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KEY WORD : ELECTRIC BOATS / LONG TAIL BOATS / COMPARATIVE / ENGINEERING  
/ EFFICIENCY / STABILITY

ATTAKORN KHAMCHUTR : THE COMPRATIVE ENGINEERING ASPECT BETWEEN  
HYBRID ELECTRIC BOATS AND LONG TAIL DIESEL ENGINE BOATS CASE STUDY  
PHADUNGKRUNGKASEM CANAL. THESIS ADVISOR : DEBHANOM MUANGMAN,  
M.P.H.,DR.P.H. , UTHAI CHAREONWONG, M.Sc.,M.A. , KASEM KULPRADIT, M.Sc. , VEERAPOL  
MONYAKOL, M.Eng., Ph.D. , WITTATA PUNPOKA , M.S. 88 P. ISBN 974-589-085-5

Hybrid electric prototype boats were built by National Electronic and Computer  
Technology Center (NECTE). Bangkok Metropolitan Administration (BMA) should have an  
engineering technology assessment for completing the process of research and development  
by using the international standard for inland waterway passenger ships and by comparing  
efficiency with long tail diesel engine boats in Phadungkrungkasem canal.

The standard of the classification society limits an angel of heeling cause of effect  
including passengers, win and turning moment at 12 degree and 0.2 meter residual freeboard.  
The electric boats pass but long tail boats cannot. The energy consumption over distance of  
electric boats is 6.69 baht / kilometer, higher than long tail boats by 2.08 baht / kilometer. For  
electric boats the cost per distance tends to decrease by using more velocity, so they should  
adjust power from the generator up for more velocity and more distance (about 40 kilometer)  
and build stationary chargers that can reduce cost. The heads of electric boats were too low and  
water could cross them so they should install front windows or lift the heads up. In policy, if  
BMA plan to use electric boats for passenger or touring boats they must clear a canal, maintain  
water level 5 meter depth and 20 meter beam and take canal depth atlases 1 meter for electric  
boats, 0.5 meter for long tail boats. They must prepare a technician team for repairing power  
systems, boat bodies and propellers. It is important that BMA manage water transportation.

An appropriate use for hybrid electric boats is as town touring boats because they are  
quite, do not emit black smoke and are very safe. For long tail diesel engine boats, they have  
long distance range and high speed, so they are good in mass transfer. But they should limit  
their speed and improve their stability for more safety.