



Tata Autocomp Systems and Soujanya Color have partnered to develop flowable colourants that are easy to mix and reduce time and cost of fabrication processes.

## THE CONTEXT



Tata Autocomp Systems found that the unavailability of good quality pigments created a challenge in the colouration of auto composite parts during fabrication processes such as sheet moulding compound (SMC), DMC, RTM, pultrusion etc. The issue was that existing pigments are thick in viscosity and difficult to mix with the composite resin matrix. The thicker consistency of colourants also led to other issues such as higher process cycle time, limitation of batch sizes, difficulty in colour changeover, and the need to thoroughly cleanse the vessel and production line to avoid colour contamination of the next batch. Also, a large amount of cleaning solvent is required to clean the vessels and machinery, resulting in the generation of waste solvent.

## THE INNOVATION



The idea of developing flowable colourants emerged during brainstorming discussions between the Tata Autocomp Systems and Soujanya teams. The project was taken up in the Soujanya laboratory and the TACO team helped in creating a better understanding of the SMC fabrication process and the type of colourants needed.

Pigment pastes used in SMC applications are thick in consistency and difficult to mix with the SMC compound. The flowable colourants developed by the team are easy to mix – the colourants can be mixed on-line with the resin and do not require prior mixing. The benefits of the innovation are reduction in cycle time and saving on costs. The new colourants are environment-friendly and there is a reduction in cleaning solvent use. It also enables quicker product changeover and faster order service.

## KEY CHALLENGE



### COMPATIBILITY

The big challenge was identification of a suitable liquid carrier for pigment dispersion that was compatible with SMC resin. Another constraint was meeting the rheology profile requirements of the SMC compound. This led to a delay in optimising the colourant design. To overcome these challenges, the chemical compositions of various resins, liquid carriers and surfactants were carefully studied. A careful and optimised blend of various ingredients successfully resulted in the development of liquid flowable colourants. During the process, joint trials were undertaken by both teams. The new pigment pastes were then validated by the TACO team for suitability.

## THE IMPACT



Tata Autocomp Systems has benefitted through successful implementation of on-line colourant mixing in the SMC manufacturing line.

There has been a cost saving of almost

**₹0.15 CR PER MONTH**

as well as other benefits such as cycle time reduction, faster order service, reduction in cleaning solvent use, quicker changeover, etc.