

# 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 23

Volume 7

Number 2

June 2015

Serial No: 0023-0702-0615

**Founders and Publishers:****International Organization of IOTPE**

Institute of Physics  
 Azerbaijan National Academy of Sciences  
 Baku, Azerbaijan  
[www.science.gov.az/physics](http://www.science.gov.az/physics)



Seraj Higher Education Institute  
 Tabriz, Iran  
[www.seraj.ac.ir](http://www.seraj.ac.ir)



Azerbaijan Research Institute of  
 Energetics and Energy Design  
 Azerenerji JSC, Baku, Azerbaijan  
<http://pei.az>



Taba Elm International Institute  
 Tabriz, Iran  
[www.tabaelm.com](http://www.tabaelm.com)



Cleaner Production and  
 Energy Efficiency Center  
 Baku, Azerbaijan  
<http://cpee.az>



Gazi University  
 Ankara, Turkey  
[www.gazi.edu.tr](http://www.gazi.edu.tr)



University of Pitesti  
 Pitesti, Romania  
[www.upit.ro](http://www.upit.ro)



Istanbul Technical University  
 Istanbul, Turkey  
[www.itu.edu.tr](http://www.itu.edu.tr)



LUMINA - University of  
 South-East Europe  
 Bucharest, Romania  
[www.lumina.org](http://www.lumina.org)



Isik University  
 Istanbul, Turkey  
[www.isikun.edu.tr](http://www.isikun.edu.tr)



University of the Basque Country  
 Bilbao, Spain  
[www.ehu.es](http://www.ehu.es)



Near East University  
 Lefkosa, Northern Cyprus  
[www.neu.edu.tr](http://www.neu.edu.tr)



Ostfold University College  
 Fredrikstad, Norway  
[www.hiof.no](http://www.hiof.no)

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

**Published by International Organization of IOTPE**

**<http://www.iotpe.com>**  
**<http://www.iotpe.com/ijtpe.html>**  
**[ijtpe@iotpe.com](mailto:ijtpe@iotpe.com), [ijtpe0@gmail.com](mailto:ijtpe0@gmail.com)**

**Issue 23**

**Volume 7**

**Number 2**

**June 2015**

**Serial No: 0023-0702-0615**

**EDITORS-IN-CHIEF:**

- Academician Arif M. HASHIMOV
- Prof. Naser MAHDAVI TABATABAEI

**SCIENTIFIC AND EXECUTIVE SECRETARIES:**

- Narges Sadat BOUSHEHRI, M.Sc. - Ali JAFARI, M.Sc. - Ali PASHAEI, Ph.D.

**EDITORIAL BOARD:**

- Prof. Ahmet AKSEN, Isik University (*Istanbul, Turkey*)
- Prof. Javier BILBAO, University of the Basque Country (*Bilbao, Spain*)
- Prof. Nicu BIZON, University of Pitesti (*Pitesti, Romania*)
- Assoc. Prof. Kamil DURSUN, Ostfold University College (*Fredrikstad, Norway*)
- Asst. Prof. Reza EFFATNEJAD, Islamic Azad University, Karaj Branch (*Karaj, Iran*)
- Acad. Arif M. HASHIMOV, Institute of Physics of Azerbaijan National Academy of Sciences (*Baku, Azerbaijan*)
- Prof. Silviu IONITA, University of Pitesti (*Pitesti, Romania*)
- Prof. Yorgo ISTEфанOPULOS, Isik University (*Istanbul, Turkey*)
- Asst. Prof. Derya Ahmet KOCABAS, Istanbul Technical University (*Istanbul, Turkey*)
- Prof. Naser MAHDAVI TABATABAEI, Seraj Higher Education Institute (*Tabriz, Iran*)
- Prof. Rauf N. MEHDIZADEH, Institute of Physics of Azerbaijan National Academy of Sciences (*Baku, Azerbaijan*)
- Assoc. Prof. Ozgur C. OZERDEM, Near East University (*Lefkosa, Northern Cyprus*)
- Prof. Nariman R. RAHMANOV, Azerbaijan Research Institute of Energetics & Energy Design (*Baku, Azerbaijan*)
- Prof. Ali ROSTAMI, University of Tabriz (*Tabriz, Iran*)
- Prof. Fahreddin M. SADIKOGLU, Near East University (*Lefkosa, Northern Cyprus*)
- Prof. Heidar Ali SHAYANFAR, Iran University of Science and Technology (*Tehran, Iran*)
- Prof. Hossein SHAYEGHI, University of Mohaghegh Ardabili (*Ardabil, Iran*)
- Prof. Ion SIMA, LUMINA - University of South-East Europe (*Bucharest, Romania*)
- Prof. M. Cengiz TAPLAMACIOGLU, Gazi University (*Ankara, Turkey*)
- Prof. Omer USTA, Istanbul Technical University (*Istanbul, Turkey*)

**ADVISORY BOARD:**

- Prof. Senol BEKTAS, Near East University (*Lefkosa, Northern Cyprus*)
- Dr. Robert BELOIU, University of Pitesti (*Pitesti, Romania*)
- Dr. Adrian BETERINGHE, LUMINA - University of South-East Europe (*Bucharest, Romania*)
- Prof. Eugenio BRAVO, University of the Basque Country (*Bilbao, Spain*)
- Prof. Aysen DEMIROREN, Istanbul Technical University (*Istanbul, Turkey*)
- Dr. Lami KAYA, Sahara Group (*Istanbul, Turkey*)
- Prof. Dominic B.O. KONDITI, Multimedia University College of Kenya (*Nairobi, Kenya*)
- Prof. Ires ISKENDER, Gazi University (*Ankara, Turkey*)
- Prof. Anvar T. KHUDIEV, Institute of Petrochemical Processes of Azerbaijan National Academy of Sciences (*Baku, Azerbaijan*)
- Asst. Prof. Ahmet NAYIR, Fatih University (*Istanbul, Turkey*)
- Asst. Prof. Kamil B. QURBANOV, Institute of Physics of Azerbaijan National Academy of Sciences (*Baku, Azerbaijan*)

**SCIENTIFIC BOARD:**

- Ahrabian, Gh., Asst. Prof. (*Iran*)  
Akcamlar, N., Asst. Prof. (*Turkey*)  
Aksen, A., Prof. (*Turkey*)  
Albizu, I., Prof. (*Spain*)  
Alizade, P., Prof. (*Turkey*)  
Amel, D., Prof. (*Tunisia*)  
Ardehali, M.M., Prof. (*Iran*)  
Ari, M., Assoc. Prof. (*Turkey*)  
Arntsen, E. (*Norway*)  
Aydemir, T.M. (*Turkey*)  
Banan, Kh., Asst. Prof. (*Iran*)  
Bay, O.F., Prof. (*Turkey*)  
Behjat, V., Asst. Prof. (*Iran*)  
Bektas, S., Prof. (*Northern Cyprus*)  
Beloiu, R., Dr. (*Romania*)  
Beteringhe, A., Dr. (*Romania*)  
Bilbao, J., Prof. (*Spain*)  
Bizon, N., Prof. (*Romania*)  
Boushehri, N.S. (*Iran*)  
Bravo, E., Prof. (*Spain*)  
Buigues, G. (*Spain*)  
Chaudhry, A., Dr. (*India*)  
Chirlesan, D., Dr. (*Romania*)  
Colak, I., Prof. (*Turkey*)  
Constantinescu, L., Dr. (*Romania*)  
Darabi, A., Prof. (*Iran*)  
Demiroren, A., Prof. (*Turkey*)  
Dincer, M.S., Prof. (*Turkey*)  
Dursun, K., Assoc. Prof. (*Norway*)  
Effatnejad, R., Asst. Prof. (*Iran*)  
Eguia, P., Prof. (*Spain*)  
Eke, I., Dr. (*Turkey*)  
Faiz, J., Prof. (*Iran*)  
Farsadi, M., Assoc. Prof. (*Iran*)  
Farsangi, M.M., Assoc. Prof. (*Iran*)  
Feizi, M.R., Prof. (*Iran*)  
Fianu, S., Dr. (*Romania*)  
Forrisdal, O.K., Assoc. Prof. (*Norway*)  
Ghanbari, E., Prof. (*Iran*)  
Gholami, A., Prof. (*Iran*)  
Hardalac, F., Dr. (*Turkey*)  
Hasanov, E.R., Prof. (*Azerbaijan*)  
Hasanova, S.I., Asst. Prof. (*Azerbaijan*)  
Hashimov, A.M., Acad. (*Azerbaijan*)  
Hatami, H., (*Iran*)  
Hernandez, J.R., Prof. (*Spain*)  
Huseynov, A., Prof. (*Azerbaijan*)  
Ionita, S., Prof. (*Romania*)  
Iordache, M. (*Romania*)  
Iskender, I., Prof. (*Turkey*)  
Istefanopulos, Y., Prof. (*Turkey*)  
Izykowski, J., Prof. (*Poland*)  
Jadid, Sh., Prof. (*Iran*)  
Jafari, A. (*Iran*)  
Kalantar, M., Prof. (*Iran*)  
Kaya, L., Dr. (*Turkey*)  
Kazemi, A., Assoc. Prof. (*Iran*)  
Kenarangui, R., Prof. (*USA*)  
Khalin, M.V., Prof. (*Russia*)  
Khalina, T.M., Prof. (*Russia*)  
Khudiev, A.T., Prof. (*Azerbaijan*)  
Kocaarslan, I., Prof. (*Turkey*)  
Kocabas, D.A., Asst. Prof. (*Turkey*)  
Konditi, D.B.O., Prof. (*Kenya*)  
Kuznetsov, V., Prof. (*Ukraine*)  
Lefter, E. (*Romania*)  
Lita, I. (*Romania*)  
Mamedov, N.A., Prof. (*Azerbaijan*)  
Mehdiyev, T.R., Prof. (*Azerbaijan*)  
Mehdizadeh, R.N., Prof. (*Azerbaijan*)  
Mordt, H., Assoc. Prof. (*Norway*)  
Mustafayev, R.I., Prof. (*Azerbaijan*)  
Nayir, A., Asst. Prof. (*Turkey*)  
Oprescu, B., Dr. (*Romania*)  
Oproescu, M. (*Romania*)  
Oraee, H., Prof. (*Iran*)  
Ozerdem, O.C., Assoc. Prof. (*Northern Cyprus*)  
Pashaei, A. (*Iran*)  
Pavlyuchenko, D.A., Prof. (*Russia*)  
Qurbanov, K.B., Asst. Prof. (*Azerbaijan*)  
Rahmanov, N.R., Prof. (*Azerbaijan*)  
Ramos, J.A. (*Spain*)  
Rosolowski, E., Prof. (*Poland*)  
Rostami, A., Prof. (*Iran*)  
Rzayev, F.T., Dr. (*Azerbaijan*)  
Sadikoglu, F.M., Prof. (*Northern Cyprus*)  
Sefa, I., Dr. (*Turkey*)  
Senol, M.A., Dr. (*Turkey*)  
Serban, G., Prof. (*Romania*)  
Sharifian, M.B.B., Prof. (*Iran*)  
Shayanfar, H.A., Prof. (*Iran*)  
Shayeghi, H., Assoc. Prof. (*Iran*)  
Shidlovsky, A., Prof. (*Ukraine*)  
Sima, I., Prof. (*Romania*)  
Stanescu, C., Prof. (*Romania*)  
Tabatabaei, Naser M., Prof. (*Iran*)  
Tabatabaei, Nejat M., Dr. (*Germany*)  
Taghizadegan, N., Dr. (*Iran*)  
Taplamacioğlu, M.C., Prof. (*Turkey*)  
Ursu, D., Dr. (*Romania*)  
Usta, O., Prof. (*Turkey*)  
Varela, C., Prof. (*Spain*)  
Vishtibeyev, A. Prof. (*Russia*)  
Voicu, N. (*Romania*)  
Yalcinoz, T., Prof. (*Turkey*)

## **EDITORIAL NOTE**

We are pleased to present International Journal on "Technical and Physical Problems of Engineering" (IJTPE) in English and electronic print published seasonal periodically by the partners of International Organization on "Technical and Physical Problems of Engineering" (IOTPE) including Institute of Physics of Azerbaijan National Academy of Sciences (Baku, Azerbaijan) and Azerbaijan Research Institute of Energetics and Energy Design (Azerenerji JSC, Baku, Azerbaijan), Cleaner Production and Energy Efficiency Center (Baku, Azerbaijan), Seraj Higher Education Institute (Tabriz, Iran), Taba Elm International Institute (Tabriz, Iran), Gazi University (Ankara, Turkey), Istanbul Technical University (Istanbul, Turkey), Isik University (Istanbul, Turkey), University of Pitesti (Pitesti, Romania), LUMINA - University of South-East Europe (Bucharest, Romania), University of the Basque Country (Bilbao, Spain), Near East University (Lefkosa, Northern Cyprus) and Ostfold University College (Fredrikstad, Norway).

The IOTPE organization is a scientific association, founder and holder of International Conferences on "Technical and Physical Problems of Power Engineering" (ICTPE) have been held in 2002 (Baku, Azerbaijan), 2004 (Tabriz, Iran), 2006 (Ankara, Turkey), 2008 (Pitesti, Romania), 2009 (Bilbao, Spain), 2010 (Tabriz, Iran), 2011 (Lefkosa, Northern Cyprus), and 2012 (Fredrikstad, Norway).

Considering the acquired experience in the eighth past conferences, *International Conference on "Technical and Physical Problems of Power Engineering" (ICTPE)* and to promote the quality and quantity of the ICTPE Conferences holding, the ICTPE Conferences name and topics are improved to *International Conference on "Technical and Physical Problems of Electrical Engineering" (ICTPE)* in the ninth ICTPE-2013 Conference to cover subjects in all fields and topics of Electrical Engineering and have been held in 2013 (Istanbul, Turkey), 2014 (Baku, Azerbaijan), and also to be held in the next edition of 2015 (Bucharest, Romania).

The IOTPE organization is generally managing and performing a set of scientific-executive affairs to holding International Conference of ICTPE, publishing International Journal of IJTPE and directing International Enterprise of IETPE.

Successful organizing and holding ICTPE conference and publishing IJTPE journal 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 conference and publishing IJTPE journal

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 conference and IJTPE journal 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 conducting of ICTPE conference and IJTPE journal 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 IJTPE journal 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.

It is our honor that the IJTPE journal is registered and cited by the Norwegian Association of Higher Education Institutions (UHR) and the Norwegian Social Science Data Services (NSD) on behalf of the Norwegian Ministry of Education and 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**

<b><u>NO</u></b>	<b><u>CONTENTS</u></b>	<b><u>PAGES</u></b>
1	IMPLEMENTABLE APPROACHES OF POWER AND ENERGY DISSIPATION CALCULATION FOR DISTRIBUTION NETWORKS USING GIS SOFTWARE PACKAGE M. Tabrizi, A. Khajehzadeh, S. Mobasheri	1-5
2	PERFORMANCE OF DUAL SOLAR COLLECTOR WITH SETTING PCM UNDER ABSORBENT PLATE B. Mozafari, M. Shams, A. Mozafari	6-10
3	METHODS AND MODELS TO OPTIMIZE THE CHOICE OF VEHICLE PRODUCT STRUCTURE A.A. Allahverdiyev	11-15
4	EFFICIENCY DYNAMICS OF WIRELESS MOUSE ANTENNA INFLUENCED BY POSITION OF USER'S INDEX FINGER R.K. Njoroge, D.B.O. Konditi, S. Musyoki	16-22
5	OVERVIEW OF STATCOM TECHNOLOGY N.M. Tabatabaei, S. Abbasi, N.S. Boushehri, A. Jafari	23-28
6	HIGH FREQUENCY ELECTROMAGNETIC FIELDS CONTINUOUS MEASUREMENTS AND MONITORING WITH MONITEM T. Karadag, T. Abbasov, E. Karaca	29-33
7	DESIGNING AND CONSTRUCTING A VLF RADIO TELESCOPE WITH AN EXTERNAL FILTER TO RECEIVE THE SUDDEN IONOSPHERIC DISTURBANCES (SID) IN IRAN M. Marbouti, M. Khakian Ghomi, M. Salmanpour, K. Ghanbari, B. Nahavandi, L.M. Tan	34-38
8	COMPARISON AND CHECKING CLASSIFICATION IN PATTERN RECOGNITION N. Molla Esmaili, Sh. Hoshiary, L. Rastgou, S. Rajebi	39-45
9	REDUCE OF NATURAL DISASTER CONSEQUENCES BASED ON FITTING ENGINEERING SOLUTIONS AND SPACE TECHNOLOGY APPLICATIONS S.R. Ashumova, M.H. Zeynalova, R.B. Rustamov	46-48
10	INFLUENCE OF PARAMETERS OF THE ELECTRODE DESIGN ON A LUMINESCENCE FORM OF THE PULSED DISCHARGES IN OVERVOLTAGE GAPS E.J. Gurbanov	49-54
11	ELECTROSPUN NANOFIBROUS SCAFFOLDS-CURRENT STATUS AND PROSPECTS IN NANOTECHNOLOGY AND NANOMEDICINE N. Saglam, E. Emul, S. Saglam, E. Yalcin, M. Sam, F. Korkusuz	55-59
12	FINDING SPECIFIC TARGETS BASED ON FUZZY LOGIC USING ZERNIKE MOMENTS AND SUPPORT VECTOR MACHINE E. Yakhti Fard, A. Amiri	60-64
13	SOLUTION OF REACTIVE POWER DISPATCH IN POWER SYSTEMS USING BAT SEARCH ALGORITHM M. Mokhtarifard, H. Mokhtarifard, S. Molaei	65-70
14	STRENGTH PARETO EVOLUTIONARY ALGORITHM FOR UNIT COMMITMENT PROBLEM M. Mokhtarifard, S. Molaei, H. Mokhtarifard	71-76
15	NEW ACTIVE TYPE OF SFCL DURING UNBALANCE FAULTS ALLOCATED IN INCOMING FEEDERS OF DISTRIBUTION NETWORKS B. Pishgahzadeh, S. Soleymani, F. Faghihi	77-83

<b><u>NO</u></b>	<b><u>CONTENTS</u></b>	<b><u>PAGES</u></b>
16	<b>PRIORITIZATION OF DISTRIBUTION NETWORK AREAS IN SANANDAJ CITY (IRAN) TO INSTALL DG USING AHP ALGORITHM</b> M.A. Harighi, S. Soleymani, F. Faghihi, B. Mozafari	84-89
17	<b>RECONFIGURATION OF A DISTRIBUTION NETWORK IN A RESTRUCTURED POWER INDUSTRY FOR MINIMIZING THE COST OF ENERGY LOSS</b> S.H.R. Alemohammad, M. Saniei, E. Mashhour	90-95

The issues of IJTPE Journal are **registered** and **cited** by:

- The Norwegian Association of Higher Education Institutions (UHR) and the Norwegian Social Science Data Services (NSD), [www.nsd.no/english](http://www.nsd.no/english), on behalf of the **Norwegian Ministry of Education and Research**.

Indexing address:

[https://dbh.nsd.uib.no/publiseringskanaler/KanalTidsskriftInfo?id=480511&bibsys=0&request\\_locale=en](https://dbh.nsd.uib.no/publiseringskanaler/KanalTidsskriftInfo?id=480511&bibsys=0&request_locale=en)

- **Google Scholar**, <http://scholar.google.com/>, for searching, exploring, locating, keeping, checking and citing the publications and authors through the libraries and on the web.

Search for: IJTPE

[http://scholar.google.com/scholar?hl=en&q=IJTPE&btnG=&as\\_sdt=1%2C5&as\\_sdtp=](http://scholar.google.com/scholar?hl=en&q=IJTPE&btnG=&as_sdt=1%2C5&as_sdtp=)