Dual fuel methanol engine linked lab integration

INTRODUCTION

- We are Luuk, Maikel, Joab, Julian, Janno, Jesper, Tim and Bauke and we are the team responsible for this project. Supporting us is our senior engineer Salvatore Castelli along with the internal client Frank Ahout. The client for this project is the internal client Frank Ahout, who is a researcher as well as Marin a maritime research organisation that owns the engine and sets the standard.
- The project offers a lot of different challenges for different disciplines. The dual fuel conversion had already been completed in the previous semester so this time it was about enhancing the initial setup and adding functionality. Systems that are being improved are the engine installation, as it is now receiving a permanent location on a testbed within the HAN. The cooling system has been completely revamped for the engine as well as the generator. Finaly the methanol injection system has also been redesigned and constructed. As for additional functionality, the engine now has digital control/monitoring system which can be used on a PC using LabVIEW. The engine also returns the generated power back to the grid using a electric motor as a generator. Last but not least, the most important factor of the projects success is the addition of remote control from Marin's Wageningen location.

JOURNEY & LEARNINGS

- For a lot of us, to do such a scale project in this level of detail was completely new. Experiencing this together as a team and seeing how different people react to certain situations was very educational. The setbacks seemed to be handled nicely. Most situations were communicated well, the spirit within the group was mostly positive. The senior engineer and internal client were very helpful when real roadblocks appeared, and helped everyone in the right direction without just giving the answers
- The teamwork in this project has been really successful, everybody puts in a lot of effort and jumps in where they can. Everyone is experienced in their own way, but others are also quick to help when someone is lacking some experience. The project has also been our most well organised project thus far, which will definitely be helpful in the future.

OUTCOME & IMPACT

- As of now most the requirements from the client are complete. The engine has been permanently mounted. The cooling system has been completely overhauled. The methanol injection system is being produced/assembled. The grid connection is also in progress. The engine is controllable from the PC, not yet with all functionality due to some difficulties with the inverter communication. The linked lab seems to be going to work, but is still in its development stage.
- The success of this project means that internal client Frank Ahout can continue his research into dual fuel engines. It also offers Marin access to remote control of a test setup and further research into dual fuel engines.
- The fact that a lot of work has been done on the engine by the team and that through trial and error, hard work and researching most obstacles were overcome through the project.

