

IJTPE Journal

International Journal on TECHNICAL AND PHYSICAL PROBLEMS OF ENGINEERING (IJTPE)

<http://www.iotpe.com>
<http://www.iotpe.com/ijtpe.html>
ijtpe@iotpe.com , ijtpe0@gmail.com

Issue 3

Volume 2

Number 2

June 2010

Serial No: 0003-0202-0610



Founders and Publishers: International Organization on TPE (IOTPE)



Institute of Physics
Azerbaijan National Academy of Sciences
Baku, Azerbaijan
www.science.gov.az/physics



Seraj Higher Education Institute
Tabriz, Iran
www.seraj.ac.ir



Gazi University
Ankara, Turkey
www.gazi.edu.tr



University of Pitesti
Pitesti, Romania
www.upit.ro



Universidad del País Vasco Euskal Herriko Unibertsitatea
www.ehu.es

IJTPE Journal
International Journal on
TECHNICAL AND PHYSICAL PROBLEMS OF ENGINEERING
(IJTPE)

Published by International Organization on TPE (IOTPE)

<http://www.iotpe.com>
<http://www.iotpe.com/ijtpe.html>
ijtpe@iotpe.com , ijtpe0@gmail.com

Issue 3

Volume 2

Number 2

June 2010

Serial No: 0003-0202-0610

EDITORS-IN-CHIEF:

Academician Arif M. HASHIMOV
Prof. Naser MAHDAVI TABATABAEI

SCIENTIFIC AND EXECUTIVE SECRETARY:

Narges Sadat BOUSHEHRI, M.Sc.

EDITORIAL BOARD:

- Prof. Javier BILBAO, University of the Basque Country (*Bilbao, Spain*)
- Acad. Arif HASHIMOV, Institute of Physics of Azerbaijan National Academy of Sciences (*Baku, Azerbaijan*)
- Prof. Silviu IONITA, University of Pitesti (*Pitesti, Romania*)
- Prof. Naser MAHDAVI TABATABAEI, Seraj Higher Education Institute (*Tabriz, Iran*)
- Prof. Rauf MEHDIZADEH, Institute of Physics of Azerbaijan National Academy of Sciences (*Baku, Azerbaijan*)
- Prof. Cengiz TAPLAMACIOGLU, Gazi University (*Ankara, Turkey*)

ADVISORY BOARD:

- Prof. Nicu BIZON, University of Pitesti (*Pitesti, Romania*)
- Dr. Reza EFFATNEJAD, Islamic Azad University, Karaj Branch (*Karaj, Iran*)
- Prof. Ires ISKENDER, Gazi University (*Ankara, Turkey*)
- Dr. Kamil QURBANOV, Institute of Physics of Azerbaijan National Academy of Sciences (*Baku, Azerbaijan*)
- Prof. Nariman RAHMANOV, Cleaner Production and Energy Efficiency Center (*Baku, Azerbaijan*)
- Prof. Karim RAMAZANOV, Azerbaijan National Academy of Sciences (*Baku, Azerbaijan*)
- Prof. Ali ROSTAMI, University of Tabriz (*Tabriz, Iran*)
- Acad. Mohammad Emin SHAHTAKHTINSKI, Institute of Physics of Azerbaijan National Academy of Sciences (*Baku, Azerbaijan*)
- Prof. Heidar Ali SHAYANFAR, Iran University of Science & Technology (*Tehran, Iran*)
- Dr. Hossein SHAYEGHI, University of Mohaghegh Ardabili (*Ardabil, Iran*)
- Dr. Navid TAGHIZADEGAN, Azarbaijan Research and Higher Education Institute (*Tabriz, Iran*)

SCIENTIFIC BOARD:

- Ahrabian, Gh., Dr. (*Iran*)
Akcamlı, N., Dr. (*Turkey*)
Albizu, I., Prof. (*Spain*)
Ardehali, M.M., Prof. (*Iran*)
Aydemir, T.M. (*Turkey*)
Banan, Kh., Dr. (*Iran*)
Bay, O.F., Prof. (*Turkey*)
Behjat, V., Dr. (*Iran*)
Beloiu, Robert, Dr. (*Romania*)
Bilbao, J., Prof. (*Spain*)
Bizon, N., Prof. (*Romania*)
Boushehri, N.S. (*Iran*)
Bravo, E., Prof. (*Spain*)
Buigues, G. (*Spain*)
Chirlesan, D., Dr. (*Romania*)
Chita, M.A., Dr. (*Romania*)
Colak, I., Prof. (*Turkey*)
Constantinescu, L., Dr. (*Romania*)
Craciunescu, A. (*Romania*)
Darabi, A., Prof. (*Iran*)
Dincer, S., Prof. (*Turkey*)
Dmitriyev, Y., Prof. (*Russia*)
Dursun, K., Dr. (*Norway*)
Effatnejad, R., Dr. (*Iran*)
Eguia, P., Prof. (*Spain*)
Faiz, J., Prof. (*Iran*)
Farsangi, M.M., Dr. (*Iran*)
Feizi, M.R., Dr. (*Iran*)
Fianu, S., Dr. (*Romania*)
Ghanbari, E., Prof. (*Iran*)
Gholami, A., Prof. (*Iran*)
Hardalac, F., Dr. (*Turkey*)
Hasanov, E., Dr. (*Azerbaijan*)
Hashimov, A., Acad. (*Azerbaijan*)
Hernandez, J.R., Prof. (*Spain*)
Huseynov, A., Prof. (*Azerbaijan*)
Ionita, S., Prof. (*Romania*)
Iordache, M. (*Romania*)
Iskender, I., Prof. (*Turkey*)
Izykowski, J., Prof. (*Poland*)
Jadid, Sh., Prof. (*Iran*)
Kalantar, M., Prof. (*Iran*)
Karami, A., Dr. (*Iran*)
Kazemi, A., Dr. (*Iran*)
Kenarangui, R., Prof. (*USA*)
Khalin, M., Prof. (*Russia*)
Khalina, T., Dr. (*Russia*)
Kocaarslan, I., Prof. (*Turkey*)
Kuznetsov, V., Prof. (*Ukraine*)
Lefter, E. (*Romania*)
Lita, I. (*Romania*)
Mamedyarov, O., Prof. (*Azerbaijan*)
Mammadov, H., Prof. (*Azerbaijan*)
Mehdiyev, T., Prof. (*Azerbaijan*)
Mehdizadeh, R., Prof. (*Azerbaijan*)
Mustafaev, R., Prof. (*Azerbaijan*)
Nayir, A., Dr. (*Turkey*)
Oprescu, B., Dr. (*Romania*)
Oproescu, M. (*Romania*)
Oraee, H., Prof. (*Iran*)
Pavlyuchenko, D.A., Prof. (*Russia*)
Perpelea, M. (*Romania*)
Pirverdiyev E., Dr. (*Azerbaijan*)
Qurbanov, K., Dr. (*Azerbaijan*)
Rahmanov, N., Prof. (*Azerbaijan*)
Ramazanov, K., Prof. (*Azerbaijan*)
Rosolowski, E., Prof. (*Poland*)
Rostami, A., Prof. (*Iran*)
Rzayev, F., Dr. (*Azerbaijan*)
Sefa, I., Dr. (*Turkey*)
Senol, M.A., Dr. (*Turkey*)
Serban, G., Prof. (*Romania*)
Shahtakhtinski, M.H., Acad. (*Azerbaijan*)
Sharifian, M.B.B., Prof. (*Iran*)
Shayanfar, H.A., Prof. (*Iran*)
Shayeghi, H., Dr. (*Iran*)
Shidlovsky, A., Prof. (*Ukraine*)
Stanescu, C., Prof. (*Romania*)
Tabatabaei, Naser M., Prof. (*Iran*)
Tabatabaei, Nejat M., Dr. (*Germany*)
Taghizadegan, N., Dr. (*Iran*)
Tutanescu, I., Dr. (*Romania*)
Vishtibeyev, A. Prof. (*Russia*)
Voicu, N. (*Romania*)
Yalcinoz, T., Prof. (*Turkey*)
Yusifbeyli, N., Prof. (*Azerbaijan*)

EDITORIAL NOTE

We are pleased to present International Journal on TPE (Technical and Physical Problems of Engineering), IJTPE, in English and electronic print published seasonal periodically by the partners of International Organization on TPE (IOTPE) including Institute of Physics of Azerbaijan National Academy of Sciences and Azerbaijan Research Institute of Energetics and Energy Design (Azerenergy Joint Stock Company), Seraj Higher Education Institute (Tabriz, Iran), Gazi University (Ankara, Turkey), University of Pitesti (Pitesti, Romania) and University of the Basque Country (Bilbao, Spain).

International Organization on TPE (IOTPE) is a scientific association is also the founder and holder of International Conferences on "Technical and Physical Problems of Power Engineering" (ICTPE) in 2002 (Baku, Azerbaijan), 2004 (Tabriz, Iran), 2006 (Ankara, Turkey), 2008 (Pitesti, Romania), 2009 (Bilbao, Spain) and the next one 2010 (Tabriz, Iran).

Successful organizing and holding ICTPE conferences and publishing IJTPE journals indicates close friendship and scientific collaboration of the scientists and researchers of member countries in engineering field development between the countries. The importance of holding ICTPE conferences and publishing IJTPE journals are mutual understanding and recognition between the organizer countries through scientific, social and cultural development where yields increasing international cooperation in scientific areas.

Furthermore, the importance subjects of ICTPE conferences and journals are related to the opportunity for researches and scientists from different countries to clarify and discuss the latest and mutual research achievements and improvements as well as generalization of the internationally obtained results in the area of engineering and new technologies.

The conduct of ICTPE conferences and journals are based on important principle of the cooperative relationship between science and industry. This relationship is a basis for the activity of contemporary engineering companies. It is well known that important technical advance is possible only due to achievements of fundamental science.

Publishing International Journal on TPE (IJTPE) is getting increasing importance for cooperation of researchers and scientific centers of different countries. We strongly believe the journal provides the establishing scientific relationships and also increase the cooperation of east and west countries on the subject of engineering fields and applying the new technologies on solving technical and physical problems.

By the mean of IJTPE journal publication, the cooperation with the partners from the involved countries and also all of the worlds will be fostered. It is the main objective to enhance the level of multilateral exchanges, the involvement of authors in developing and improving the scientific research.

We will do our best to disseminate the journal's results and forward to the possible technological transfer of the accumulated knowledge of the scientific contributions of the authors.

Finally, we wish to express our gratefulness to all the authors and scientists from all over the world who have scientific reports in preparing the transactions published in the journal.

Editors-in-Chief

Academician Arif M. HASHIMOV
Prof. Naser M. TABATABAEI

<u>NO</u>	<u>CONTENTS</u>	<u>PAGES</u>
1	DESIGNING POWER SYSTEM STABILIZER WITH PID CONTROLLER N.M. Tabatabaei, M. Shokouhian Rad	1-7
2	ECONOMICAL ESTIMATION OF SOLAR AND WIND ENERGIES APPLICATION AS ALTERNATIVE OF FIRE WOOD G.Sh. Mammadov, U.F. Samadova, F.F. Mammadov	8-12
3	EFFECT OF LOSS PENALTY FACTOR ON UNIT COMMITMENT E. Moradi, F. Jamali, P. Abdollahifard	13-17
4	THE COMPARATIVE ANALYSIS OF WIND POWER PLANTS (WPP) USING EFFICIENCY IN ABSHERON PENINSULA CONDITIONS OF THE REPUBLIC OF AZERBAIJAN R.I. Mustafayev, R.A. Saidov, L.H. Hasanova	18-21
5	OPTIMAL UNIT COMMITMENT OF POWER SYSTEM USING FAST MESSY GENETIC ALGORITHM A. Safari, H.A. Shayanfar, R. Jahani	22-27
6	PSO BASED NEURO-FUZZY CONTROLLER FOR LFC DESIGN INCLUDING COMMUNICATION TIME DELAYS H. Shayeghi, H.A. Shayanfar	28-36
7	EFFECT OF USING DISSOLVED AIR FLOTATION SYSTEM ON INDUSTRIAL WASTEWATER TREATMENT IN PILOT SCALE Y. Habibzadeh, R. Namaki, S. Rafizadeh Rashid	37-44
8	ROBUST LOOP-SHAPING BASED POD CONTROLLER DESIGN FOR UPFC H. Shayeghi, H.A. Shayanfar, F. Shalchi	45-51
9	THE STARTER-GENERATING COMPLEX Z.N. Musaev	52-56