

Wednesday, October 29

9:00-9:30 Opening Ceremony at Room A

9:30-10:20 Special Lecture : Prof. H.Murrenhoff at Room A

10:20-10:40 Coffee Break at Room E

10:40-12:00 OS1-01 Energy saving and LCA design

A NEW VARIABLE FREQUENCY PUMP SYSTEM BASED ON ENERGY EFFICIENCY
ADAPTIVE CONTROL (1036)

Yajun LIU, Jun CAI, Zhiyong WANG and Yeqing CHEN
South China University of Technology, China

ENERGY SAVING OF OIL HYDRAULIC PUMP UNIT DRIVEN BY GASOLINE
ENGINE DUE TO INTERMITTENT OPERATION USING HYDRAULIC ASSIST (1046)

Shuji KASUYA*, Kenichiro NONAKA**and Katsumasa SUZUKI**
Tokyo City University, Japan

CHARACTERISTICS OF ENERGY EFFICIENT SWITCHED HYDRAULIC SYSTEMS
(1115)

Hang Yuan*,**, Milos Vukovic**, Yaoxing Shang*, Shuai Wu*, Hubertus Murrenhoff**,
Zongxia Jiao*

*Beihang University, China

** RWTH Aachen University, Germany

APPLICATION OF NANOSTRUCTURED LAYER TO IMPROVE THE ENERGY
EFFICINECY IN HYDRAULIC PISTON PUMP (1160)

Antonino BONANNO, Giorgio MASSAROTTI, Giuseppe RIZZO, Roberto PAOLUZZI,
*Mariarosa RAIMONDO, *Magda BLOSI, *Federico VERONESI, *Aurora CALDARELLI
Institute for Agricultural and Earthmoving Machines, Italy

*Institute of Science and Technology for Ceramics, Italy

10:40-12:00 G2-01 Pneumatics: Application of Control Theory

NOVEL CONTINUOUS VARIABLE CURRENT CONTROL FOR A FULL-DIGITAL
PNEUMATIC CYLINDER POSITION CONTROL SYSTEM (1008)

Jyh-Chyang RENN, Chin-Yi CHENG and Wei-Cheng LIAO
National Yunlin University of Science and Technology, Taiwan

PRESSURE OBSERVER BASED SERVO CONTROL OF AN ELECTRO-PNEUMATIC
CLUTCH ACTUATOR (1009)

Pengfei QIAN, Guoliang TAO, Hao LIU
Zhejiang University, China

CROSS-COUPLING ADAPTIVE ROBUST CONTROL STUDY OF SINGLE/MULTIPLE
3-DOF PNEUMATIC PARALLEL PLATFORMS (1040)

Guo-liang Tao, He Zuo
Zhejiang University, China

REPEATED POSITIONING OF A PNEUMATIC RODLESS CYLINDER AT ENDPOINTS VICINITY USING PROXIMITY SWITCHES (1159)

Mohammad Taufiq MUSTAFFA*, Hidetoshi OHUCHI**

*Universiti Malaysia Perlis, Malaysia

**University of Yamanashi, Japan

10:40-11:40

OS2-01 Robotics and Mechatronics

DEVELOPMENT OF HYBRID HYDRAULIC EXCAVATORS (1016)

Hiroaki Inoue

Komatsu Ltd.

PNEUMATIC BIG-HAND GRIPPER WITH SLIP-IN AIR-BAG AND SHAPE ADAPTIVE FEATURE AIMING FOR HUMAN BODY GRIPPING (1038)

Chiuntai LOH, Yoshihiro NAGANO and Hideyuki TSUKAGOSHI

Tokyo Institute of Technology, Japan

PRESENTATION METHOD OF SOIL STRENGTH FOR A CONSTRUCTION ROBOT (1054)

Katsutoshi OOTSUBO, Raito NAKAMURA, Takuya KAWAMURA and Hironao YAMADA

Gifu University, Japan

10:40-12:20

G1-01 Oil Hydraulics: Pump and Motor

ANALYSIS ON TORQUE AND FLOW CHARACTERISTICS OF CAM-ROTOR VANE MOTOR (1025)

WenJun Zhang*, XuYong Wang*, ChuanHui Xu*, ZhongHua Miao**

*Shanghai Jiao Tong University, China

** Shanghai University, China

THE INFLUENCE OF OIL GROOVE STRUCTURE ON THE INTERNAL GEAR PUMP SHELL (1068)

Qing HAN, Hongwei LI, Ronghua DUAN

University of Jinan, China

POTENTIALS AND CHALLENGES OF A NEW VARIABLE GEOMETRIC POSITIVE DISPLACEMENT PUMP (1074)

Mohamed ELGAMIL*, Khaled MOSTAFA*, Norman BÜGENER** Saad KASSEM**, and Jürgen WEBER****

*Cairo University, Egypt

**TU Dresden, Germany

THE RESULTS OF MEASUREMENTS, FFT ANALYSIS AND STATISTICAL PARAMETERS OF THE WORKING PROCESS OF AXIAL PISTON PUMPS WITH COMBINED-SHARING WORKING FLUID (1058)

Radovan PETROVIC*, Nenad TODIC**, Miroslav ZIVKOVIC** and Nenad FILIPOVIC**

* University Union Nikola Tesla of Belgrade, Serbia

**University of Kragujevac, Serbia

PROPOSAL OF NEW ECF-PUMP WITHOUT BONDING AGENT (1057)

Yasuo SAKURAI*, Yumihiko WATANABE**, Takeshi NAKADA*** and Kazuya

EDAMURA ****

* Ashikaga Institute of Technology, Japan

** Shintec Co.,Ltd., Japan

*** Tokyo Denki University, Japan

**** New Technology Management Co., Ltd., Japan

12:00-13:00 Lunch at Room E

13:00-14:20 OS1-02 Energy Saving and LCA design

DEVELOPMENT OF THE FLOW AREA OPTIMIZATION FOR A HYDRAULIC EXCAVATOR (1060)

Kiyoung Kim*, Kiyong Kim*, Yoonseok Jang*, Hyeonsik Ahn*

*Doosan Infracore, Korea

DEVELOPMENT OF HYBRID HYDRAULIC EXCAVATOR (1082)

Yasutaka TSURUGA, Kouji ISHIKAWA

Hitachi Construction Machinery Co., Ltd., Japan

A STUDY ON MODELING AND EXPERIMENT OF WAVE ENERGY CONVERTERS WITH HYDRAULIC POWER TAKE-OFF (1105)

Binh C. Phan, Truong Q. Dinh, Tri M. Nguyen, Kyoung K. Ahn

University of Ulsan, Korea

HYDRAULIC HYBRID SERVO BOOSTER AND APPLICATION TO SERVO PRESS (1154)

Sang-Ho HYON*, Fumio NODA*, Toshiyuki NOMURA*, Hiroshi KOSODO**, Yoshihiro MORI***, Harutsugu MIZUI****

*Ritsumeikan University, Japan

** Takako Industry, Inc., Japan

*** Mori Kogyo, Ltd., Japan

**** Sankyoku, Co. Ltd., Japan

13:00-14:20 G2-02 Pneumatics: New Mechanism

DEVELOPMENT OF A VARIABLE FLOW RESISTANCE BASED ON TEMPERATURE CHANGE (1005)

Liao Yuxuan*, Li Xin*, Zhong Wei**, Tao Guoliang*, and Toshiharu Kagawa***

*Zhejiang University, China

**Jiangsu University of Science and Technology, China

***Tokyo Institute of Technology, Japan

PNEUMATIC SOFT ROBOT BASE WITH OMNIDIRECTIONAL LOCOMOTION (1037)

Mohamed Najib RIBUAN*, Koichi SUZUMORI**, Shuichi WAKIMOTO* and Takefumi KANDA*

*Okayama University, Japan

**Tokyo Institute of Technology, Japan

DEVELOPMENT OF THIN MCKIBBEN ARTIFICIAL MUSCLE AND ITS APPLICATION TO BIOMIMETIC MECHANISMS (1063)

Kazuya Mori*, Shuichi Wakimoto*, Masayuki Takaoka* and Koichi Suzumori**

* Okayama University, Japan
**Tokyo Institute of Technology, Japan

STUDY OF UNSTATIONARY PULSED AIR JETS FOR SORTING OPERATIONS (1152)
Thiago FERREIRA, Sylvie SESMAT, Eric BIDEAUX, Fabien SIXDENIER
Université de Lyon, France

13:00-14:20 OS2-02 Robotics and mechatronics

CONTROL OF ROBOT ARM USING ELECTRO-PNEUMATIC HYBRID ACTUATOR
(1039)

Hiroshi HIGO*, Kazuhiro TANAKA*, Hiromichi KAJIKAWA**, Shinichi Honma**

*Kyushu Institute of Technology, Japan

AERIAL MANIPULATOR WITH DOOR OPENING FUNCTION (1069)

Ashlih DAMEITRY, Takahiro HAMADA, Ryuma IIZUKA, Masahiro WATANABE,
Hideyuki TSUKAGOSHI*

Tokyo Institute of Technology, Japan

A LAPAROSCOPE CONTROL SYSTEM USING A PNEUMATIC ROBOT ARM (1071)

Kei Mikami*, Kotaro Tadano*, Kenji Kawashima**

*Tokyo Institute of Technology, Japan

**Tokyo Medical Dental University, Japan

FORCE PROJECTION TYPE BILATERAL CONTROL OF A PNEUMATIC SURGICAL
ROBOT (1076)

Takahiro KANNO*, Daisuke HARAGUCHI**, Kotaro TADANO** and Kenji
KAWASHIMA*

*Tokyo Medical and Dental University, Japan

**Tokyo Institute of Technology, Japan

13:00-14:20 G1-02 Oil Hydraulics: Applications

RESEARCH ON ELECTRO-HYDRAULIC LIFTING CONTROL SYSTEM WITH HEAVE
COMPENSATION (1087)

Ruijia Huang, Guanglin Shi and Qinyang Guo

Shanghai Jiao Tong University, China

MODELING AND DESIGN OF A HYBRID BICYCLE WITH HYDRAULIC
TRANSMISSION (1110)

FengWANG, Michael BISSEN, William WARD and Kim STELSON

University of Minnesota, USA

NUMERICAL SIMULATION AND EXPERIMENT OF FAIL-SAFE ELECTRO
HYDRAULIC ACTUATOR FOR STEERING SYSTEM OF ROLLING STOCK BOGIE
(1136)

Kotaro ISHIGURI, Shogo KAMOSHITA, Yasuhiro UMEHARA, Makoto ISHIGE and
Yusuke YAMANAGA

Railway Technical Research Institute, Japan

VALIDATION OF SIMULATION MODEL FOR FULL SCALE WAVE SIMULATOR AND

DISCRETE FULL POWER PTO SYSTEM (1148)

Anders Hedegaard Hansen*, Henrik C. Pedersen*, Rico Hjerm Hansen**

*Aalborg University, Denmark

**R&D A/S, Denmark

14:20-14:40 Coffee Break at Room E

14:40-15:30 Special Lecture : Prof. E. Rathakrithman at Room A

15:30-15:50 Coffee Break at Room E

15:50-17:10 G1-03 Oil Hydraulics: Valve

NEW ROTO-TRANSLATING VALVE FUNCTIONAL AND SAFETY FEATURE ANALYSIS (1033)

Massimiliano RUGGERI*, Pietro MARANI*

* IMAMOTER - Institute for Agricultural and Earthmoving Machines, Italy

THE CUSHIONING GROOVE FOR SOLENOID SWITCHING VALVES – CONCEPT AND THEORETICAL ANALYSIS (1051)

Rudolf Scheidl*, Christoph Gradl*, Andreas Pl 啣 kinger**

*Johannes Kepler University Linz, Austria

**Linz Center of Mechatronics GmbH

OPTIMIZATION OF POPPET SHAPE TO MINIMIZE OVERRIDE ON DIRECT ACTING RELIEF VALVE (1061)

Sung won Kim*, Youngmin Seo*, Manjin Ahn* and Yoonseok Jang*

*Doosan Infracore, Korea

THE EXPERIMENTAL RESEARCH FOR DYNAMIC RESPONSE OF 2D PROPORTIONAL DIRECTIONAL VALVE (1091)

Sheng LI, Jian RUAN, Bin MENG

Zhejiang University of Technology, China

15:50-17:10 G2-03 Pneumatics: Components and Systems

STUDY ON A NONCONTACT HOLDER USING AIR FLOW (1024)

Ryo MORINAGA*, Tetsuhiro TSUKIJI* and Taira OMIYA**

Sophia University, Japan

** SMC Corporation, Japan

ACOUSTIC COMMUNICATION IN AIR SUPPLY LINE REALIZING MULTIPLEX CONTROL OF ACTUATORS (1098)

Koichi SUZUMORI*, Naoto OSAKI**, Jumpei MISUMI**, Akina YAMAMOTO** and Takefumi KANDA**

*Tokyo Institute of Technology

**Okayama University

STUDIES OF ANALYSIS FOR DYNAMIC CHARACTERISTICS OF OPTO-FLUIDIC CONVERSION DEVICE (1125)

Fumito OTAKA*, Osamu OYAMA* and Toshihiro YOSHIMITSU**

* Meiji University, Japan

** Kanagawa Institute of Technology, Japan

PRESSURE RESISTANCE IMPROVEMENT OF METAL BELLOWS FOR PNEUMATIC ACTUATORS (1153)

Yasukazu SATO*, Jin MIYAZAWA**, Tomoki HIRAYAMA**, and Takeyoshi SHIMBORI*

Yokohama National University, Japan

15:50-17:10

OS2-03 Robotics and mechatronics

FORCE AND POSITION CONTROL OF THE RUBBERLESS ARTIFICIAL MUSCLE ANTAGONISTIC DRIVE SYSTEM (1126)

Naoki SAITO and Toshiyuki SATOH

*Akita Prefectural University, Japan

JOINT TORQUE CONTROL BY PRESSURE FEEDBACK ON HYDRAULIC EXCAVATOR FOR ROBOTIC APPLICATION (1155)

Kohei Inoue_, Tomoo Yoneda_, Taihei Maehara_ and Sang-Ho Hyon_

Ritsumeikan University, Japan

DEVELOPING A SUPER-SMALL HIGH-PRESSURE COMPRESSOR AND A REGENERATIVE AIR PRESSURE SYSTEM FOR HIGH EFFICIENCY OF SELF-CONTAINED PNEUMATIC ROBOTS (1156)

Shouhei KUMAKURA*and Ikuo MIZUUCHI*

Tokyo University of Agriculture and Technology, Japan

PNEUMATIC DRIVING SOFT-BODIED ACTUATOR MIMICKING ESOPHAGEAL PERISTALSIS (1161)

FeijiaoCHEN*, XiaoningLI*and WeiliangXU**

*Nanjing University of Science and Technology, China

**Auckland University, New Zealand

15:50-17:10

G1-04 Oil Hydraulics: Components and Systems

THE COORDINATE CONTROLLER OF THE TWO ELECTRO-HYDRAULIC PROPORTIONAL PUMPS CONTROLLED SYSTEM FOR A HEAVY LOAD AND LARGE INERTIA FIN STABILIZER (1084)

Bing Xu, Linfeng Sha, Junhui Zhang, Ruqi Ding

Zhejiang University, China

THE WORLD'S FIRST DISPLACEMENT-CONTROLLED EXCAVATOR PROTOTYPE WITH PUMP SWITCHING—A STUDY OF THE ARCHITECTURE AND CONTROL (1021)

Enrique BUSQUETS* and Monika IVANTYSYNOVA**

Purdue University, USA

CLOSED-CENTRE HYDRAULIC POWER STEERING BY DIRECT PRESSURE CONTROL (1043)

Alessandro Dell'Amico, Petter Krus

Linköping University, Sweden

MINIATURE HYDRAULIC EXCAVATOR MODEL FOR TELEOPERABILITY
EVALUATION TEST PLATFORM (1095)

Kei SHINOHARA, Tatsuya KOIKE, Keita KURASHIKI, Ryo FUKANO, Hiroshi
YOSHINADA

Osaka University, Japan

Thursday, October 31

9:00-10:10 OS1-03 Energy saving and LCA design

STUDY OF THE ENERGY CONSUMPTION OF A VACUUM TOILET SYSTEM FOR
TRAIN (1131)

Kenji FUJINO*, Hiroshi YAMAMOTO**, Nobuaki YAMAMOTO***, Chongho YOUN***
and Toshiharu KAGAWA***

*EAST JAPAN RAILWAY COMPANY, Japan

**TesikaCo.,Ltd., Japan

*** Tokyo Institute of Technology, Japan

THE EFFECT OF RECOVERED ENERGY IN WATER HYDRAULIC FST SYSTEM
(1026)

Pha N. PHAM*, Kazuhisa ITO* and Shigeru IKEO**

*Shibaura Institute of Technology, Japan

**Professor Emeritus, Sophia University, Japan

EFFICIENCY IMPROVEMENTS BY AIR RECUPERATION USING THE EXAMPLE OF
A PICK-AND-PLACE-APPLICATION (1047)

Christian VON GRABE, Hubertus MURRENHOFF

RWTH Aachen University, Germany

9:00-10:00 OS4-01 Tribology, Seals and Contamination Control

MECHANICAL LOSSES IN THE PISTON-BUSHING CONTACT OF AXIAL PISTON
UNITS (1114)

Nils VATHEUER*, Hubertus MURRENHOFF*, Ulrich BRÜCKELMANN** and David
BREUER**

*RWTH Aachen University, Germany

** Bosch Rexroth AG, Germany

INVESTIGATIONS ON THE THERMAL EFFECTS IN THE SLIPPER SWASH PLATE
INTERFACE OF AXIAL PISTON MACHINES (1019)

YIN Yaobao, TANG Hesheng, LI Jing

Tongji University, China

RELATION BETWEEN SLIDING-PART TEMPERATURE AND CLEARANCE SHAPE
OF A SLIPPER IN SWASHPLATE AXIAL PISTON MOTORS (1093)

Toshiharu KAZAMA*, Motoshi SUZUKI**, and Kenta SUZUKI***

*Muroran Institute of Technology, Japan

** Hitachi Construction Machinery Co., Ltd., Japan

***Hitachi, Ltd., Japan

9:00-10:00 OS3-01 Basic theory and technologies

APPROXIMATE EXPRESSIONS FOR CHARACTERISTICS OF GAS-FLOW THROUGH ORIFICES (1041)

Eizo URATA*, Chongho YOUN** and Toshiharu KAGAWA**

*Air and Water Society, Japan

**Tokyo Institute of Technology, Japan

A METHOD FOR ESTIMATE OF LEAK COEFFICIENTS (1109)

Nobuhiro TSUCHIYA *, Eizo URATA** Lai Lai OO***, Chongho YOUN*** and Toshiharu KAGAWA***

* Gstar Co. Ltd., Japan

** Air and Water Society, Japan

*** Tokyo Institute of Technology, Japan

ESTIMATE OF CLOSED SPACES BY CHARGING OF COMPRESSED GAS (1085)

Lai Lai OO, Chongho YOUN, Toshiharu KAGAWA

Tokyo Institute of Technology, Japan

9:00-10:20

G1-05 Oil Hydraulics: Valve and Components

PERFORMANCE IMPROVEMENT OF A PROPORTIONAL CONTROL VALVE USING SHAPE STRATEGY OF CONTROL CONE AND SPOOL WITH A SLEEVE (1066)

So-Nam Yun*, Young-Bog Ham*, Jung-Ho Park*, Ill-Yeong Lee** and Yoshito TANAKA***

*Korea Institute of Machinery & Materials, Korea

**Pukyong National University, Korea

*** Korea Institute of Machinery & Materials, Korea

A STUDY OF A MULTI-STEP POLE TYPE ELECTOR-MAGNETIC ACTUATOR FOR CONTROLLING PROPORTIONAL HYDRAULIC VALVE (MAGNETIC FLUX FLOW IN THE ACTUATOR) (1112)

Hisao KONDO and Yuki KURATA

Toyota National College of Technology, Japan

DEVELOPMENT OF A NEWHYDRAULIC SERVO-VALVE WITH TWO LAND SPOOL AND NEW PILOT STAGE (1116)

Mohamd ELGAMIL*, Moataz AMIN** and SaadKASSEM***

Cairo University, Egypt

HIGH EFFICIENCY BUBBLE ELIMINATOR FOR HYDRAULIC SYSTEMS (1130)

Sayako SAKAMA*, Yutaka TANAKA*, Ryushi SUZUKI**

*Hosei University, Japan

**Opus System Inc., Japan

10:10-10:20

Coffee Break at Room E

10:30-12:00

OS5-01 Functional Fluids

CHARACTERISTICS OF MEMS-BASED DIVIDED ELECTRODE TYPE FLEXIBLE ELECTRO-RHEOLOGICAL VALVE (1013)

Kazuhiro YOSHIDA, Noboru TSUKAMOTO, Joon-Wan KIM, Sang In EOM and Shinichi

YOKOTA
Tokyo Institute of Technology, Japan

FABRICATION OF A MEMS-BASED ER MICROGRIPPER WITH
ALTERNATING-PRESSURE SOURCE (1089)
Tomoya MIYOSHI, Kazuhiro YOSHIDA, Joon-wan KIM, Sang In EOM and Shinichi
YOKOTA
Tokyo Institute of Technology, Japan

THERMAL RHEOLOGICAL FLUID WITH SIDE-CHAIN CRYSTALLINE BLOCK
CO-POLYMER (1007)
Toru Okumaa, Ryoko Nakanob, Hiroshi Sekiguchib, Shigeru Yao
Fukuoka University, Japan

EFFECT OF ELECTRODE MATERIALS ON ELECTRO-CONJUGATE FLUID FLOW
GENERATION (1018)
Mika NARAKI*, Kenjiro TAKEMURA*, Shinichi YOKOTA**, Kazuya EDAMURA***
*Keio University, Japan
**Tokyo Institute of Technology, Japan
***New Technology Management Co., Ltd., Japan

10:20-12:00 G1-06 Oil Hydraulics : General

ENERGY EFFICIENT FLUID POWER SYSTEM FOR MOBILE MACHINES WITH
OPEN-CENTRE CHARACTERISTICS (1002)
Mikael Axin*, Björn Eriksson**, and Petter Krus*
Linköping University, Sweden

INVESTIGATION OF NEW SERVO DRIVE CONCEPT UTILIZING TWO FIXED
DISPLACEMENT UNITS (1139)
Henrik C. Pedersen*, Lasse Schmidt*, Torben O. Andersen*, Morten H. Brask**
*Aalborg University, Denmark
** Bosch-Rexroth A/S, Denmark

SIMULATION AND EXPERIMENTAL TESTING OF ACTUATOR FOR A FAST
SWITCHING ON-OFF VALVE SUITABLE TO EFFICIENT DIGITAL DISPLACEMENT
MACHINES (1142)
Daniel B. Roemer, Per Johansen, Michael M. Bech and Henrik C. Pedersen
Aalborg University, Denmark

DROPLETS GENERATION IN A FLOW FIELD BY USING A BOLT-CLAMPED
LANGEVIN-TYPE TRANSDUCER (1073)
Kota MORI*, Takuji MURAKAMI*, Takefumi KANDA*, Koichi SUZUMORI **
*Okayama University, Japan
**Tokyo Institute of Technology, Japan

VORTEX FLOWS AND TURBULENCE MODELS OF OIL JET IMPINGING ON A WALL
WITH HOLES (1080)
Yu SHIBATA*,***, Kazuhiro TANAKA* and Takeshi NAKADA**
* Kyushu Institute of Technology, Japan
** Tokyo Denki University, Japan

***Nabtesco Corporation, Japan

10:20-12:00 G1-08 Oil Hydraulics: Simulation and Control

SIMULATION AIDED DESIGN AND TESTING OF HYDROMECHANICAL TRANSMISSIONS (1006)

Karl Pettersson*, K. Viktor Larsson**, L. Viktor Larsson**, and Petter Krus**

*Volvo Construction Equipment, Eskilstuna, Sweden

**Linköping University, Sweden

MODELING, SIMULATION AND EXPERIMENTAL ANALYSIS OF THE TUBE HIGH-PRESSURE HYDROFORMING SYSTEM (1010)

YaGuang Shang*, DeRu Yu*, ShiGang Wang*

Shanghai Jiao Tong University, China)

AN EXTENDED UNKNOWN INPUT OBSERVER BASED SENSOR FAULT DETECTION IN ELECTRO HYDRAULIC ACTUATOR (1034)

Syed Abu NAHIAN*, Dinh Quang TROUNG**and Kyoung Kwan AHN**

Ulsan University, Korea

A FREQUENCY RESPONSE APPROACH TO SLIDING CONTROL DESIGN FOR HYDRAULIC DRIVES (1042)

Lasse Schmidt, Per Johansen, Torben O. Andersen

Aalborg University, Denmark

OIL FILM THICKNESS CONTROL IMPROVEMENT OF A HYDROSTATIC ROTARY MACHINE (1048)

Ming-Chang Shih and Jen-Sheng Shie

National Cheng-Kung University, Taiwan

10:20-12:10 OS6-01 Medical and Welfare Equipments

BREAST CANCER PALPATION SIMULATOR USING PNEUMATIC ACTUATOR (1137)

Masahiro TAKAIWA* , Takeshi MATSUNO*, Daisuke SASAKI* and Toshiro NORITSUGU**

*Okayama University

** Tsuyama National College of Technology, Japan

STUDY ON HIGH-PERFORMANCE SHOES FOR WALKING TRAINING (1067)

Kazuma KANEZAKI, Yasuhiro HAYAKAWA, Shogo KAWANAKA and Shigeki DOI

Nara National College of Technology, Japan

SURGICAL ROBOT USING FORCE INPUT TYPE OPERATION INTERFACE (1065)

In KIM*, Takahiro KANNO**, Kotaro TADANO* and Kenji KAWASHIMA**

*Tokyo Institute of Technology, Japan

**Tokyo Medical and Dental University, Japan

PNEUMATIC DEVICE FOR POSTURAL BALANCE IN ELDERLY (1146)

HisamiMURAMATSU*, ShigekiYAMAMOTO** and ReoCHIBA***

* Numazu National College of Technology, Japan

**Toyota Motor East Japan, INC., Japan,

***Nagaoka University of Technology, Japan,

Lunch at Room E

13:00-14:40 OS5-02 Functional Fluids

DAMPING PROPERTIES OF SEIMIC LINEAR MOTION DAMPER WITH MR FLUID COMPOSITE ROTARY BRAKE (1127)

Masami NAKANO*, Atsushi TOTSUKA*, Tomoaki INABA* and Akira FUKUKITA**

*Tohoku University, Japan

**Shimizu Corporation, Japan

EVALUATION OF THE DISPERSION STABILITY AND REDISPERSIBILITY OF NANOPARTICLE MR FLUID AGAINST SEDIMENTATION USING X-RAY CT (1099)

Junichi Noma*, Yuya Ueshima* and Masami Nakano**

*Kurimoto, LTD., Japan

**Tohoku University, Japan

EFFICIENT UTILIZATION OF WIND ENRGY BY ELECTRO-MAGNETIC TORQUE CONTROL WITH POWER GENERATION (1129)

Akira TANIDA and Hidemasa TAKANA

Tohoku University, Japan

STUDY ON A PUMP USING FUNCTIONAL FLUID FLOW (1028)

Keitaro HAMADA, Kohei MIYAHARA and Tetsuhiro TSUKIJI

Sophia University, Japan

3-TRIANGULAR PRISM ELECTRODES DESIGN FOR ELECTRO-CONJUGATE FLUID MICROPUMP (1145)

Hongri GU*, Joon-wan KIM*, Shinichi YOKOTA* and Kazuya EDAMURA**

* Tokyo Institute of Technology, Japan

** New Technology Management Co. Ltd, Japan

12:40-14:50 G1-07 Oil Hydraulics: Noise and vibration

MODELING NOISE SOURCES AND PROPAGATION IN DISPLACEMENT MACHINES AND HYDRAULIC LINES (1003)

Timothy Opperwall*, Andrea Vacca*

Purdue University, USA

MODAL ANALYSIS SIMULATION AND VALIDATION OF A HYDRAULIC MOTOR (1020)

Christian SCHLEIHS* and Hubertus MURRENHOFF*

RWTH Aachen University, Germany

EXPERIMENTAL ANALYSIS OF ATTENUATORS IN HYDRAULIC CIRCUITS (1027)

Jiabin ZHU*, Feng YU**, Hua ZHOU*, Huayong YANG*

*Zhejiang University, China

**China Shipbuilding Industry Corporation, China

NUMERICAL ANALYSIS OF ACOUSTIC FIELD AROUND SOUND INSULATION

COVER USING ACOUSTIC/STRUCTURE COUPLED TECHNIQUE (1045)

Fumio SHIMIZU*, Koji YAMAMOTO**, Hiroshi SHIGEFUJI***and Kazuhiro TANAKA*

* Kyushu Institute of Technology, Japan

**TADANO Ltd., Japan

***TOTO Ltd.

ATTENUATION CHARACTERISTICS OF A HELMHOLTZ TYPE OF HYDRAULIC SILENCER WITH HEMISPHERICAL VESSEL SHAPE (1121)

Tetsuya KURIBAYASHI*, Takayoshi ICHIYANAGI** and Takao NISHIUMI**

National Defense Academy, Japan

AVOIDANCE OF PRESSURE OSCILLATIONS IN DISCRETE FLUID POWER SYSTEMS WITH TRANSMISSION LINES - AN ANALYTICAL APPROACH (1149)

Anders Hedegaard Hansen and Henrik C. Pedersen

Aalborg University, Denmark

12:40-14:50

OS7-01 Water hydraulics

IMAGE ANALYSIS OF UNSTEADY STRUCTURE OF HIGH-SPEED CAVITATING JET (1157)

Nobuyuki FUJISAWA, Takayuki KIKUCHI, Ryuta WATANABE, Takayuki YAMAGATA

Niigata University, Japan

OPTIMIZATION DESIGN AND EXPERIMENTAL INVESTIGATION OF THE WATER HYDRAULIC PILOTED SOLENOID RELIEF VALVE (1014)

Xiangyang Liu, Songlin Nie, Shuai Yin and Minghui Chen

Beijing University of Technology, China

DEVELOPMENT OF VANE-TYPE WATER HYDRAULIC OSCILLATING MOTOR OF THREE-QUARTER TURN TYPE (1120)

Kenji SUZUKI*, Ryosuke TORII** and Yohichi NAKAO*

*Kanagawa University, Japan

** Sakagami Seisakusho, Ltd., Japan

SIMULATION ON CAVITATION FLOW FOR A WATER HYDRAULIC AXIAL PISTON PUMP WITH INTERFACE GAPS (1031)

Fanglong Yin*and Songlin Nie*

Beijing University of Technology, China

DISPLACEMENT CONTROL OF WATER HYDRAULIC MCKIBBEN MUSCLE WITH LOAD COMPENSATION - APPLICATION OF MODEL PREDICTIVE CONTROL- (1035)

Wataru KOBAYASHI, Kazuhisa ITO and Shin-ichiro YAMAMOTO

Shibaura Institute of Technology, Japan

CHARACTERISTIC OF PRESSURE CONVERTER BY ACTIVE CHARGE ACCUMULATOR FOR WATER HYDRAULIC SYSTEM (1078)

Kenji ITO*, Shouichiro IIO*, Futoshi YOSHIDA**, Ato KITAGAWA***

* Shinshu University, Japan

**KYB Corporation, Japan

***Tokyo Institute of Technology, Japan

13:00-14:40 OS6-02 Medical and Welfare Equipments

A NUMERICAL STUDY OF THE AIR FLOW IN A BRANCHING PIPE MODELED ON BRONCHI (1133)

Kensyo Takahashi,* Mariko Watanabe,* and Jobu Watanabe**

* Sophia University, Japan

** Teikyo Heisei University, Japan

THEORETICAL AND EXPERIMENTAL ANALYSIS OF WEARABLE CONTROL VALVE WITH SELF-HOLDING FUNCTION USING PERMANENT MAGNETS (1077)

Tetsuya AKAGI*, Shujiro DOHTA* and Ying ZHANG*

*Okayama University of Science, Japan

IMPROVEMENT OF LOW-COST WEARABLE SERVO VALVE USING BUCKLED TUBE (1075)

Ayumu ONO*, Tetsuya AKAGI*, Shujiro DOHTA* and Abdul NASIR*

*Okayama University of Science, Japan

OPERATION OF SURGICAL ROBOT USING A HAPTIC MASTER DEVICE WITH AIR JETS (1064)

In KIM*, Takumi YAJIMA*, Takahiro KANNO**, Kotaro TADANO* and Kenji KAWASHIMA**

*Tokyo Institute of Technology, Japan

**Tokyo Medical and Dental University, Japan

DEVELOPMENT OF AN EMG-BASED MOTION DETECTOR FOR A PNEUMATIC ARM ASSISTIVE DEVICE (1017)

Jun Kitai*, Takahiro Kosaki*, Keita Atsumi*, Yuzo Takahashi*, and Manabu Sano**

* Hiroshima City University, Japan

**Osaka Gakuin University, Japan

14:40-15:20 Exhibition Core Time & Coffee Break at Room E

15:20-16:10 Special Lecture : Prof. M. Cai at Room A

Bus Transportation 16:10-18:00

Banquet 18:00-20:00

Friday, October 31

9:00-10:20 OS8-01 Simulations and CAE

VIRTUAL SIMULATOR TO TEST SUITABILITY OF INTEGRATED ELECTRO-HYDRAULIC ENERGY CONVERTER IN DIFFERENT TYPES OF WORKING MACHINES (1144)

Lauri O. LUOSTARINEN, Rafael ÅMAN and Heikki HANDROOS

Lappeenranta University of Technology, Finland

CHARACTERISTICS OF THE MULTIPHASE FLOW IN A HYDROCYCLONE FOR FLUID POWER SYSTEMS (1086)

Chenxiang Wang, Chen Ji, Jun Zou*, Xin Fu
Zhejiang University, China

TEMPERATURE PREDICTION IN OIL-HYDRAULIC COMPONENTS AND CIRCUIT BY SYSTEM MODELING METHOD COUPLED WITH 3D-CFD SIMULATION (1059)

Fumio SHIMIZU*, Kazuhiro TANAKA*, Kohki TOMIOKA**, Hiroshi HIGO*
*Kyushu Institute of Technology, Japan
**Nitto Denko Co., Ltd.

ON SIMPLIFICATIONS OF SIMULATION MODELS FOR PNEUMATIC TURBULENT FLOWS THROUGH TUBES (1015)

Kazuo NAKANO *, Eiji MURAYAMA** and Yukio KAWAKAMI**
* Tokyo Institute of Technology, Japan
**Shibaura Institute of Technology, Japan

9:20-10:20 G2-04 Pneumatics: Compressor

A STUDY AND DEVELOPMENT OF THE SMALL GAS PRESSURE SOURCE USING THE TRIPLE POINT OF THE DRY ICE (1123)

Daisuke HORIGUCHI*, Yuki TANI *, Osamu OYAMA*, Ato KITAGAWA**
*Meiji University, Japan
**Tokyo Institute of Technology, Japan

DEVELOPMENT AND APPLICATION OF ALTERNATE DIRECTION AIR COMPRESSOR (1128)

Hiroki HASEGAWA*, Osamu OYAMA* and Toshihiro YOSHIMISTU**
* Meiji University, Japan
**Kanagawa Institute of Technology, Japan

DEVELOPMENT OF A MINITURE RUBBER MUSCLE DRIVEN BY GAS-LIQUID PHASE CHANGE (1055)

Tomonori KATO*, Mingzhao CHENG*, Shunta HONDA*, Toshiki OGASAWARA* and Manabu ONO**
*Fukuoka Institute of Technology, Japan
** Tokyo Metropolitan College of Industrial Technology, Japan

9:00-10:20 OS2-04 Robotics and mechatronics

MULTI-ABSORBING WAVE ENERGY CONVERTER USING CYLINDERS AND PRESSURE COUPLING PRINCIPLE (1107)

Hoang-Thinh DO*, Cong-Binh PHAN*, Hyung-Gyu PARK** and Kyoung-Kwan AHN
University of Ulsan, Korea

DEVELOPMENT OF A 7-DOF POWER ASSISTANT ROBOT (1108)

Doan Ngoc Chi NAM, Kyoung Kwan AHN, Dao Thanh LIEM, and Jihwan LEE
* University of Ulsan, Korea

ANALYSIS AND CONTROL OF A THREE-AXIAL PYRAMIDAL PNEUMATIC

PARALLEL MANIPULATOR (1118)
Mao-Hsiung Chiang*, Yih-Nan Chen*, Wei-Hsin Chou*
National Taiwan University, Taiwan

STUDY ON REMOTE CONTROL FOR FIELD ROBOT AND AUGMENTED REALITY
VISION USING HEAD TRACKER SYSTEM (1119)
Soon-Yong YANG, Quang Hoan LE, Young-Man JEONG and Chi Thanh NGUYEN
University of Ulsan, Korea

9:00-10:20 OS3-02 Basic theory and technologies

COMPARING DRIVES WITH VARIABLE LOW SPEED AND HIGH TORQUE (1070)
Takahiro Urai, Osamu Hoshino
Bosch Rexroth Corporation, Japan

MODELING OF HYDRAULIC VALVE-CONTROLLED CYLINDER POWER
MECHANISM BASED ON FLOW APPROXIMATION (1092)
Yanhong BAI*,**, Long QUAN*
*Taiyuan University of Technology, China
**Taiyuan University of Science and Technology, China

A NUMERICAL STUDY ON THE SIMPLEST HYDRAULIC CONTROL SYSTEM (1135)
Satoru Sakai
Shinshu University, Japan

ORDER REDUCTION OF OPTIMIZED FINITE ELEMENT MODEL OF PIPELINE
DYNAMICS (1011)
Kazushi SANADA*
Yokohama National University, Japan

Coffee Break at Room E

10:40-11:50 OS8-02 Simulations and CAE

UNSTEADY CFD SIMULATION OF PURE-TONE NOISE GENERATED BY A
HYDRAULIC RELIEF VALVE (1158)
Masanori TAKAHASHI*, Ryo NOMURA*, Makoto AOKI*, Tsunehiro OKAHASHI**
Kawasaki Heavy Industries, LTD., Japan
1158

REDUCTION OF UNDESIRE FLOW-INDUCED PHENOMENA IN A
FLAPPER-NOZZLE PILOT VALVE BY USING DIFFERENT INNOVATIVE FLAPPER
SHAPES: A CFD APPROACH (1012)
Nay Zar Aung**, Qingjun YANG** and Songjing LI **
*Mandalay Technological University, Myanmar
**Harbin Institute of Technology, China

A STUDY OF THE FUEL-FLOW DRIFT WHEN CHANGING THE PUMP MODE ON A
FUEL-METERING SYSTEM FOR A TURBO FAN ENGINE (1023)
Seiei MASUDA
IHI, Corporation, Japan

10:40-11:20

OS4-02 Tribology, Seals and Contamination Control

MODELLING OF SPATIAL CONFORMAL LUBRICATED JOINTS IN FLUID POWER MULTIBODY SYSTEMS (1141)

Per Johansen, Daniel B. Roemer, Henrik C. Pedersen and Torben O. Andersen
Aalborg University, Denmark

DYNAMIC BEHAVIORS OF PNEUMATIC CYLINDER (FRICTION AND VIBRATION CHARACTERISTICS) (1044)

Yasunori WAKASAWA*, Yuhi ITO* and Hideki YANADA**

*Toyota National College of Technology, Japan

**Toyohashi University of Technology, Japan

10:40-12:00

OS2-05 Robotics and mechatronics

DESIGN AND CONTROL OF AN UPPER-LIMB POWER-ASSIST EXOSKELETON DRIVEN BY PNEUMATIC MUSCLES (1081)

Hao LIU*, Danting ZHANG*, Yong ZHAO*, ZHishou LI*

*Zhejiang University, China

RESEARCH ON THE CONTROL SYSTEM OF A MULTI-JOINT MANIPULATOR WITH HYBRID DRIVING (1090)

Dongyuan Qiu, Guanglin Shi and Licheng Yu

Shanghai Jiao Tong University, China

CONTROL OF FLEXIBLE PNEUMATIC ROBOT ARM USING MASTER DEVICE WITH PNEUMATIC BRAKE MECHANISM (1094)

Mohd ALIFF*, Shujiro DOHTA*, Tetsuya AKAGI and Takafumi MORIMOTO*

* Okayama University of Science, Japan

STUDY ON CONTROL PERFORMANCE WITH CONSIDERATION OF THE ARTICULATED MANIPULATORS WITH PNEUMATIC CYLINDERS - SIMPLE ADAPTIVE CONTROL SYSTEM AND ITS APPLICATION TO NONLINEAR FRICTIONS- (1101)

Yoshiyuki Yogosawa*, Eiji Murayama*, Yukio Kawakami*, Akiyoshi Horikawa**, Koji Shioda**, Masashi Ogawa**

* Shibaura Institute of Technology, Japan

** KOGANEI Corporation, Japan

10:40-11:50

OS3-03 Basic Theory and Technologies

A KALMAN FILTER USING THE CIP METHOD TO ESTIMATE SMALL AMPLITUDE PRESSURE WAVE IN GAS PIPELINE (1132)

Mitsuhiro NAKAO*

*Kagoshima University, Japan

INFLUENCE OF COPPER WIRE QUANTITY IN AN ISOTHERMAL CHAMBER FOR A FINE PRESSURE WAVE GENERATOR (1134)

Daisuke Sakamoto, Chongho Youn, and Toshiharu Kagawa

*Tokyo Institute of Technology, Japan

A METHOD TO REDUCE THE TEMPERATURE CHANGE OF PNEUMATIC
ARTIFICIAL RUBBER MUSCLE (1062)

Jun LI*, Kenji KAWASHIMA**and Toshiharu KAGAWA*

*Tokyo Institute of Technology, Japan

** Tokyo Medical and Dental University, Japan

12:10-12:30 Closing Ceremony at Main Hall at Room A

12:30-13:30 Lunch at Room E