energy CLUSTER DENMARK

Johannes Kromann Bie
Senior Project Manager
Innovation Projects, Esbjerg

Energy Cluster Denmark

We are Denmark's national cluster organization for the entire energy sector.

We are the energy sector's preferred innovation platform, where companies and knowledge institutions collaborate on the development of new energy technology solutions.

We help facilitate and fundraise concrete innovation activities that always involve partnerships between small and medium-sized companies, market-leading companies and research and knowledge institutions.

Energy Cluster Denmark

800 mio. dkk
in Project Portfolio

375+
Core Members

88+
Active Projects

1
National Cluster Organization

5
Focus Areas

6
Offices in Denmark

Our focus area

ENERGY PRODUCTION

ENERGY INFRASTRUCTURE

ENERGY STORAGE

ENERGY EFFICIENCY

SECTOR COUPLING, SYSTEM INTEGRATION & DIGITIZATION

energy CLUSTER DENMARK

Board of Directors

SIEMENS Gamesa RENEWABLE ENERGY

Ørsted

EWII

LUNDGRENS

TOTAL

BLADT INDUSTRIES

seluxit

FORCE TECHNOLOGY

AALBORG UNIVERSITET

Vestas

WorldPower

MHI VESTAS OFFSHORE WIND

nature energy

Danfoss

SEMCO maritime

WIND POWER LAB

Aalborg Kommune

GREEN HYDROGEN SYSTEMS

DTU

SIEMENS

Green Vessel



Den Danske Maritime Fond

Industry challenge

The shipping companies' challenge is to deliver the same performance, safety and flexibility at an acceptable cost, but with lower emissions

Descriptive project solution

The project focuses on coastal service operations for ships with 4-stroke engines

find, update and systematize existing technology descriptions up to the specification

Project outcome (short)

Present a technology-neutral overview that can form the basis for the shipping companies' expectations reconciliation with end customers and support in the upcoming strategic choices of new technologies

Deliveries

The project will gather research-based knowledge about available technologies, their maturity and challenges from a wide range of existing projects and actors.

These data are compared with a mapping of sail patterns and needs from a typical operator (ESVAGT).

The project group will then shed light on the advantages and disadvantages of the individual technologies, their maturity and time horizon for associated infrastructure.

The project will collaborate and share data with other projects in the maritime industry and should be seen as a complement to other analyzes.

Partners

Esvagt, problemowner

Ballard Power Systems Denmark, Fuelcells

CS Electric, electrical and batteritechnology

DIS Dansk Ingeniør Service, technology neutral engineering

Fyns Maritime Klynge, partner and information gathering

Hydrogen Valley, ammonium technology

Powercon, shorepower

Eltronic Fuel Systems, Fuel Technology (Support)

Work Packages:

WP1:

Overview of known technologies with their strengths and weaknesses. Including hybrid solutions such as battery / Diesel / fossil-free.

WP2:

Mapping of ESVAGT sailing pattern on the various vessels, requirements for power / redundancy / customer requirements, etc.

WP3

Focuses on the complete or partial rebuilding of the ship with one or more of the selected technologies in interaction with land facilities.

“The chicken and the egg”

WP4

Review of necessary fueling / charging facilities on the North Sea and land depending on the choice of electricity, hydrogen, ammonia and diesel. Establishment of necessary battery pack / tank facility. Including clarification of legal requirements / Energinet.dk, the Port of Esbjerg and various authorities.

WP5

Business case with expected CO_2 reduction and possible costs over time

WP6

Knowledge sharing with industries and organizations

Project results so far

Collaboration agreements and NDA signed

Information gathering presented to partners for comments

Esvagt has completed mapping of power requirements and requirements specification

Partners have started their homework with diving into 4 areas: ammonia, fuel cells, shore power and batteries, biofuels and hybrid solutions