# Codesign - bridging Design with Manufacturing

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The Co-Design workflow is embedded in ProCAST 2020 onwards, this tool is enabling designers within Rolls-Royce to analyse designs within 10 minutes, support Design for Manufacture (DfM) reviews and enable faster diagnoses of issues in manufacture.

ProCAST is utilized for cost saving in casting within Rolls-Royce for the past +20 years in our Turbine Blade Facility (TBF). Outside of our TBF, lots of large static components also require high quality casting which is manufactured in our supply chain, but here lies an important problem: how do we make our designs castable without knowing the supplier's IP surround the casting process? Co-Design has given Rolls-Royce the ability to analyse a given geometry within 10 minutes to highlight problem areas just by analyzing the geometry thickness. If the user wishes, they can continue to produce a full solidification analysis of the design (without gating, feeders etc.) to understand the potential level of porosity across the part. With this knowledge early in the design process, the designer is able to make comparisons to previous designs, mitigate high risk porosity areas and offer the information at preliminary discussions with suppliers.

This presentation runs through the Co-Design process, discusses the required inputs and given outputs at various stages and shows how this can be used in reality with an example component which is currently fabricated from sheet but is now potentially going to be cast to reduce component cost.

Co-Design has enabled Rolls-Royce to take a good step forward into embedding casting analysis of our components at very early stages of design with little additional work for designers and manufacturing engineers, whilst saving large amounts of rework later in the manufacturing stages.