Mobility Energy Environment

The Future is Wireless

Inductive energy transfer systems for electric ships

INTIS

Inductive energy transfer

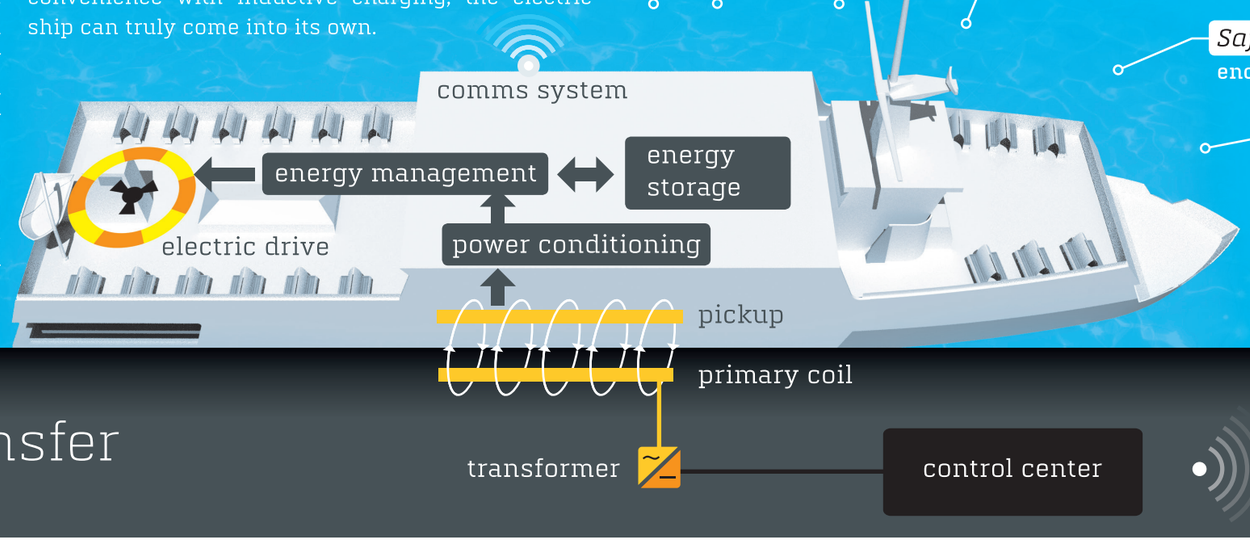
The Technology

Inductive energy transfer systems operate like a transformer with an air-gap between the coils. An alternating electric current flows through a primary coil located on shore and generates an alternating magnetic field. This magnetic field passes through a secondary coil system which is attached to the ship, and induces a voltage and subsequent flow of current. With this principle, electric energy can be transferred to the ship's batteries inductively and without direct electrical contact.

For maritime applications, charging plates are installed at specific locations on the ship's route. They can be installed directly on the quay side or on a floating pontoon to account for changes in water level. These charging plates are only operational when they are needed. Inductive energy transfer systems have the benefit of maximum convenience for the operator, as charging is automatic and requires no additional crew or procedures. The land-side installation is hidden and vandalism-proof. Installation of this "invisible" technology leaves the mooring point completely visibly unaffected.

INTIS develops systems for stationary and dynamic inductive applications. Our coil layout is specifically designed to be low cost, use a minimum of materials and allow for easy installation. Our system can easily be integrated into existing and future electric ships. The power our system can transfer is enough to meet all energy requirements for small electric ships and ferries. The on-board battery can be reduced in size and will have an increased life with more frequent and lower powered charging.

With fewer batteries, greater economy and more convenience with inductive charging, the electric ship can truly come into its own.



The Future

Economical Battery capacity can be dramatically reduced with automatic opportunity charging.

Simple & convenient No wires, no fuss, just charge. With user-friendly charging, the crew can get on with their job and let our automated technology take care of charging. vandalism-proof.

Invisible The quay side is unaffected, and infrastructure is vandalism-proof.

Battery-friendly Transmitted energy can be used directly to power consumables when charging – without passing through the battery. Additionally, more frequent and lower powered charging reduces battery wear-and-tear.

Safe Wireless technology means components are fully enclosed and no electrical contacts are accessible.

Low-maintenance No moving parts, so the energy transfer system suffers no wear-and-tear.

Compatible Primary coils can be installed almost anywhere, while the design of our ship-side coils allows easy installation.

Unique Advantages

Up to now, electric ships have not been accepted as widely as they could be. The main reasons for this are their limited cruising range, the enormous cost of batteries with enough capacity to power a day's worth of sailing and the inconvenience of plugging ships in for short stops. Inductive energy transfer systems change all this. They work without cables and allow a contact-free charging process. Charging is possible from the moment the ship docks at the quay to the moment it resumes its journey – completely automatically. Inductive transfer technology is a game-changing addition to current EV technologies and is going to have a decisive role to play in the up-take of electric ships. The crew of a wirelessly and automatically charged ship can concentrate on the job, the journey or the joys of being on the water.

Your Advantages

Our customers benefit from our experienced engineers and technicians, together with the extensive portfolio offered by the IABG Group and our partners.

Our expertise is based on more than 10 years' experience in the areas of sensor technology, power electronics and inductive energy transfer systems. We have one of the world's first test roads for inductive energy transfer systems, where customers can carry out testing and validation of stationary or dynamic inductive energy transfer systems for electric road vehicles.

Using customer-specific components for position detection and communication, we can examine the performance of complete systems under dynamic and realistic conditions. Insights gained during this testing and feedback process help our clients to rapidly develop mature inductive charging systems.

Our Core Competencies at a Glance

As your partner and expert for this technology, INTIS develops components and complete systems which are customised to your specification – from design, through prototype, to the complete solution.

- Concept-creation and feasibility studies of inductive systems for energy supply and charging
- Examination and selection of coil topologies for inductive systems
- Calculation and design of primary and secondary topologies to customer requirements, with regard to power transfer, EMC, position tolerances, weight and installation space, based on system modelling and simulation
- Construction and testing of vehicle and land-side coil systems, electrical and power-electronics components and energy supplies
- Facilities for testing and verification, including our own test centre for inductive energy transfer systems

Getting to know INTIS

INTIS GmbH was founded in 2011 as a subsidiary of the IABG mbH and has its headquarters in Hamburg. As an engineering service provider, we specialise in integrated solutions in the mobility and energy sectors. At our test facilities, we develop and realise technologies that help to reduce environmental pollution and minimise use of resources.

The focus of INTIS' service portfolio is on the growing demand for modern transport and energy systems that are flexible and future-proof. Current focal points are control, drive and power supply systems for electric vehicle applications, as well as energy storage and management systems.

Mobility

Energy

Environment

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