability. Because a lot of Information is collected and proved previously there is a very good documentation about coating systems on hand. This documentation helps to avoid or at less minimise risks as reclamations, coating problems and decay. Even the information delivered by a paint manufacturer is previously proved. To follow all the mentioned steps results in a stable and projectable coating process, increases the competitive ability and serves many unused economically advantage. //

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