

Case Study

How Beckers supports switch from post-painted to precoated steel for Domestic Appliance



Introduction

Precoated steel offers massive advantages over post-painting in the production of major home appliances. Both more sustainable and more attractive than post-painted material, precoating also offers consistent quality, a wide range of design options, and opportunities for operational streamlining and cost savings.

Already widely used for casings and fronts, manufacturers are actively investigating options to switch to precoated where post-painting is still being used.

Project overview

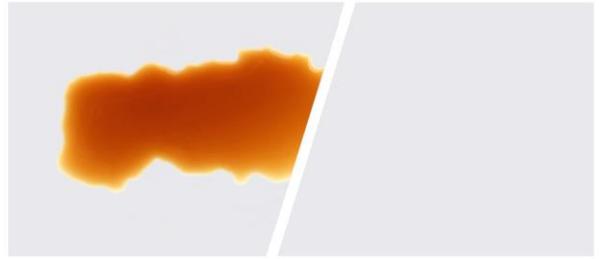
One of the major Domestic Appliance OEM has always strived to be at the forefront of sustainability in society through their solutions and operations.

In 2021, they started a project switching from post-painting to precoated steel for production of refrigerators at one of their European factories. Their supplier, a leading European coil coater became their dedicated supplier for precoated steel and Beckers was awarded the opportunity to supply topcoats for this project.

Project challenges

- Precoated steel offers opportunities for operational streamlining and cost savings but also requires adaptations in handling and production processes. In the described case there was no need for design changes but adjustments to the machines and tools on the production floor were necessary.
- The precoated material had to be laboratory approved and tested on the production line.
- Laboratory approval requires passing a set of rigorous tests including mechanical, chemical, UV and corrosion resistance, as well as resistance for stains from foodstuff.
- Average film thickness of standard two layers coil coating system for DA is 25 μm , which is considerably less than a typical powder coating system. Additionally, coil coatings systems must ensure perfect adhesion and formability as forming of the final shape of the product is done on already painted material.

- Compared to typical powder post-painted systems, which are much thicker and don't require such good adhesion and flexibility, matching results for foodstuff stain resistance is more challenging.
- In the project, Beckers was to supply two shades: White and Grey. The Grey had no problem fulfilling all requirements. The White, however, struggled with stain resistance for the most demanding foodstuff (such as mustard). A standard DA quality wasn't sufficient, so we had to develop a new tailor-made solution in short time.



Coffee stain before and after removal following 72 hours at room temperature.



Solutions offered

- The development and approval is usually a time consuming process requiring multiple testing at coil coaters' and end-users' sites. For this project, the coil coater accepted our proposal to work in one team together with the end user. This direct approach allowed for quick exchange of information, clarification of requirements, review of results and approval of proposals.
- The DACE team, our Domestic Appliance Center of Excellence laboratory in Dormagen, quickly came with a proposal for a new quality of topcoat. It was preliminary tested in our laboratory, and after presentation of results to our partners, it was tested in the OEM approving laboratory. In the next step, coils were painted on line on site and sent for testing on production line. At same time, samples cut from coils were used for final testing in the OEM approving laboratory.

- Finally, the precoated steel painted with the new quality of topcoat Beckry®PoI 3500 DA was successfully approved for production of casings and fronts for different types of refrigerators.

Product overview

- Beckry®PoI 3500 DA is a polyester crosslinked with amino resin coating, which is distinguished by exceptional stain resistance. In combination with Beckry®Prim 243 TU or Beckry®Prim 3510 DA (orange peel) it is recommended for the cold segment of the domestic appliance market (Beckry®Frost product range for refrigerators, freezers), while with Beckry®Prim 251 DA it is suitable for the wet segment (Beckry®Wash product range: dishwashers, washing machines).

Customer Benefits

- More sustainable material : Life Cycle Analysis conducted by Anthesis Consulting Group (copyright of the European Coil Coating Association), confirmed that precoated steel (coil coated) has lower environmental impact in all categories than powder post-painted steel. This is due to high efficiency of coil coating process which uses:
 - Less energy during paint application
 - Less paint
 - Less intensive pretreatment
- Elimination of supporting manufacturing process (post-painting) and connected to this, exposure to environmental and fire hazards
- Lean production setup, freeing production area
- Extensive quality control on supplier's site
- Material fully conforms with quality requirements
- Quick development, testing, approval and implementation process



Domestic appliances furniture

- Beckers is a global coatings supplier that offers products, logistics and service for your entire range of domestic appliances – always with a strong focus on sustainability and product development in collaboration with our partners and customers.

Conclusion

- Close cooperation between Beckers, Coil coater and the OEM teams allowed for development and application of solution in short time.
- Direct and inclusive communication ensured quick progress and increased level of trust that helped to avoid traps and delays in the process.