CULLEN CROTT

Manufacturing Engineer | Aerospace & MRO Operations | Process Development & Quality Systems
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SUMMARY

Manufacturing engineer with 6+ years in production and MRO for the GE Honda HF120 Turbofan — AS9100 / FAA Part 21 & 145 certified environment. Experienced in RCCA, work instruction authoring, tooling design, supplier qualification, OEM technical liaison, and new capability launches. Pursuing M.S. Mechanical Engineering (NC State); seeking to bring certified aerospace manufacturing expertise to a team scaling new production capabilities.

CORE COMPETENCIES

FAA Part 21/145 & AS9100	IFS ERP & Solumina MES	GD&T Interpretation & Creation
Work Instructions & MBOM	Data Analysis (Python, SQL, MATLAB)	Business & Technical Proposal Dev.
Cross-Functional Collaboration	Root Cause & RCCA	CATIA V5 & Creo CAD Design

PROFESSIONAL EXPERIENCE

Honda Aero LLC — Manufacturing Engineer *Burlington, NC | Jan 2020 – Present*

Production and MRO engineering for the GE Honda HF120 Turbofan Engine — AS9100 / FAA Part 21 & 145 environment.

Tooling, Work Instructions & Quality

- Managed MRO supplier coordination: confirmed capability against HF120 Overhaul Manual and GE Standard Practices, issued task packages, created purchase requisitions, and ensured FAA/EASA 8130 return-to-service compliance.
- Led RCCA investigations including suspect hardware resolution on the Hot Flow Stand & Fuel Nozzle system — full shutdown to operational recovery.
- Supported FPMU new capability launch (Rolls Royce part transfer): created 3D tooling models from original drawings, managed 3D print validation and supplier fabrication, and structured MRO work instructions for IFS/Solumina integration.
- Led full fuel nozzle engineering change lifecycle — problem identification through CID approval to production implementation — recovering non-conforming low-flow inventory and updating laser marking programs.

Process Improvement & Work Cell Optimization

- Led MRO Cleaning Room Renovation end-to-end — managed sub-$100K capital budget, built cost-benefit analyses across 3+ options, secured leadership funding approval, and delivered 50% downtime reduction and improved technician safety.
- Implemented physical and digital tools enabling MRO to consistently achieve 45-day (unscheduled) and 15-day (HSI) turnaround KPIs.

Cross-Functional & Data

- Serve as technical liaison to GHAE engineers (US, Turkey, Japan) — initiating departure records for out-of-limits dispositions, providing production/MRO data packages, and advising on part selection for repair validation; work directly influences TAT for ~50 engines annually.
- Selected as MRO SME for HF120 TBO Extension project (3,750 → 5,000 hr target) — providing shop floor data, component wear analysis, and CMM/work instruction review to support global engineering decisions.
- Led MRO AGB feasibility study: analyzed CMM documentation and IFS ERP data to evaluate revenue potential; developed and presented business & technical proposal to leadership.
- Developed interactive dashboard to track HF120 rental engine fleet critical data and display key metrics — Time, Cycles, Preservation Dates, and Status.

BorgWarner Turbo Systems — Design Co-op *Arden, NC | May – Dec 2019*

- Modeled turbocharger components in Creo 2.0; created and edited GD&T engineering drawings. Performed full teardown and failure analysis on Ford EcoBoost turbochargers.

EDUCATION

M.S. Mechanical Engineering — NC State University, Raleigh, NC (Expected Dec 2029)

Relevant Coursework: Mechanics of Composite Materials — laminate plate theory, failure theories, and manufacturing techniques for fiber-reinforced composites

B.S. Mechanical Engineering — UNC Charlotte (May 2019) | FSAE Team Member 3 years — chassis fabrication, engine/wing/suspension mounting systems

CERTIFICATIONS & TECHNICAL PROFILE

Regulatory: AS9100 QMS, FAA Part 21 & 145 (6 years applied) • **CAD:** CATIA V5, Creo 2.0/3.0/4.0 • **Systems:** IFS ERP, Solumina MES • **Data:** Python, SQL, MATLAB

ACTIVITIES & TECHNICAL PROJECTS

1990 Nissan 240sx Resto-Mod: Blueprinted and assembled engine; modified engine oil and coolant routes to integrate and support turbocharger components; designed turbocharged fuel system (injector sizing, IAT/ethanol sensors, aftermarket ECU calibration); structural rust repair and subframe refurbishment including weld-in reinforcement plates, internal/external coating, and heim joint suspension components.