Travis M. Frazier
Sr. Thermal Engineer
tfrazier@vertexaerospace.com

EDUCATION

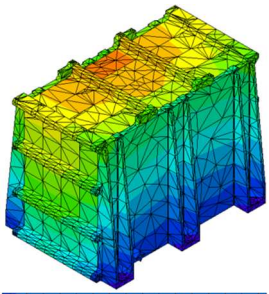
Sep. 2012 – Dec. 2013 **M.S. Mechanical Engineering**
University of California, San Diego, La Jolla, CA

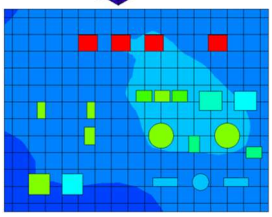
Aug. 2007 – Dec. 2011 **B.S. Mechanical Engineering**
Texas A&M University, College Station, TX

EXPERIENCE

April 2022 – June 2022 **IMAP MAG Electronics Box Thermal Analysis**
Southwest Research Institute (SwRI)

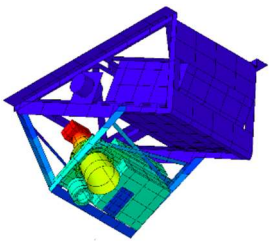
- Created Thermal Desktop and SINDA/FLUINT thermal model of the IMAP MAG Electronics Box and Boards from STEP CAD models and specification documents
- Researched components to determine junction to case (θ_{jc}), case to board (θ_{jb}) resistances
- Conducted operational worst case hot/cold steady state analysis
- Completed trade study to determine maximum power limits for some components with and without underfill
- Retrieved detailed radiation boundary conditions from IMAP spacecraft model and applied as boundary conditions in detailed box model
- Prepared detailed boards thermal analysis report per SOW for the IMAP MAG Critical Design Review (CDR)





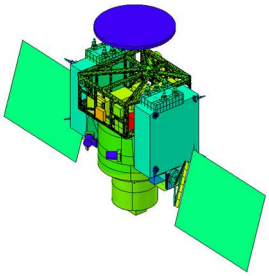
Mar. 2022 – Present **NIRVSS/XL-1 Thermal Support**
NASA/Ames Research Center

- Received latest NIRVSS thermal model from previous thermal engineer and compared to latest STEP CAD and specification documentation
- Received Masten XL-1 lander interface temperature and location data and applied as boundary conditions in thermal model
- Created more representative radiative boundary conditions by adding particularly adding lunar surface and lander deck to bottom
- Creating presentation package summarizing results and recommendations to customer



Feb. 2022 – Present **Khon Lunar Satellite Thermal Support**
York Space Systems

- Created Thermal Desktop and SINDA/FLUINT thermal model of the Khon lunar satellite and its payloads from STEP CAD models and specification documents
- Developed and analyzed worst case hot/cold thermal environments based on orbit and satellite orientation
- Presented analysis results and assumptions to the customer for Preliminary Design Review (PDR)
- Made updates to thermal model based on new CAD geometry, trajectory, and MEL information in preparation for Critical Design Review (CDR)



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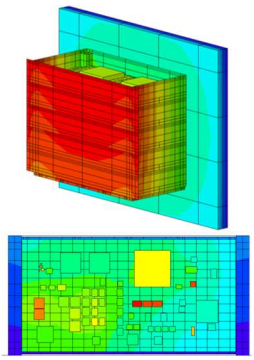
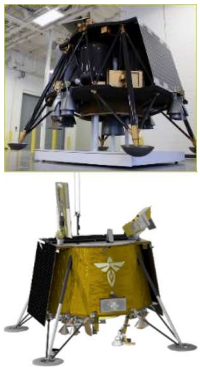
Jan. 2022 – Present **CCRS RSCE Box Thermal Support**
NASA/Goddard Space Flight Center

- Updated Thermal Desktop and SINDA/FLUINT thermal model of the CCRS (Capture/Containment and Return System) RSCE Box and Boards based on specification documents
- Conducted operational worst case hot/cold steady state analysis
- Advised which components needed underfill in order to remain under their derated temperature limits
- Added radiator to flipped electronics box and completed trade studies necessary to determine optimal radiator size.
- Created presentation package summarizing results and recommendations to customer



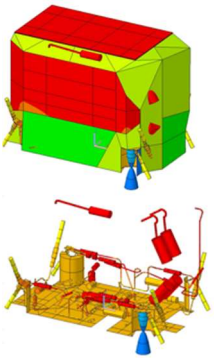
June 2021 – Jan. 2022 **Blue Ghost Lunar Lander**
Firefly Aerospace

- Performed as lead thermal engineer for Blue Ghost Lunar Lander
- Participated in coordinating thermal system definitions within the vehicle architecture and worked with other disciplines to refine lunar lander design requirements.
- Worked with other responsible engineers, analysts, and systems engineers to refine lander design to meet mission criteria with respect to vehicle and component level thermal environments
- Designed thermal control system – thermal blankets, heaters, and coatings – required to keep critical components within operational ranges.



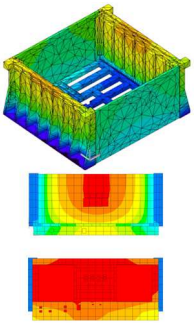
April 2021 – June 2021 **Satellite Prop Module Thermal Analysis**
Stellar Exploration

- Created Thermal Desktop and SINDA/FLUINT thermal model from STEP CAD model and specification documents
- Analyzed worst case hot/cold thermal environments and documented results
- Performed propulsion system heater power analysis by using passive radiators and thermal isolators to optimize sharing of heat within propulsion zone
- Performed soak back and thruster firing analysis
- Created presentation package summarizing results and recommendations to customer



Mar. 2021 – June 2021 **Electronics Box and Boards Thermal Analysis**
Redwire Space

- Created Thermal Desktop and SINDA/FLUINT thermal model of the MIS Avionics Box and Boards from STEP CAD model and specification documents
- Researched components to determine junction to case (θjc), case to board (θjb) resistances
- Conducted operational worst case hot/cold steady state analysis
- Advised major design changes to chassis heat path and determined which components needed underfill in order to maintain acceptable thermal margin
- Created presentation package summarizing results and recommendations to customer



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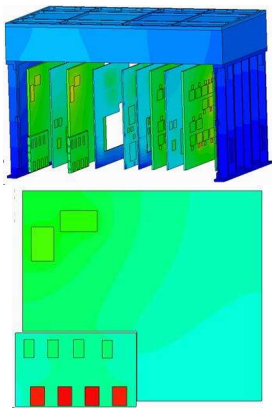
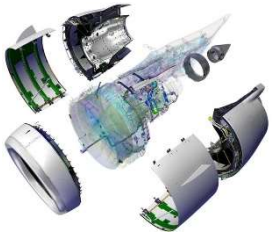
Oct. 2020 – June 2021 **Roman Space Telescope (RST) Electronics Box Thermal Support**
NASA/Goddard Space Flight Center



- Developed FloEFD model of the RST Avionics box and boards/components from STEP CAD model and specification documents
- Researched components to determine junction to case (θjc), case to board (θjb) resistances
- Conducted operational worst case hot/cold steady state analysis
- Advised which components needed underfill in order to remain under their derated temperature limits
- Created Thermal Desktop and SINDA/Fluint thermal model of Deploy board for transient analysis
- Prepared detailed box and boards presentation for the RST Avionics Component Design Review (CDR)

Jan. 2015 – July 2020 **Airbus A350-900 and -1000 Programs**
Collins Aerospace



- Performed as Subject Matter Expert (SME) and lead thermal engineer for Airbus A350-900 and -1000 programs.
- Managed Thermal Certification for A350-900 and -1000 Nacelle Enhancement Program, including Fan Cowl, Thrust Reverser, System Equipment, and Pressure Relief Analysis.
- Led multinational team of engineers responsible for planning, directing, and reviewing thermal and ventilation analyses, using correlated thermal models updated with latest component design in support of major project milestones.
- Presented detailed thermal analysis results to chief engineers to validate new, creative designs for NEP and final material selection process.
- Created and analyzed thermal finite element models in Thermal Desktop by extracting nacelle component models designed in CATIA and applying engine performance and ventilation conditions from engine manufacturer.

SKILLS

- Highly proficient with Thermal Desktop and SINDA/FLUINT
- Proficient in Microsoft Office
- Proficient in CATIA and Solidworks
- Proficient in MATLAB data analysis and visualization

ACHIEVEMENTS

Professional

- Received 3 Excellence Awards for exceptional deliverable support and customer satisfaction 2016 – 2018
- Co-Inventor on 3 patents for thermal-related inventions: Issued - US11149564B2, Pending – No. 17/307,570, No. 17/24,514

Academic

- Engineering Project Management Certificate 2011
- Business Management Certificate for Engineers 2010
- Chevron Project Management Research Fellowships, Texas A&M 2010-2011