

Success Story

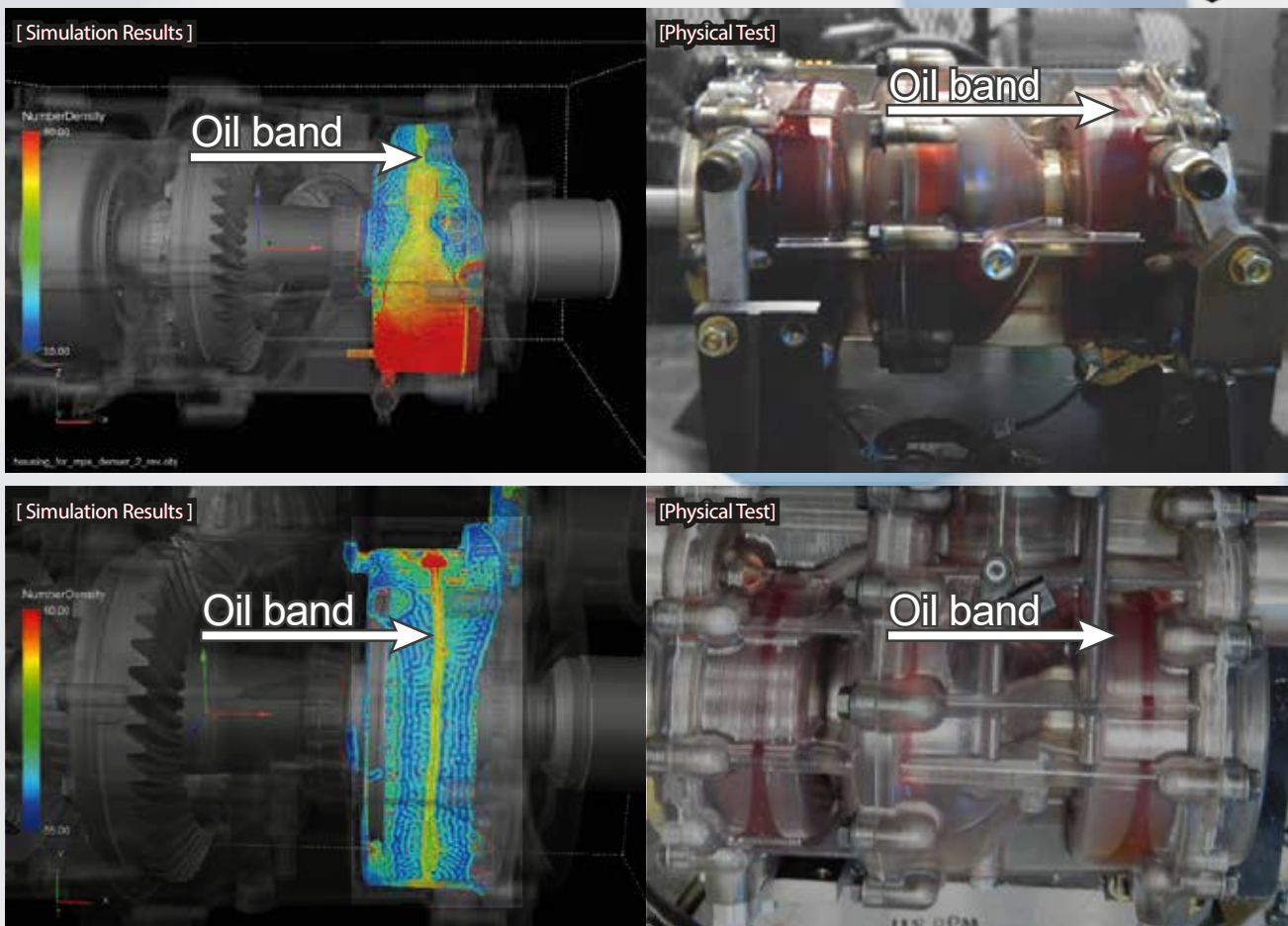
Dana Incorporated

New Validated Approach for Advanced Design of Powertrain using the Cutting-Edge Simulation Technology

Dana Incorporated is a valued automotive powertrain supplier because of the capabilities and value of their products. The Advanced Methods group at the Dana Technical Center looked for innovative technology that can be used in the engineering and design process for their products. In 2015, they evaluated the ability of **Particleworks** to predict the accumulation of oil on the surface of a rotating component within one of their axle assemblies.

Particleworks is able to predict the oil accumulation on the spinning wheel on the right side of the axle assembly (top images are the side view, bottom images are the top view), with quite good matching the behavior in the actual physical test.

* Corelation of Oil Accumulation on Surface of a Rotating Wheel

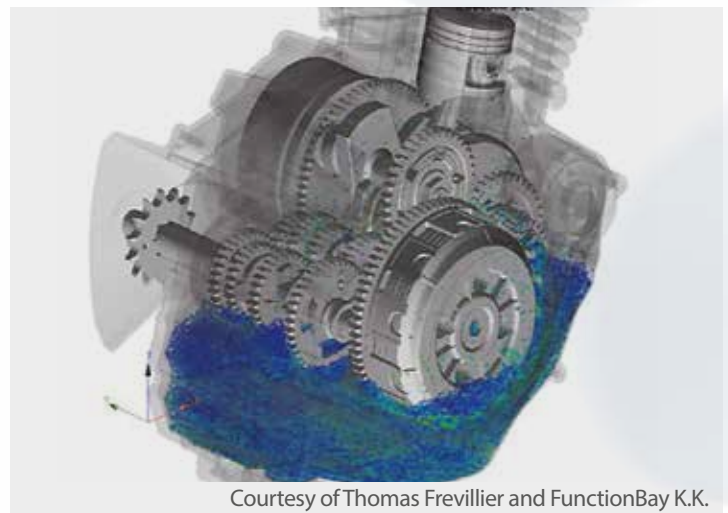
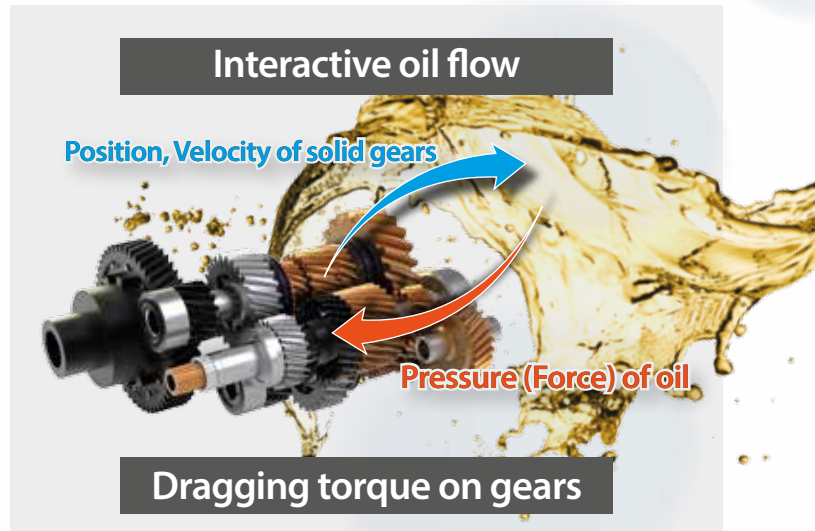


'Spicer Axle' Courtesy of Dana Incorporated

Particleworks can also be interacted with RecurDyn which is a best simulation tool for multibody dynamic analyses, resulting in a fully-coupled simulation method that accurately evaluates the interactions between the fluid and the moving components in the mechanical assembly.

No matter how complex interaction there is among parts and fluid, it can be successfully calculated and estimated giving reliable information for CAE experts as well as design engineers with a fancy and easy-to-use user interface.

This new technology of simulation will give advantages in designing powertrain assemblies like engines, transmissions, drivelines, and axles which contain fast and sophisticated moving components interacted with viscous oil inside them. Through this methodology, designers can clearly see through cases and understand how oil flows being affected by inner parts. Along the way, precise estimation of dragging loss at each gear and shaft due to oil viscosity can be done through seamless 2-way coupling interface between multibody dynamics simulation software – **RecurDyn** and particles-based flow analysis software **Particleworks**.



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