

Optimizing an Electrocoating Pre-Treatment System



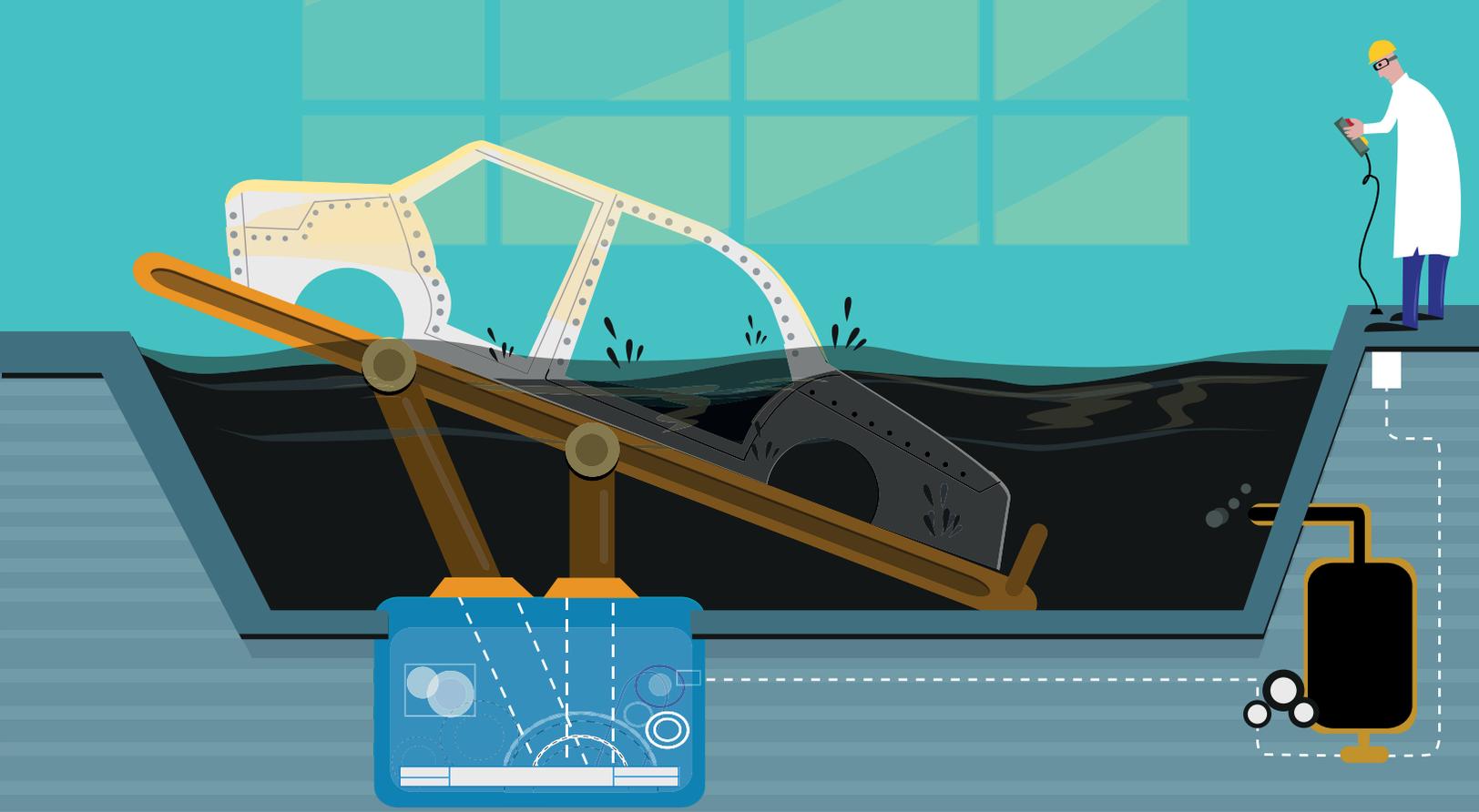
General
Manufacturing

Purolite® A103Plus
WBA Macroporous Resin

One of Germany's largest and most recognized manufacturers of luxury automobiles experienced a build-up of biological debris within the electro-coating pre-treatment process in one of their German production plants. The biologicals tainted the base layer ahead of the automotive coating, causing an unacceptably high percentage of defective products.



Purolite®



Challenge

One of Germany's largest and most recognized manufacturers of luxury automobiles experienced a build-up of biological debris within the electro-coating pre-treatment process in one of their German production plants. The biologicals tainted the base layer ahead of the automotive coating, causing an unacceptably high percentage of defective products.

The problem existed for a decade. In an attempt to remedy the problem, various maintenance and consulting teams made modifications to the plant, and "optimized" the system through the use of increased amounts of peracetic acid. As a result, the ion exchange treatment plant used an excess of caustic for regeneration (>400%). Additionally, the plant did not run efficiently, with an extended fast rinse of over 300 minutes.

The peracetic acid supplier (Brenntag GmbH) was aware of the problem, and worked to find a permanent solution. Although they were very familiar with the ion exchange systems and resins being used, they had limited knowledge of the scope and potential of ion exchange technologies. Brenntag does, however, produce a storable chlorine dioxide solution under license that does not contain free chlorine. They believed that this solution would be very effective at disinfecting biologicals without damaging the existing ion exchange resin. Unfortunately, because of the long history of production issues, the customer was not receptive to "testing" any new product that could further disturb the production process and do harm to the resin. The acid supplier needed some way to convince the manufacturer to try the proposed solution. Purolite was called in as a resin consultant because of our trusted relationship with Brenntag.



General Manufacturing

Purolite® A103Plus
WBA Macroporous Resin

Solution

Purolite reviewed the entire IEX system and regeneration procedure. It was determined that there was no need to replace the SAC resin, but the weak base anion exchange resin showed reduced capacity and long rinsing times. Purolite A103Plus WBA macroporous resin was chosen as a replacement due to its operating capacity and resistance to osmotic shock, as well as its ability to remove organic species and superior elution efficiency of organics during regeneration.

Working alongside the inventor of the chlorine dioxide solution, extensive laboratory tests were performed to demonstrate that contact time with an extremely strong solution (a concentration 10x greater than would ultimately be used in production) would not decrease capacity or damage the resin. Tests were run on the resin with the chlorine dioxide, with results indicating that the chlorine dioxide solution was very safe and did not affect the capacity or integrity of the resin nearly as much as peracetic acid did. After results were presented, the customer agreed to test the new solution in their production process.

Benefit

Purolite worked in close collaboration and partnership with multiple participants to ensure that the proposed new solution was workable, sustainable, and highly effective. Results of the new resin and chlorine dioxide solution were very successful. After a 4-week period, no treatments of peracetic acid were needed to control biologicals. The plant now runs at peak performance with excellent quality water and longer cycles and the number of defects resulting from the biological contamination within the coatings line has been eliminated.

Additionally, Purolite also developed a custom detailed technical training manual that described their Ion Exchange system. It included a description of each train (WBA and SAC), water analysis, regenerant operations and troubleshooting guidelines to help current and future plant operators recognize problems with the system before they begin to affect overall production.

Why Purolite?

Purolite is your ion exchange system partner. Our experience, technical knowledge, and resources will help you solve long-standing costly problems.

- Listen and collaborate
- Excellent communication
- Innovative
- Committed to discovering workable solutions
- Go the distance



Purolite®

Americas

150 Monument Road
Bala Cynwyd, PA
19004
T +1 800.343.1500
T +1 610.668.9090
F +1 484.384.2751
Americas@purolite.com

Europe

Llantrisant Business Park
Llantrisant
Wales, UK
CF72 8LF
T +44 1443 229334
F +44 1443 227073
Europe@purolite.com

Asia Pacific

Room 707, C Section
Huanglong Century Plaza
No.3 Hangda Road
Hangzhou, Zhejiang, China 310007
T +86 571 876 31382
F +86 571 876 31385
AsiaPacific@purolite.com



Australia
Brazil
Canada
China
Czech Republic
France
Germany
India

Indonesia
Israel
Italy
Japan
Jordan
Kazakhstan
Korea
Malaysia

Mexico
Poland
Romania
Russia
Singapore
Slovak Republic
South Africa
Spain

Taiwan
Tunisia
Turkey
UK
Ukraine
USA
Uzbekistan



Purolite—the leading manufacturer of quality ion exchange, catalyst, adsorbent and specialty high-performance resins—is the only company that focuses 100% of its resources on the development and production of resin technology.

We're ready to solve your process challenges. For further information on Purolite® products and services, visit Purolite.com or contact your nearest Technical Sales Office.

© 2016 Purolite
All rights reserved.
P-000094-100PP-1216-PCO