

Electrification belt loader

Client	Groningen Airport Eelde (GAE)
Related project	Electrification belt loader
Start date	Anytime
Suitable for training course	Electrical engineering, Mechatronic engineering
Bachelor or Master	Ba

Assignment description

Groningen Airport Eelde is a regional airport in the north of the Netherlands. The airport facilitates passenger traffic and supports activities such as pilot training, donor flights, and business aviation. Groningen Airport Eelde has committed itself to the “Akkoord Duurzame Luchtvaart”, which states that ground-based airport activities must achieve zero CO2 emissions by 2030. To support this transition, the airport is exploring several options for the replacement and renewal of ground support equipment, including the purchase of new equipment, the acquisition of second-hand equipment, and the conversion of existing diesel-powered vehicles to zero-emission alternatives.

Met opmerkingen [TE1]: Teona and I think it should be all in English

Assignment

The objective of this assignment is the conversion an existing diesel belt loader into a battery-electric alternative. The assignment consists of three parts:

1. Design: developing a technical design for converting the diesel belt loader into a battery-electric alternative, including the selection and sizing of the battery pack, electric drivetrain, power supply for hydraulics, charging connection, and integration into the existing vehicle.
2. Cost estimate: preparing an estimate of the expected conversion costs, including components and where applicable certification costs.
3. Modification (optional): preparing and, where feasible, supervising or carrying out (parts of) the actual modification in Groningen Airport Eelde’s own workshop, subject to prior approval of the cost estimate.

The project is expected to deliver the following results:

1. Design documentation: design documentation of the modification.
2. Cost estimate: an estimate of the expected conversion costs.
3. Final report: a final report summarising the design process, findings, conclusions, and recommendations.

Groningen Airport Eelde will provide access to the vehicle, workshop facilities, workspace and technical and process supervision. Components will be provided by Groningen Airport Eelde, based on an agreed bill of materials and cost estimate.



Problem definition

Convert a polluting belt loader into a zero-emission belt loader

General information

Final Product	Working electrical belt loader
Location	Entrance, Hanze (VanDoorenveste), Eelde (GAE)
Stakeholders (researchers & companies)	Entrance, GAE, Battery producers, Electric motor producers, Wiring producers, etc..... J. Kamphuis (GAE), J. van Dorp (GAE), J.C. Scholte (Entrance-Hanze)

Contact person	J.C. Scholte
Supervision	T. Jansma
Details	Students first deliver a prepossession for modification of the belt loader. Later on the prepossession will be carried out so a real life working system is delivered to GAE in the end.

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- Location Proeftuin, Zernikelaan 17
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Contact us

Are you interested in vacancy? Do you have questions or would you like to apply directly?

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