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Indexes materials appearing in the Society's Journals, Transactions, Manuals and reports, Special publications, and Civil engineering. Addressing the urgent need to develop LCOE competitive renewable energy solutions for US energy security and to replace fossil-fuel generation with the associated benefits to environment impacts including a reduction in CO2 emissions, this Project focused on the advantages of using hydraulic energy transfer (HET) in large-scale Marine Hydrokinetic (MHK) systems for harvesting off-shore tidal energy in US waters. A recent DOE resource assessment, identifies water power resources have a potential to meet 15% of the US electric supply by 2030, with MHK technologies being a major component. The work covered a TRL-4 laboratory proof-in-concept demonstration plus modeling of a 15MW full scale system based on an approach patented by NASA-JPL, in which submerged high-ratio gearboxes and electrical generators in conventional MHK turbine systems are replaced by a submerged hydraulic radial pump coupled to on-shore hydraulic motors driving a generator. The advantages are; first, the mean-time-between-failure (MTBF), or maintenance, can be extended from approximately 1 to 5 years and second, the range of tidal flow speeds which can be efficiently harvested can be extended beyond that of a conventional submerged generator.

The approach uses scalable, commercial-off-the-shelf (COTS) components, facilitating scale-up and commercialization. All the objectives of the Project have been successfully met (1) A TRL4 system was designed, constructed and tested. It simulates a tidal energy turbine, with a 2-m diameter blade in up to a 2.9 m/sec flow. The system consists of a drive motor assembly providing appropriate torque and RPM, attached to a radial piston pump. The pump circulates pressurized, environmentally-friendly, HEES hydraulic fluid in a closed loop to an axial piston motor which drives an electrical generator, with a resistive load. The performance of the components, subsystems and system were evaluated during simulated tidal cycles. The pump is contained in a tank for immersion testing. The COTS pump and motor were selected to scale to MW size and were oversized for the TRL-4 demonstration, operating at only 1-6% of rated values. Nevertheless, in for 2-18 kW drive power, in agreement with manufacturer performance data, we measured efficiencies of 85-90% and 75-80% for the pump and motor, respectively. These efficiencies being 95-96% at higher operating powers. (2) Two follow-on paths were identified. In both cases conventional turbine systems can be modified, replacing existing gear box and generator with a hydraulic pump and on-shore components. On a conventional path, a TRL5/6 15kW turbine system can be engineered and tested on a barge at an existing site in Maine. Alternatively, on an accelerated path, a TRL-8 100kW system can be engineered and tested by modifying a team member's existing MHK turbines, with barge and grid-connected test sites in-place. On both paths the work can be expedited and cost effective by reusing TRL-4 components, modifying existing turbines and using established test sites. (3) Sizing, performance modeling and costing of a scaled 15MW system, suitable for operation in Maine's Western Passage, was performed. COTS components are identified and the performance projections are favorable. The estimated LCOE is comparable to wind generation with peak production at high demand times. (4) We determined that a similar HET approach can be extended to on-shore and off-shore wind turbine systems. These are very large energy resources which can be addressed in parallel for even great National benefit. (5) Preliminary results on this project were presented at two International Conferences on renewable energy in 2012, providing a timely dissemination of information. We have thus demonstrated a proof-in-concept of a novel, tidal HET system that eliminates all submerged gears and electronics to improve reliability. Hydraulic pump efficiencies of 90% have been confirmed in simulated tidal flows between 1 and 3 m/s, and at only 1-6% of rated power. Total system efficiencies have also been modeled, up to MW-scale, for tidal, and wind, systems. Projected efficiencies are between 81% (full rated flow) and 86% (1/3 rated flow). This high efficiency in a wide operating range compares favorably

*with conventional systems having a performance range of 87% (full rated flow) to 0% (1/3 rated flow) efficiency. An accelerated path to commercialization is identified, leveraging conventional MHK system technology and COTS components to meet the urgent need for renewable energy generation. The Jan. 1956 issue includes Fluid power engineering index, 1931-55. Vols. for 1970-71 includes manufacturers catalogs. This book provides 1-page short biographies of scientists and engineers having worked in the areas of hydraulic engineering and fluid dynamics in the USA. On each page, a notable individual is highlighted by: (1) Exact dates and locations of birth and death; (2) Educational and professional details, including also awards received; (3) Rea The purpose of this document is to identify and provide design guidelines for bridge scour and stream instability countermeasures that have been implemented by various State departments of transportation (DOTs) in the United States. Countermeasure experience, selection, and design guidance are consolidated from other FHWA publications in this document to support a comprehensive analysis of scour and stream instability problems and provide a range of solutions to those problems. The results of recently completed National Cooperative Highway Research Program (NCHRP) projects are incorporated in the design guidance, including: countermeasures to protect bridge piers and abutments from scour; riprap design criteria, specifications, and quality control, and environmentally sensitive channel and bank protection measures. Selected innovative countermeasure concepts and guidance derived from practice outside the United States are introduced. In addition, guidance for the preparation of Plans of Action ... Vol. for 1955 includes an issue with title Product design handbook issue; 1956, Product design digest issue; 1957, Design digest issue. Vols. for 1970-71 includes manufacturers' catalogs. For more than 40 years, Computerworld has been the leading source of technology news and information for IT influencers worldwide. Computerworld's award-winning Web site (Computerworld.com), twice-monthly publication, focused conference series and custom research form the hub of the world's largest global IT media network. Groundwater Science, 2E, covers groundwater's role in the hydrologic cycle and in water supply, contamination, and construction issues. It is a valuable resource for students and instructors in the geosciences (with focuses in hydrology, hydrogeology, and environmental science), and as a reference work for professional researchers. This interdisciplinary text weaves important methods and applications from the disciplines of physics, chemistry, mathematics, geology, biology, and environmental science, introducing you to the mathematical modeling and contaminant flow of groundwater. New to the Second Edition: * New chapter on subsurface heat flow and geothermal systems * Expanded content on well construction and design, surface water hydrology,*

*groundwater/ surface water interaction, slug tests, pumping tests, and mounding analysis. * Updated discussions of groundwater modeling, calibration, parameter estimation, and uncertainty * Free software tools for slug test analysis, pumping test analysis, and aquifer modeling * Lists of key terms and chapter contents at the start of each chapter * Expanded end-of-chapter problems, including more conceptual questions * Two-color figures * Homework problems at the end of each chapter and worked examples throughout * Companion website with videos of field exploration and contaminant migration experiments, PDF files of USGS reports, and data files for homework problems * PowerPoint slides and solution manual for adopting faculty Many coastal tidal marshes have been significantly degraded by roadways and other projects that restrict tidal flows, limiting their ability to provide vital ecosystem services including support of fish and wildlife populations, flood protection, water quality maintenance, and open space. Tidal Marsh Restoration provides the scientific foundation and practical guidance necessary for coastal zone stewards to initiate salt marsh tidal restoration programs. The book compiles, synthesizes, and interprets the current state of knowledge on the science and practice of salt marsh restoration, bringing together leaders across a range of disciplines in the sciences (hydrology, soils, vegetation, zoology), engineering (hydraulics, modeling), and public policy, with coastal managers who offer an abundance of practical insight and guidance on the development of programs. The work presents in-depth information from New England and Atlantic Canada, where the practice of restoring tidal flow to salt marshes has been ongoing for decades, and shows how that experience can inform restoration efforts around the world. Students and researchers involved in restoration science will find the technical syntheses, presentation of new concepts, and identification of research needs to be especially useful as they formulate research and monitoring questions, and interpret research findings. Tidal Marsh Restoration is an essential work for managers, planners, regulators, environmental and engineering consultants, and others engaged in planning, designing, and implementing projects or programs aimed at restoring tidal flow to tide-restricted or diked salt marshes.*

- *The Effect Of Ash landfill Leachate And Some Salt Solutions On The Hydraulic Conductivity Of Maine Marine Clay*

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- *Committee On Tidal Hydraulics Report*
- *Bibliography On Tidal Hydraulics*
- *National Fisherman*
- *Modern Manufacturing*
- *Federally Coordinated Program Of Highway Research And Development*
- *Computerworld*
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