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Ann Arbor, MI 48108

Daniel K. Carabell, M.S.
Senior Staff Consultant

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Mr. Daniel K. Carabell is a Senior Staff Consultant with Engineering Systems Inc. (ESI). Mr. Carabell has over seven years of materials engineering and operations management experience using lean six sigma manufacturing principles. His technical expertise includes corrosion, environmental degradation of materials, fatigue and fracture, inspections, engineering data analysis, as well as characterization and analysis of polymers, metals and composite materials. He specializes in sand casting processing and heat treatment of lightweight metals, such as aluminum and magnesium.

Mr. Carabell's investigative background includes industrial and consumer products, automotive and recreational vehicles, medical devices, plumbing components, as well as oil and gas industrial equipment. He is experienced in failure analysis, metallurgy, materials processing, and material characterization techniques including optical microscopy, scanning electron microscopy (SEM), energy dispersive spectroscopy (EDS), Fourier transform infrared spectroscopy (FTIR), and X-ray diffraction (XRD).

Prior to working at ESI, Mr. Carabell worked in the aerospace industry as a six sigma black belt. In his various roles, he specialized in improving lightweight metal casting processing including tungsten inert gas (TIG) plug welding, heat treatment fixturing and processing, hot isostatic pressing (HIP), laser and white light dimensional scanning as well as 3D sand printing technology. He completed his bachelor's degree from the University of Michigan and his master's degree from the University of Illinois, both in materials science and engineering.

Areas of Specialization

Sand Casting Lightweight Metals (Aluminum and Magnesium)

Heat Treatment of Lightweight Metals

Metallurgy

Materials Processing and Characterization

Failure Analysis

Lean Six Sigma Manufacturing

Education

M.S., Materials Science and Engineering, University of Illinois, Urbana-Champaign, IL, 2016

B.S.E., Materials Science and Engineering, (Cum Laude), University of Michigan, Ann Arbor, MI, 2015

Continuing Education

Michigan P.E. – Metallurgical and Materials (passed October 9, 2024)

Center for Creative Leadership – CCL Boost for New Leaders 2021-2022

Certifications

Six Sigma Black Belt Certification – Minneapolis MN 2019

Professional Affiliations/Honors

American Society for Metals (ASM International)

Member, 2023 - Present

Failure Analysis Society (FAS)

Member 2023 – Present

Minerals, Metals and Materials Society (TMS)

Member, 2013-2015, Present

Material Advantage

Member, 2013-2015

Michigan Material Society – University of Michigan

Member, 2013-2015

Positions Held

Engineering Systems Inc., Ann Arbor, Michigan

Sr. Staff Consultant, 2023 – Present

Materials Science and Engineering Intern, 2015

Consolidated Precision Products, Minneapolis, Minnesota

Operations Manager, 2021 - 2023

CI Supervisor of Engineering, 2019 - 2021

Product Engineer, 2017 – 2019

Magna International Inc., Troy, Michigan

Research and Development Engineering Intern, 2016



Daniel K. Carabell, M.S.
January 2024

TRW Automotive, Livonia, Michigan

Materials Science Intern, 2014

KUKA Systems and Robotics, Sterling Heights, Michigan

Mechanical Design/Software Engineering Intern, 2013

Publications/Presentations

“Catastrophic Failure of a Brush Cutter Blade” **D.K. Carabell**, D.B. Brickman and E.R. Weishaupt
Presented at International Materials Applications & Technologies ASM’s Annual Meeting – IMAT,
Cleveland, OH, September/October 2024