

GSB NEWS
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Dear members of the GSB,

with the rest potential analysis you have the possibility to check the quality of a pre-treatment within a few hours.

We have prepared a small case study for you so that you can visualise the rest potential analysis (= RPA; also known as OCP = Open Circuit Potential) from an economic point of view.

Your GSB Team



Case Study RPA

Today's case study is intended to provide an overview of the use of the RPA from a purely economic point of view. For this purpose, we present exemplary scenarios. For this example, we compare the fictitious GSB coaters A (with RPA) and B (without RPA).^{*} In each of these scenarios, the pre-treatment line starts to deliver poor quality at different times. We calculate the amount of the product rejects for each scenario and compare coaters A and B.

Please note that for this case study we have made some assumptions for simplification.

The Starting Situation

Both companies coat 2,800 m² of aluminium profiles per day and run a two-shift operation. In our example we assume 16 working hours (2x 8 h) per day in which coating takes place. Both coaters are located in the fictitious country C. There are no public holidays and work is done from Monday to Friday.

Furthermore, we neglect interruptions due to preparation times and assume that both coaters coat the same amount of surface in each of the 16 h per day (2800 m²/16 h = 175 m²/h).

Both companies are GSB Master Coaters without an additional seal. Both companies are completely identical. There is only one difference:

→ Coater A carries out the RPA twice a week as an additional recommended process control in accordance with GSB recommendations.^{**} This takes place after 40 h of production time (1/2 working week). It takes 4 h from the time the samples are taken until the results of the RPA are available.

→ Coater B is inspected unannounced once every six months as part of the regular GSB monitoring inspection. The samples for the corrosion test are taken during this inspection. We assume that for coater B the period between taking the samples for the corrosion tests is exactly 6 months. Furthermore, it takes 6 weeks until the results of the corrosion tests are

available.

Scenarios: Best Case, Worst Case, Middle Case

For our case study, we now calculate the coated surface that is wasted for 3 scenarios:

Scenario 1 (Best Case):

With both coaters, the pre-treatment line starts to produce poor quality. **Immediately after** the occurrence of the quality deficiency in the pre-treatment line, the samples for the RPA are taken at coater A. At coater B, the samples for the corrosion test are also taken **immediately after** the occurrence of the quality deficiency as part of the GSB monitoring test.

In summary, this means that in both cases the time between the occurrence of the quality deficiency and the drawing of the samples is minimal.

Scenario 2 (Worst Case):

With both coaters, the pretreatment line starts to produce poor quality. **Immediately before** the occurrence of the quality deficiency in the pre-treatment line, the samples for the RPA are taken at coater A. At coater B, the samples for the corrosion test are also taken **immediately before** the occurrence of the quality deficiency as part of the GSB monitoring test.

In summary, this means that in both cases the time between the occurrence of the quality deficiency and the drawing of the samples is maximum.

Scenario 3 (Middle Case):

For coater A, the pretreatment line begins to fail to produce the required quality 20 operating hours after the samples for the RPA have been drawn. For coater B, the pre-treatment line begins to fail to produce the required quality 3 months after the last drawing of samples for the corrosion tests.

In summary, this means: In both cases, the quality defect in the pre-treatment line starts exactly halfway through the production interval between the drawing of the samples.

Results

You can see the results in the table in the appendix.

As can be seen, in all scenarios the amount of coated surface that is wasted is **many times higher** if no RPA is carried out for quality assurance.

Do you have questions about the RPA?

If you have any questions about the RPA, please contact Mr Werner Mader:
werner.mader@gsb-international.de

*We would like to point out that we have intentionally presented the case study with fictitious companies and without calculating prices in order not to violate competition law. Furthermore, the values in practical use can differ significantly from company to company. The corrosion tests offered by some manufacturers of pre-treatment chemicals were not presented in the context of this case study and also cannot replace RPA due to the time intervals between the drawing of the samples.

**Cf. GSB AL 631-5 Coating Aluminium Section 2 - Technical Requirements Standard/Master/Premium in each case Point 9.2.3.

Editorial Office

Philipp Mader is looking forward to your questions and suggestions concerning the GSB

NEWS:

philipp.mader@gsb-international.de



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