

INTERNATIONAL ROUNDTABLE ON
"ENERGY STORAGE SYSTEMS"

12 SEPTEMBER 2022

Jointly organized by:

	<p>Centre for Science and Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre), New Delhi, India</p>
	<p>Center of Excellence in High Voltage Engineering, University of Witwatersrand, South Africa</p>
	<p>Department of Science and Innovation (DSI), South Africa</p>
	<p>Energy Storage Chapter, South African Institute of Electrical Engineers (SAIEE)</p>

Introduction

Marching from black energy to a world of green energy essentially requires energy storage systems that could hold sizable quantity of energy for a reasonably long time, to maximize the usage of energy produced. Most renewable sources, such as solar, wind, ocean thermal gradient, tidal waves etc. are non-uniform in availability (producible only at certain time of the day and also seasonal). Thus, long-duration energy storage holds great potential for developing countries in which renewable energy dominates new additions and gradually may overtake other sources of electricity.

Energy Storage Systems (ESSs) are systems which store energy in various forms such as electrochemical, kinetic, pressure, potential, electromagnetic, chemical, and thermal; using, for example, fuel cells, batteries, capacitors, flywheels, liquid and compressed air, super magnets, hydrogen, etc. Thus, there is a need to accelerate advanced research on inventing new, innovative and cost effective energy storage systems. The principal criteria of an ESD required for a specific application are: the amount of energy in terms of specific energy (in Wh.kg⁻¹) and energy density (in Wh.kg⁻¹ or Wh.l⁻¹), the electrical power (in W.kg⁻¹ or W.l⁻¹), i.e. the electrical load required, the volume and mass, reliability, durability, safety, cost, recyclability and environmental impact.

When choosing an ESS, the characteristics that should be considered are: specific power, storage capacity, specific energy, response time, efficiency, self-discharge rate/charging cycles, sensitivity to heat, charge-discharge rate life time, environmental effects, capital and operating cost as well as maintenance.

Storage systems can stockpile energy for use when environmental energy is not available. Energy Management Systems (EMSs) can be deployed in various climates characterized by diverse conditions and different patterns of ambient energy availability. For example, tropical climates have long periods of warm, sunny weather alternating with rainy seasons. Polar regions, on the other hand, have low ambient temperatures and experience extended periods of no insolation during polar nights indicating very low solar radiation received during winter months. Hence storage systems must be carefully selected, both from the perspective of their operating conditions, storage capacity and flexibility of use.

In the view of the above backdrop, the Centre for Science and Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre); New Delhi, in partnership with the Center of Excellence on High Voltage Engineering, University of the Witwatersrand, South Africa; Department of Science and Innovation, South Africa; and Energy Storage Chapter, South African Institute of Electrical Engineers (SAIEE) is organizing a *one-day* International Roundtable on **“Energy Storage Systems”** on **12 September 2022 (Virual-mode)**.

The event will be hosted by the Center of Excellence on High Voltage Engineering, University of the Witwatersrand, South Africa and Energy Storage Chapter, South African Institute of Electrical Engineers.

Potential Themes

Suitable concurrent topics will be included under the following themes:

- Setting up visionary goals to move from grey to green energy
- Potential of developing countries for innovative long-duration energy storage technologies
- Hydrogen vs. Battery storage: With special attention to transportation
- Conventional energy storage systems
- Futuristic green energy and energy storage solutions
- Policy development on renewable energy sources and storage systems at national and international levels

Objective

This Roundtable aims to provide the participants, especially, in developing countries with an understanding of importance of energy storage such as: technologies of energy storage, applications of energy storage systems and the benefits of energy storage, including overcoming several energy storage barriers and addressing the related challenges.

Who Should Attend?

Researchers, technologists, policymakers, representatives of industry and commerce, socio-economic specialists, environmentalists and investors are welcome to attend the Roundtable.

Mode of Execution

The Roundtable will be organized in Virtual-mode through MS Teams online platform, provided by the University of Witwatersrand or GoToWebinar online platform provided by SAIEE.

Resource Person

Eminent experts and professionals in the field from various developing and developed countries will be invited as resource persons.

Certificates

A Certificate of Participation will be provided to the participants electronically on the successful completion of the Roundtable.

Submission of Application

Experts and professionals desirous of participating in the Roundtable should submit their application electronically to the Director General, NAM S&T Centre, New Delhi at Email: namstcentre@gmail.com as early as possible but latest by **September 2, 2022**.

Interested applicants from South Africa and other African countries (who are not Members of the NAM S&T Centre) should submit their requests directly to Prof. Chandima Gomes, Professor of High Voltage Engineering, School of Electrical & Information Engineering, University of the Witwatersrand, Johannesburg, South Africa at E-mail: chandima.gomes@gmail.com.

The following documents must be submitted as e-mail attachments:

- i. Filled-in **Application Form** (Blank-form enclosed)
- ii. An **Opinion** (a short paragraph; in MS-Word only) on what qualifies you to participate in the Roundtable
- iii. A **Short CV** (maximum two pages in the format enclosed; in MS-Word only)

***Note:** The documents at (ii) and (iii) above must be in MS-Word format only; PDF or image files will not be accepted. Hard copies of the Application Form and the above attachments are **NOT REQUIRED** to be submitted.*

Selection of Applicants

Selection of applications will be made based on their academic and professional background, and relevance of their current engagements in the relevant field. Successful applicants will be electronically informed about their selection by **September 5, 2022**.

The details about the virtual-platform that will be used for the Roundtable including the log-in details will be communicated to all the selected applicants by **September 7, 2022**.

Tentative Program Structure

Number of days: 01; Duration (Lecture Hours): 04 hours and 30 mins (270 mins)

Program Overview

- Introduction of Event and Organizers: 5 mins by Compere
- Introduction by Representatives of each Organizing Institute/Department: 5 minutes each (total 20 mins)
- Introduction of Speakers: 5 mins by Compere
- 6 Invited Lectures : 30 mins each (total 180 mins)
- General Discussion and Q&A Session: 50 mins
- Wrap up for the Day: 10 mins

About the Organisers

NAM S&T CENTRE



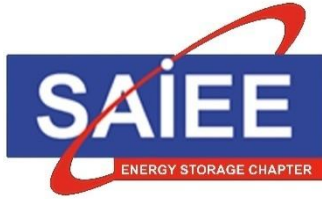
The Centre for Science and Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre; www.namstct.org) is an Inter-Governmental Organisation with a Membership of 47 countries spread over Asia, Africa, the Middle East and Latin America. The Centre was set up in 1989 in New Delhi, India, based on decisions taken during various NAM Summits and mandated to undertake a variety of programmes, including organization of workshops, symposiums and training courses and implementation of collaborative projects. It also offers short-term Research Fellowships to scientists from developing countries in association with the Centres of Excellence (CoE) in various countries. The Centre also brings out technical books, monographs and other scientific publications in different S&T subjects of interest to developing countries. The Centre's activities provide an opportunity for scientist-to-scientist contact and interactions; familiarizing participants on the latest developments and techniques in the subject areas; identification of the requirements of training and expert assistance; locating technologies for transfer between the Members and other developing countries, and dissemination of S&T information etc. In addition, the Centre encourages Academic R&D-Industry interactions in the developing countries through its NAM S&T-Industry Network.

CENTER OF EXCELLENCE ON HIGH VOLTAGE ENGINEERING (CEHVE), UNIVERSITY OF THE WITWATERSRAND, SOUTH AFRICA



The University of the Witwatersrand, Johannesburg (<https://www.wits.ac.za/>) is a multi-campus South African Public Research University, situated in the northern areas of Central Johannesburg. It is more commonly known as Wits University or Wits. The University has its roots in the mining industry, as do Johannesburg and the Witwatersrand in general. Founded in 1896 as the South African School of Mines in Kimberley, it is the third oldest South African university in continuous operation. For a long period, Wits has been one of the highest ranked Universities in the African continent. The *Centre of Excellence on High Voltage Engineering* is a key research unit within the Faculty of Engineering and Built Environment at Wits University, dedicated to a wide spectrum of electrical engineering subjects including high voltage and discharge engineering, power system protection, lightning protection, grounding and bonding, and energy security.

SOUTH AFRICAN INSTITUTE OF ELECTRICAL ENGINEERS (SAIEE), ENERGY STORAGE CHAPTER



Formed in 1909, the South African Institute of Electrical Engineers has grown to the extent that there are approximately 6000 members on its membership roll. Members are professionally engaged in the full range of engineering activities, including academic research, manufacturing, electronics, telecommunications, measurement and control, mining, and power infrastructural services. They make meaningful contributions of the quality of life to the community and to the steady advancement of technology. Their efforts are acknowledged in many countries across the world. The Energy Storage Chapter of SAIEE was formed in the year 2020 with the intentions of promoting energy storage technologies among the researchers, entrepreneurs, investors, and the general public, and supporting the relevant authorities to develop various roadmaps, policies and guidelines related to energy storage systems.

DEPARTMENT OF SCIENCE AND INNOVATION, SOUTH AFRICA



science & innovation

Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA

The Department of Science and Innovation (DSI) seeks to boost socio-economic development in South Africa through research and innovation. To achieve its goals, the Department provides leadership, an enabling environment and resources for Science, Technology and Innovation in support of South Africa's development. Through its Programmes (Administration; Technology Innovation; International Cooperation and Resources; Research Development and Support; and Socio-economic Innovation Partnerships) and several entities that work alongside it, the Department is accomplishing groundbreaking science and enhancing the well-being of all South Africans.

Secretariat and Enquiries

NAM S&T CENTRE

Dr. Amitava Bandopadhyay

Director General

Centre for Science & Technology of the Non-Aligned and Other Developing Countries
(NAM S&T Centre)

Core-6A, 2nd Floor, India Habitat Centre, Lodhi Road

New Delhi – 110003, India

Tel: +91-11-24645134, 24644974;

E-mail: namstcentre@gmail.com

Website: <http://www.namstct.org>

UNIVERSITY OF THE WITWATERSRAND

Prof. Chandima Gomes

Chair, Eskom Power Plant Engineering Institute (EPPEI)-HVAC

Director, Center of Excellence on High Voltage Engineering

School of Electrical & Information Engineering

University of the Witwatersrand

Johannesburg, South Africa

Tel: +27672179416

E-mail: chandima.gomes@wits.ac.za

SAIEE, ENERGY STORAGE CHAPTER

Ms. Joanne Dean

Vice Chair – Energy Storage Chapter

SAIEE House

18a Gill Street, Observatory

Johannesburg, South Africa

E-mail: joanne@enerj.co.za

DSI, SOUTH AFRICA

Mr. Selby Modiba

Deputy Director: Multilateral Cooperation

Department of Science and Innovation,

Pretoria, South Africa

Tel: +27128436393

E-mail: Selby.Modiba@dst.gov.za

CENTRE FOR SCIENCE AND TECHNOLOGY OF THE NON-ALIGNED AND
OTHER DEVELOPING COUNTRIES
(NAM S&T CENTRE)

**INTERNATIONAL ROUNDTABLE
ON
"ENERGY STORAGE SYSTEMS"**

**12 SEPTEMBER, 2022
[VIRTUAL-MODE]**

APPLICATION FORM

PLEASE TYPE OR USE BLOCK CAPITALS
(NO COLUMN SHOULD BE LEFT BLANK)

SECTION –A

(To be filled in by the Applicant)

1 First Name (Prof. /Dr. /Mr. /Mrs. /Ms.):

Middle Name:

Last Name:

2 Father's / Spouse Name:

3 Designation (Position held):

4 Nationality:

5 Date of Birth:

Place of Birth (City)(Country).....

6 Name of the Parent Institution (Employer):

Full Address (Office):

.....

Phone: Fax:

E-mail:

7 Full Address (Home):

.....

Phone: Mobile:

E-mail:

8 Educational Qualifications: Highest Degree.
Year of Award: University:
Field of Study:

9 Brief Bio data (CV)
.....

(Maximum two pages in MS Word only; to be attached on separate sheet as per the attached format)

10 A Write-up (in MS-Word format only) on what qualifies you to attend the Roundtable

SECTION –B

ENDORSEMENT BY THE NOMINATING AUTHORITY

(The Applicant in a Member Country of the NAM S&T Centre must get the Nomination Form endorsed by the Focal Point of the Centre in his/her country, if he/she wishes to take advantages extended to the official nominee of the country. For the list of member countries and names /addresses of the Focal Points please visit the Centre’s official website; www.namstct.org.)

Signature:

Name (in full):

Designation:

Date:

SEAL

Enclosures:

1. A Brief CV (maximum two pages, as per attached format; in MS Word only)
2. An Opinion (in MS-Word format only) on what qualifies you to attend the Roundtable

CENTRE FOR SCIENCE AND TECHNOLOGY OF THE NON-ALIGNED AND
OTHER DEVELOPING COUNTRIES
(NAM S&T CENTRE)

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12 SEPTEMBER, 2022
[VIRTUAL-MODE]

CURRICULUM VITAE

1. Personal Details:

Name: *(Prof/Dr/Mr/Mrs/Ms)* **Font Name:** *Times New Roman*

Designation: *Position Title* **Font Size:** *12*

Present Employer: *Full Address (Office)*

City/State/Province:

Country:

Nationality:

Date of Birth: *dd/mm/yyyy*

Proficiency in English Language:

Permanent Address: *Full Address (Home)*

Gender:

Contact: Mobile:

Telephone Office:

Fax:

E-mail:

Alternative e-mail:

2. Academic Qualifications: *In chronological order*

Qualification <i>Degree/Diploma/Certificate</i>	Awarded	Major Subject	University/ Institution	Year <i>(From-To)</i>

3. Professional Experience: *In chronological order*

Organisation/ Institution	Position Title	Year (From-To)	Nature of duties
i.			
ii.			

Total number of years of relevant experience –

4. Research Experience: *In chronological order*

Research Title	Duration	Status

5. Experience with respect to the title of the Workshop:

6. Details of Awards/Recognitions (if any):

7. Any other information: *Not more than 50 words*

8. Recent Publications: *Only five recent publications to be mentioned*
