ARUN SHANKAR SHANMUGASUNDARAM

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EXPERIENCE

Mechanical Engineer – NetGroup Engineering (Greensboro, NC) — Aug 2018 – Present

NetGroup is an engineering service company working with Volvo and Mack Trucks, providing expertise in the field of automotive design

Volvo VNR Electric (Class-8 Electric Truck)

- Completed packaging and design of 42 components for Volvo's VNR Electric across the areas of powertrain cooling, air management and high voltage grounding using Sheet-metal, Cabling and Piping modules of Creo. Generating detail drawings with extensive GD&T
- Participated in prototype builds and cross functional design reviews to ensure that all designs were compliant with the requirements from assembly requirements and legal requirements of Federal Motor Vehicle Safety Standards
- Completed timely release of design and product structure from prototype to production. Participated in RTS with suppliers to fine tune manufacturability, ensuring timely delivery of quality parts to complete builds and meet the deliverable deadlines of Volvo's $44.8 Million funding from California Climate Investments

Brake Hose Routing & Clipping Re-Design

- Implemented improved rear service & park brake hose routing scheme addressing driveshaft proximity on 6x4 trucks with air suspension
- Designed a multi-function bracket to work across 6 configurations of brake valves and cross-members to mount brake valves and provide clipping points for brake lines away from the driveshaft
- Incorporated new routing scheme to standardize brake hose P/N's across 3 bogie spreads resulting in a 33% reduction in P/N variation in the most popular suspension offering (~12k trucks/year)
- Developed a virtual articulating model of the bogie to simulate brake hose flex in suspension jounce and re-bound

Chassis Layout Generation for Mack Trucks Customer Adaptation

- Developed chassis layouts for Mack TerraPro, Granite, Anthem and LR in CAD for use by after-market body builders
- Worked with sales engineers to arrive at optimal packaging of chassis equipment and maximize on-frame space for body builders
- Implemented a PDM/PLM search strategy to reduce the time taken to complete complex multi-steer, multi axle layouts by 60%

Engineering Intern – ZF Industries (Gainesville, GA) — Aug 2017 – Aug 2018

The ZF plant in Gainesville assembled hydrodynamic transmission systems for construction machinery and CV axle assemblies (front & rear)

Assembly fixture and tool designs

- Lead efforts to maintain 3D printed palettes for gear pre-assembly stations covering 20 different BOM's. Performed RCA on palettes with high wear rates and modified stereolithography parameters to optimize material usage while resolving issue
- Designed and developed a standardized assembly fixture for use across 3 BOM's of CV rear axles with varying casting geometries, reducing cycle time involved in switching out fixtures. Performed static load FEA using Creo Simulate to optimize design
- Designed a screw on alignment tool to locate CAT final drive housing over 8 studs & achieve uniformly sealed contact with mating face

Standardized Work & integration with HMI

- Developed Standardized Work instructions for 50 BOM's across 5 families of transmissions & integrated data on a Siemens HMI system
- Introduced the usage of CAD models as a visual aid in HMI's for improved operator understanding of assembly process
- Designed multiple tool fixtures with integrated sensors to assist automatic workflow validation on HMI's in accordance with PFMEA's

Engineering Intern – Ashok Leyland (Chennai, India) — Jun 2015 – Jul 2015

Ashok Leyland is the second largest manufacturer of commercial vehicles in India

Fuel Pump Spill Time process automation

- Developed work fixture to allow process automation of spill timing in Bosch in-line fuel injection pumps used in 6-cylinder diesel engine
- Work fixture allowed for improved ease of alignment between fuel pump & actuating stepper motor through the use of spring-loaded alignment pins. Provisions for proximity & diffuser sensor integration were made available to automate alignment validation & spill cut
- Analyzed data pertaining to process errors and impact on cycle times for sub-assembly and main assembly stations
- Automated setup helped reduce average cycle time by 18.6% and process errors by 14.5%

EDUCATION

Master of Science in Mechanical Engineering | Clemson University [SC] — Aug 2016-May 2018 | GPA: 3.54/4

Bachelor of Technology in Mechanical Engineering | SRM University [India] — Aug 2012-May 2016 | GPA: 8.23/10

TECHNICAL SKILLS

CAD	Creo Parametric (Pro/E), Catia V5, Solidworks
SOLVERS & CAE	MSC Adams, Creo Simulate, COMSOL Multiphysics, Fortran
PDM	KOLA (Volvo), Axalant (ZF)
PLM	Windchill (Volvo), Teamcenter (ZF)