


کد سند: RO-S-F-28-04	معاونت پژوهشی	
تاریخ صدور: ۱۳۹۹/۴/۲۲		
تاریخ ویرایش: ۱۴۰۰/۰۳/۲۵	فرم خلاصه انگلیسی طرح / پروژه	

Project Title: Scientific and executive activities of the 13th International Conference on Energy Smart Grid

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Project Financial Code:	182009	Project Quality Code:	182009
Type of Project/Program:		Assistant:	

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Keywords: The 13th Smart Grid Conference – Tehran – Niroy Research Institute – Technological Event -Paper Sessions – Professional Panel - Workshop

Project Necessity:

According to the mission of Niroy Research Institute (NRI) in the dissemination of knowledge, the respected director of NRI , along with a contract with the Smart Grid Society, accepted the holding of the 13th Smart Grid Conference

by NRI and entrusted to the distribution research institute. Considering the subject relatedness of Smart Energy Grid with information and communication technology, holding the conference was assigned to the information and communication technology research group, and all the scientific and executive affairs of the conference were approved by the honorable council of NRI project definition in the form of an improvement project. All executive activities of this conference were carried out by full-time colleagues of NRI, and various technical and support units played an effective role in holding this conference.

Also, in the scientific department, assistant professors and researchers from different units of the research institute were present in the scientific committee and judged the articles. In addition, respected faculty members in domestic and foreign universities and experts and industrial activists in the field of Smart Energy grid have actively participated in the scientific committee of this conference.

Project Goals:

The purpose of holding this conference, in addition to disseminating knowledge and presenting scientific and industrial achievements to those interested in this field, it can be mentioned to create organizational vitality and group cooperation among colleagues of NRI. Since due to the spread of the corona disease, the holding of various events at the NRI and other organizations had been interrupted for several years, so holding this event was put on the agenda with the initiative of the honorable head of the NRI. In this regard, in order to coordinate and organize the activities of the conference and hold this event with the highest quality, the holding of this conference was approved as an improvement project.

This conference was guided and carried out by obtaining a license from the Ministry of Energy and on this basis in a problem-oriented manner in order to provide solutions to solve the problems in the electricity industry.

Abstract:

This conference was held on 4th to 6th of December 2023 in NRI for 3 consecutive days. The main activities performed are as follows:

- The opening ceremony was held in the presence of the Honorable Deputy Minister of Energy for Electricity and Energy, Mr. Haeri, and the honorable deputy minister of human capital, research and information technology, Mrs. Karegar Njafi, in the Persian Gulf hall of NRI. The speakers of this ceremony were Dr. Amidpour, the honorable conference chair, Mr. Haeri, the honorable deputy minister of electricity and energy, and Mrs. Dehestani Monfared, the director of the office of information technology and cyberspace Security of the ministry of energy.
- The first event of technological ideas in the field of energy smart grid was held on December 4, 2023, in order to provide technological answers to the needs of the electricity industry. In this event, during the months leading up to the event, technological plans in the field of smart grid were received and in order to identify the connection with the smart energy grid and the innovation done, they were subjected to preliminary judging by the organizing team. On the event

day, the selected projects, while presenting ideas in detail, were criticized and judged by the respected event steering committee invited from specialized parent companies and the Iranian Smart Grid Association. In the end, the top three ideas were chosen by the honorable committee of judges. The ceremony of the technological event was held in the Ferdowsi Hall of the NRI and was broadcast live on Aparat.

- 11 training workshops in various fields of smart grid were held on December 4 in four halls of NRI Simultaneously. These educational workshops were presented in person and broadcasted live on Aparat network.
- The exhibition of the conference was opened on 5th of December with the presence of Mrs. Kargar Najafi. 9 different groups of industry activists, along with 5 knowledge-based companies in the form of Niro Research Institute Growth Center, Electricity Industry Syndicate and NRI, united in the 13th Iran Smart Grid Exhibition in a space of more than 220 square meters to take valuable steps in the direction of The prosperity and progress of smart energy grid.
- The key note speakers of this conference included 2 foreign and 4 internal key note speakers. Foreign key note speakers were Dr. Aydoghan Ozdemir from Turkey on the topic of resilience of active distribution networks and Engineer Alexey Nebra from Sigere, Russia on the topic of challenges and opportunities for the development of high-scale distributed production on the consumption side. Also, internal key note speakers include Engineer Haeri, Honorable Deputy Minister of Power and Energy with the topic of smartening the country's electricity grid, Dr. Seyed Hossein Hosseinian with the topic of power quality in smart grids, Dr. Mahmoudreza Haqi Pham with the topic of digital transformation in the electricity industry and Dr. Hamidreza Baghai with the topic of seamless integration of artificial intelligence in cyber physical power systems for cyber security and resilience.
- 5 professional panels were held on December 5 and 6. Among them, a professional panel on the subject of intelligent load monitoring and management using a data lake, which was held by the Vice President of Tavanir Distribution Coordination, and another professional panel on the subject of cyber security requirements and basic measures and security assessment frameworks of the Ministry of Energy, which was jointly organized by the Ministry of Energy and the NRI Was held. In addition, 3 professional panels were organized by Mapna, SKI Iran and Yekta Qaqnos Pars.
- Paper sessions were held in order to present 50 selected papers in the form of 9 meetings in the 6 main areas of the conference and were managed by the heads of scientific committee chairs, Dr. Qara Petian, Dr. Haqifam, Dr. Feridounian, Dr. Selmaszadeh, Dr. Fallahi and Dr. Heydari. In this conference, a total of 207 articles were received, of which 50 were selected for oral presentation and 44 for poster presentation.
- In accordance with the evaluations and due to the limitation of speech articles, a total of 44 articles in 6 specialized areas of the conference were accepted as poster presentations, which were presented on December 5 and 6.

- The closing of the conference on December 6, 2023 was accompanied by the speech of Dr. Baqaee, the vice president of the IEEE Power Forum of Iran. Also, the scientific committee chair, Dr. Gilvanjad, spoke about the achievements of the conference. In the final part of the closing ceremony, the key note speakers, the top presentations of professional meetings, the winners of the technological event and the financial sponsors of the conference were recognized.

Steps and Methodologies:

In order to hold the conference coherently, in the first stage of the project, the organizational structure of the conference was prepared and then approved by the honorable President and the honorable scientific committee chair. Based on that, all executive activities were planned in the form of 7 executive working groups and all scientific activities were planned in the form of 6 scientific working groups. In addition, the duties of the Conference Secretariat and scientific and executive working groups were determined separately. In this regard, a responsible person was appointed for each executive working group. In addition, for each scientific working group, one of the famous professors in the related fields was appointed as the head and chief editor and one of the colleagues of the NRI was appointed as the assistant. Also, all conference activities were carried out in close connection with the conference secretariat.

Also, technological event activities have been carried out under the leadership of the selected committee from the relevant departments in the Ministry of Energy, mail technical companies of Tavanir, SATBA, Thermal Power Plants, SATCAP and IGMC, as well as the growth center of the NRI and the Smart Grid Society.

Finally, this project has been completed in the form of 5 stages as follows:

1. Determining the organizational structure of the conference (roles and including job descriptions)
2. Establishing the steering committee and secretariat of the electricity conference
3. Carrying out the scientific activities of the conference
4. Carrying out executive activities of the conference
5. Carrying out conference closing activities and documentation

Main Results (technical outputs, patents, papers, books, reports, etc.):

- Presenting a detailed report of the conference to the Iranian Smart Grid Society
- Introduction of selected companies with superior ideas to the growth center of NRI for material and spiritual support

- Indexing of selected English articles in IEEE at <https://ieeexplore.ieee.org/xpl/conhome/10459225/proceeding>

- Indexing of selected articles in the AUTJEE journal of Amir Kabir University of Technology

- Live broadcasting of all meetings, keynote speeches, technological events, educational workshops, Professional panels, opening and closing online and directly from the Aparat network and placing an offline link on the conference site.

- Preparation of CD containing abstract of articles and conference program

- Minimizing the use of paper and replacing it with smart tools such as QR code during the conference