CONTENTS

APPLIED FLUID MECHANICS

ESDA2012-82022 .................................................. 1
Fluid Pattern and Optimum Design of Sump Based on CFD
   Li Cheng and Chao Liu

ESDA2012-82028 .................................................. 11
A Numerical Simulation Approach for Atmospheric Pollution Evolution at Urban Scale to Help Traffic Control Decision Making
   Davide Basso and Carlo Cravero

ESDA2012-82054 .................................................. 21
Fractal Orifices for Flowmetering
   Franck C. G. A. Nicolleau, Stephen B. M. Beck, and Andrzej F. Nowakowski

ESDA2012-82059 .................................................. 29
Numerical Simulation on the Flow Pattern in Forebay of Pumping Station
   Chao Liu and Meining Lu

ESDA2012-82093 .................................................. 37
Injection Pump Analysis
   William W. Schultz, Eric Johnsen, Bosuk Han, and Sung Park

ESDA2012-82119 .................................................. 43
Influence of Elevator Moving Pattern on the Contaminant Exclusion for an LCD Panel Delivery Facility
   Sheam-Chyun Lin, Cheng-Ju Chang, Yu-Shan Luo, Hsien-Chang Shih, You-Min Huang, and Chao-Chang Chen

ESDA2012-82205 .................................................. 51
A Neural Network Approach to Analyse Cavitating Flow Regime in an Internal Orifice
   M. G. De Giorgi, D. Bello, and A. Ficarella

ESDA2012-82300 .................................................. 63
CFD Evaluation of the Pressure Losses in a Reciprocating Compressor: A Flexible Approach
   Francesco Balduzzi, Giovanni Ferrara, Alberto Babbini, and Guido Pratelli

ESDA2012-82332 .................................................. 73
Experimental Study of Very Low Aspect Ratio Wings in Slender Bodies
   M. A. Arevalo-Campillos, S. Tuling, L. Parras, C. del Pino, and L. Dala

ESDA2012-82337 .................................................. 83
Effects of Microjets in Flow Over a Backward-Facing Step
   H. Kanchi and F. Mashayek
Performance Improvement of a Centrifugal Compressor Using a Developed 3D Inverse Design Method
Mahdi Nili-Ahmadabadi, Farzad Poursadegh, and Majid R. Shahhosseini

Injection Pressures of a Bio-Oil Driven Non-Road Diesel Engine: Experiments and Simulations
Seppo Niemi, Jukka Kiijärvi, Mika Laurén, and Erkki Hiltunen

Numerical Calculation of Two-Phase Flow Based on a Two-Fluid Model With Flow Regime Transitions
Moon-Sun Chung, Youn-Gyu Jung, and Sung-Jae Yi

Microthermocouples Sensors for Velocity and Temperature Measurements in Gas Flow
François Lanzetta, Eric Gavignet, Sofiane Amrane, and Philippe Baucour

Taguchi Methodology to Optimize the Design of a MR-Brake With Permanent Magnet
Ozan Erol and Hakan Gurocak

Non-Linear Observer-Based Control of Flexible-Joint Manipulators Used in Machine Processing
Jinna Qin, François Léonard, and Gabriel Abba

Electro Magneto-Fluid-Structural Coupling Problem: The Vibrating Viscometer
Doudou Badiane, Alain Gasser, Luc Bellière, Eric Blond, and Kevin Vancayzeele

Control Strategies for a Linear MR-Brake With Serpentine Flux Path for Haptics
Mustafa Sait Alkan and Hakan Gurocak

Nonlinear Controller for a Modified Design of the Ball and Beam System
Oscar Salas, Samer Riachy, and Jean-Pierre Barbot

Modeling and Simulation of an Electro-Hydraulic Servovalve in an Intelligent Programming Environment
Mait Harf and Gunnar Grossschmidt
Mathematical Modelling and Parameter Identification of an Electro-Magneto-Mechanical Actuator for Vibration Control
Radoslav Darula, George Juraj Stein, Carsten Skovmose Kallesøe, and Sergey Sorokin

Computer-Aided Design of Mechatronic Systems Using Multiobjective Optimization and Object-Oriented Languages
Didier Casner, Jean Renaud, and Dominique Knittel

Needs for Tracing the Consequences of Decisions in Mechatronics Design
Mambaye Lo and Pierre Couturier

Characterization of a Four Discrete Positions Electromagnetic Actuator
Laurent Petit, Pengfei Huyan, Christine Prelle, Emmanuel Dore, and Frédéric Lamarque

An Unified Design Procedure for Flying Machining Operations
Roberto Strada, Bruno Zappa, and Hermes Giberti

Fluid-Dynamic Analysis of Earthquake Shaking Table Hydraulic Circuit
Massimo Cardone and Salvatore Strano

Robust Analysis of a Wireless Bistable Micro-Actuator
Syed Sajid Hussain Zaidi, Zohra Cherfi-Boulanger, Nassim Boudaoud, Philippe Pouille, and Frédéric Lamarque

Adapting Ant-Colony Optimization to Design Problems in Mechatronics
Ahmad Smaili, Nadim Diab, and Samer Abdallah

Vibration Suppression in Carbon Fiber Structures With Piezoelectric Actuators and Fiber Bragg Grating Sensors
Gabriele Cazzulani, Simone Cinquemani, Lorenzo Comolli, and Andrea Gardella

Analysis of an Electromagnetically Actuated Pumping System
Somer M. Nacy and Montassar Aida Sharif

Comparisons Between Dynamic Characteristics of Pneumatic, Magnetorheological, and Hydraulic Shock Absorbers
A. M. Salem and S. Olutunde Oyadiji
Analysis of a Reciprocate Engine-Based Cogeneration Plant With High Temperature Heat Recovery for Industrial Uses
   *Fabio Cardona, Domenico Panno, and Antonio Piacentino*

Numerical Investigation on Nanofluid Mixed Convection in Triangular Ducts Heated by a Uniform Heat Flux
   *O. Manca, S. Nardini, D. Ricci, and S. Tamburrino*

Dynamic Response of Piezoelectric Material Strips at High Frequencies
   *N. Ikenna-Agbeze, S. O. Oyadiji, E. Siores, and T. Shah*

Combined Flow Fields (Serpentine-Interdigitated) for Improvement of a PEMFC Performance
   *L. Perez-Raya, A. Hernandez-Guerrero, F. Elizalde-Blancas, B. Ramos-Alvarado, and D. Lorenzini-Gutierrez*

Optimal Plant Configuration for the Nearly Ideal Processes of an OTEC Concept Driven by the Sea-Air Temperature Difference
   *Demos P. Georgiou, Kypros F. Milidonis, and Nikolaos G. Theodoropoulos*

Control Strategy for the Optimal Operation of a Solar Cooling Installation
   *Vittorio Verda, Giorgia Baccino, and Stefano Pizzuti*

Numerical Investigation on the Thermal Performance Enhancement in a Latent Heat Thermal Storage Unit
   *Adriano Sciacovelli, Vittorio Verda, and Francesco Colella*

Enhancing the Performance of Photovoltaic Solar Modules by Active Thermal Management
   *Peter Rodgers, Valerie Eveloy, and Shrinivas Bojanampati*

Thermodynamic Analysis and Performance Investigation of an Alpha-Type Stirling Engine
   *E. D. Rogdakis, I. P. Koronaki, and G. D. Antonakos*

Eco-Driving Assistance System: A New Way of How to Save Energy
   *Lydie Nouveliere, Hong Tu Luu, Saïd Mammar, Qi Cheng, and Olivier Orfila*

Structure Design of Energy Harvester for Supporting Paroxysmal Energy Collection
   *Zhenhuan Zhu and S. Olutunde Oyadiji*
ESDA2012-82917 The Effect of Gas Channels-Electrode Interface Area on SOFCs Performance

Julio C. Moreno-Bianco, Francisco Elizalde-Blancas, Abel Hernandez-Guerrero, and Cuauhtemoc Rubio-Arana

ESDA2012-82986 Sources and Potential Utilization of Waste Heat at a Natural Gas Processing Facility in the Middle East

Valerie Eveloy and Peter Rodgers

THERMAL ENGINEERING

ESDA2012-82134 Determination of Pressure in the Mold Cavity of Injected Semi-Crystalline Thermoplastics

Xavier Tardif, Vincent Sobotka, Nicolas Boyard, Philippe Le Bot, and Didier Delaunay

ESDA2012-82203 Methodology for the Design of Cooling Channels in Thermoplastic Injection Moulding Process

Alban Agazzi, Vincent Sobotka, Ronan Le Goff, and Yvon Jarny

ESDA2012-82336 Performance Analysis on the Internally Cooled Dehumidifier Using Two Liquid Desiccant Solutions

I. P. Koronaki, R. I. Christodoulaki, V. D. Papaefthimiou, and E. D. Rogdakis

ESDA2012-82361 Use of Inverse Method for Bonding Quality Assessment Between Bitumen and Aggregates Under Asphalt Mixes Manufacturing Conditions

Sàannibè-Ciryle Somé, Vincent Gaudefroy, and Didier Delaunay

ESDA2012-82421 Non-Dimensional Finite Element Formulation for Thermal Problems

Sulaman Pashah, Abul Fazal M. Arif, and Syed M. Zubair

ESDA2012-82428 EHD-Induced Flow in a Square Channel With Two-Stage Electrodes


ESDA2012-82479 Thermal Properties of Sintered Diamond Composites Used in Grinding

Tala Moussa, Bertrand Garnier, and Hassan Peerhossaini

ESDA2012-82485 Experimental Study of Heat Transfer in Pulsation Flow in a Rectangular Duct

H. Shokouhmand, M. Safarifard, and S. M. Emami

ESDA2012-82590 Modelling IR-Heating in Stretch-Blow Moulding and Thermoforming

S. Rasche, M. Begemann, and Ch. Hopmann
Implementations of Deflectors to Improve the Performance of Heat Sinks

J. P. Vazquez-Ramirez, A. Guerrero-Hernandez, J. L. Cerroblanco-Zuñiga, and J. C. Arana-Rubio

Modeling and Optimization of Heat Exchangers Within Gas Turbine Systems

Georgiana Tirca-Dragomirescu, Monica Costea, Michel Feidt, Jim McGovern, Alexandru Dobrovicescu, Diana Tutica, and Abdelhamid Kheiri

Comparison Between Numerical and Experimental Gas Side Heat Transfer and Pressure Drop of a Tube Bank With Solid and Segmented Circular L-Fins

Rene Hofmann and Heimo Walter

Modelling the Heat During the Injection Stretch Blowing Moulding: Infrared Heating and Blowing Modelling

Yun Mei Luo, Luc Chevalier, and Françoise Utheza

Effect of Changing Atmospheric and Operating Conditions on the Thermal Stresses in PV Modules

M. U. Siddiqui and A. F. M. Arif

Latent Heat Estimation of the Martensite Transformation Through Inverse Methods During the Hot Stamping Process

Alexandre Blaise, Brahim Bourouga, Bakri Abdulhay, and Christine Dessain

Identification of Pick Up Noise for Laser Printers Based on Psychoacoustic Parameters


Emblematic Gestures Recognition

Ryad Chellali and Ilaria Renna

Toward an Affective Design of Products

Weihua Lu and Jean-François Petiot

Predicting the Subjective Evaluation of Drivers in a Driving Simulator During Loss of Adherence

Thomas Denoual, Jean-François Petiot, Franck Mars, and Andras Kemeny
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESDA2012-82892 Model-Based Approaches to Human-Automation Systems Design</td>
<td>871</td>
</tr>
<tr>
<td>Greg A. Jamieson, Jonas Andersson, Ann Bisantz, Asaf Degani, and Morten Lind</td>
<td></td>
</tr>
<tr>
<td>ESDA2012-82974 Ecological Interface for Assessing Cardiac Disease</td>
<td>881</td>
</tr>
<tr>
<td>Tim McEwen, John Flach, and Nancy Elder</td>
<td></td>
</tr>
<tr>
<td>ESDA2012-82977 Ecological Interface Design for Aircraft Guidance and Conflict Avoidance</td>
<td>889</td>
</tr>
<tr>
<td>M. M. (René) van Paassen, Joost Ellerbroek, Jan Comans, Clark Borst, and Max Mulder</td>
<td></td>
</tr>
<tr>
<td>ESDA2012-83015 Deep Structure and Smart Mechanisms: Designing Perspicacious Systems</td>
<td>897</td>
</tr>
<tr>
<td>John M. Flach</td>
<td></td>
</tr>
<tr>
<td>Author Index</td>
<td>907</td>
</tr>
</tbody>
</table>