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“PRODUCT JOURNEY FROM OEM TO

We come across many of the plastic components in each and every Automotive, but it is very interesting to know about the journey of manufacturing any automotive plastic component right from the concept designing at 'Original equipment manufacturer (OEM)' to final product in customer hand.

OEM Design team initially design 'A surface' (surface which is visible to end user) and set each product's requirements like, function of a product, Aesthetic requirements, mechanical and electrical properties, fire redundant, life cycle, environment condition (moisture, heat, exposed to Sunlight) etc.

Next stage is, OEM finalize tier 1 supplier who are experts in their own field like lighting system, locking system, switches, mirrors,

instrument panel, seating system, etc. OEM share each product's requirement to related tier 1 supplier.

Tier 1 supplier further design the product which involves plastic parts, PDC parts, sheet metal and electronic parts as per OEM's requirements. Normally softwares like Catia, NX, Creo, solid works etc. were used for this. Same design is shared with OEM for reviews and iteration if required. Finalize 3D data next moved to RPT (rapid prototype) to validate design. Again at this stage modifications had done as and when required.

Software based 'MOLD FLOW ANALYSIS' carried out to check various parameters like, runner system, injection pressure volumetric shrinkage, sink mark, warpage, Air trap, weld lines, share stress, cooling time, etc for each plastic molded component.

Final design is further released to tool room for mold manufacturing. Further to this mold's 3D generated using same software like Catia, NX, Creo, etc. Detailing and 2D drafting on software like AutoCAD. All this mould design is released to mould manufacturing team.

Raw material procurement is done as per the drawing and the conventional machining is done which is followed by hardening process. The profile machining of core and cavity plate using VMC, EDM and Wire cut is carried out after hardening. After inspection of all olds parts they moved to Mould Assembly. Mould trial done on appropriate moulding machine to get moulded plastic part. This moulded part further inspected with respect to the drawing given by product design team. Instrument like, digital VC, Height Master, Profile projector, CMM, VMM were used for this. Number of dimensions correction done on mould to achieve satisfactory dimensions level.

This plastic part further send to Product sub assembly department. Initial assembled product sent to OEM for review, inspection and to check function of part with vehicle. If any abnormally observed here then further minor modifications done to product. Now this OEM approved part further send to endurance testing. Here actual number of cycle done with the part in it's entire life in various conditions.

After this Part production approval process is done at supplier end to sign off Part submission Warrant (PSW) which can be considered as the authentication of eligibility to supply part to customer.

This entire process right from the beginning of design till the PSW takes minimum 6 moths to maximum 24 months span depending on the complexity. It concludes that any product you see in market for sell is having near about 24 to 30 months back journey to reach in customer hand.