Graduation/internship assignment laminate analysis

Company and background assignment

Lantor BV is a manufacturer of technical nonwovens (textiles) based in Veenendaal. The products of Lantor are used in three different market segments: cable, composites and construction. Each market requires specific nonwoven products, with very different requirements. The products have high standards for quality and process-ability. The main application of our non-woven products in composites is as a core material. A core material is a lightweight material which is used to increase the thickness and stiffness and decrease the weight of a composite part. Lantor manufactures unique foamed textiles that, contrary to typical core materials like foam panals and wood, are flexible and are partly being impregnated with resin. These products are branded Coremat® and Soric® and used for Hand Lay Up (HLU), Vacuum Infusion (VI) and Resin Transfer Moulding (RTM) processes. Typical applications are hulls and decks of yachts, bus and train panels, construction panels and roofs, hoods and spoilers of sports– and racecars.

Target assignment

This assignment is linked to a project in which we aim to determine to what extent our materials can also be applied in ship hulls larger than 10 m. For this we need to properly determine the mechanical properties of our cores. (E, ε, σ, G, τ in x, y and z direction), based on ISO12215 part 5 (design / calculation method for boat hulls). These values are fully dependent of the shape of the core and the resin used to laminate it in a composite structure.
This will require desk study, practical experiments and customer contact.

To be delivered at the end: a report containing the reasons why our cores (and which) can be safely used in ship hulls based on the ISO standard, accompanied by calculation examples and supporting test results.

At the same time Lantor will apply for DNV-GL certificates so that our materials are tested against strict requirements.
All this results in a marketing strategy aimed at a specific part of the shipbuilding market where our materials are not yet used.

Student profile

The student is a bachelor or masters student with both mechanical analysis and composite materials in their curriculum. Knowledge of composite laminate analysis is preferred.

The student is able to work on location in Veenendaal (Utrecht) for the duration of the internship.

Accompaniment

The student will be accompanied by one of the product managers within the company. To execute the assignment, the student will work together with the research and development department and the application laboratory to collect the required information. This assignment is suitable for students who like to work in a dynamic production environment.

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