**Senior Design Project Definition**

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| Project Title: | Environment controlled test stand chamber – Part 3 |

Submitting Organization and Company:

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| DANFOSS Turbocor Compressors |

Liaison Engineer Information:

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| Name: | William Bilbow |
| Title: | Engineering Fellow |
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Project Background:

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| Danfoss Turbocor strives to provide real world simulated environments to achieve the greatest test validation of its oil-free advanced centrifugal compressors. The FAMU-FSU COE class of 2021 completed psychrometric analysis and thermal management development to define the component specifications for all subsystems integral to the environmental test chamber. Due to restricted site access during 2021, the team was limited to designing and building a simulator to test their work. Since it was a simulation only, subsystem components on hand were used rather than sourcing the analysis-driven components mentioned above. Danfoss wishes to build from that experience and complete the analysis, procurement, fabrication and test based upon the work completed to date. |
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Most Important Project Objectives:

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| 1. Review and confirm the heat balance analysis conducted from the 2020-2021 team.
2. Finalize the specification and sourcing of all hardware and controls
3. Assemble and commission the test chamber at Danfoss Turbocor R&D Lab Facility in Innovation Park,
4. Tune the environmental chamber system controls to achieve stable and specified test conditions
5. Demonstrate fundamental 6-sigma methods of problem-solving in one or more project challenges
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Design/Result Expectations:

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| 1. Regular communication with Danfoss (~bi-weekly)
2. Timely notice of all project progress reporting at the COE
3. Heat Balance Report Review & Confirmation
4. Finalize design the chamber (enclosure)
5. Finalize selection and procurement of any remaining system components needed to control temperature and humidity
6. Final system assembly, control tuning and commissioning
7. Functional acceptance
8. 6-sigma problem-solving summary report (one activity only)
9. All team reports/presentations as an integral part of the Capstone program
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| Is a prototype required? | Yes |[x]  No |[ ]

Prototype Expectations:

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| The chamber will be commissioned for regular test operations in Danfoss R&D lab |

New Technology Requirements:

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| 1. Environmental Control of temperature and humidity
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Special Information: open the current structures