

CENTRAL BOARD OF IRRIGATION & POWER OFFICE BEARERS

President	:	Mr. S.K. Haldar , Chairman, CWC
(i) Sr. Vice President	:	Mr. Dinesh Chandra , Chairperson, CEA
(ii) Vice President	:	Mr. Vivek P. Kapadia , Secretary to Government of Gujarat and Director (Civil), Sardar Sarovar Narmada Nigam Ltd.
(iii) Vice President	:	Mr. Abhay Kumar Singh , CMD, NHPC Ltd.
(iv) Vice President	:	Mr. Manoj Mathur , Director (Solar), SECI
(v) Vice President	:	Mr. Anil Sardana , MD & CEO, Adani Transmission Ltd. & Adani Power Ltd.
Secretary	:	Mr. A.K. Dinkar
Director (WR)	:	Dr. G.P. Patel
Director (Energy)	:	Mr. A.K. Bhatnagar

110
292

- The statements and opinions expressed in this Journal are not necessarily of Central Board of Irrigation & Power.
- Reproduction of articles from Water and Energy International is subject to approval of the Editor.
- Interested authors from India and abroad are requested to contribute their articles to this Journal and send the same to Secretary, Central Board of Irrigation & Power, well in advance.

All communications should be addressed to :

Secretary
Central Board of Irrigation & Power
Malcha Marg, Chanakyapuri
New Delhi 110 021
Ph. : 91-11-2611 5984
Fax : 91-11-2611 6347
E-mail : cbip@cbip.org
Website : www.cbip.org

Total Pages 84

Monthly Subscription ₹ 200/-
Annual Subscription ₹ 2400/-

FROM EDITOR'S DESK

Mr. A.K. Dinkar, Secretary, CBIP 5

W&E INTERNATIONAL

Water Resources Section

- | | |
|--|----|
| 145 Web GIS-Based Water Distribution Network Management using Google Maps – <i>I Wayan Parantapa Jnana, I Ketut Gede Darma Putra and Ni Made Ika Marini Mandenni</i> | 6 |
| 146 Rural Roads as possible enablers to Water, Sustainability and Women Empowerment : A Case Study of Indian State of Uttarakhand – <i>Manoj Kumar Aggarwal, A.K. Dinkar and Vijita Singh Aggarwal</i> | 13 |
| 147 Experimental Studies of Scour around Multiple Spur Dikes in Channels – <i>Mukul Anand and Arun Goel</i> | 19 |
| 148 Stabilization of Expansive Soil – <i>Neelam Phougat</i> | 24 |

Energy Section

- | | |
|--|----|
| 149 Energy Storage including Pumped Storage (Base Paper) – <i>Dinesh Chandra and A.K. Rajput</i> | 35 |
|--|----|

EDITORIAL BOARD

Mr. Vivek P. Kapadia, Secretary to Government of Gujarat and Director (Civil), Sardar Sarovar Narmada Nigam Limited

Mr. Avinash C. Tyagi, Former Secretary General, International Commission on Irrigation & Drainage

Mr. D.K. Chaturvedi, Former General Manager, NTPC Ltd.

Dr. Rajesh Arora, Manager, Delhi TRANSCO Ltd.

Publisher, Printer and Editor Mr. A.K. Dinkar on behalf of Central Board of Irrigation and Power, Printed at M/s Chandu Press, D-97, Shakarpur, Delhi, published from Central Board of Irrigation and Power, Malcha Marg, Chanakyapuri, New Delhi 110 021

CONTENTS

(contd.)

150	Review of Uttarakhand Solar Policy in Perspective of Rural Development and Sustainable Livelihood in Hilly Areas – <i>Aman Joshi and Anil Kumar</i>	44
151	Fault Current Limiter Using Series Reactors in Indian Power System – <i>Dr. Subir Sen, M. Khanna, K.Rathore, P.S. Das, Abhay Kumar, Prastuti Pandey, VMS Prakash, Shashank Shekhar</i>	52
–	Extract Discussion of Experts on SPARK... Ignited to Share (A Power Engineers WhatsApp Group)	59
NEWS LETTER		
<i>Water Resources Section</i>		
–	Virtual Training Programs on “Contract Management and Tendering Process” Organized for Water Resources Department, Govt. of Uttar Pradesh	68
<i>Energy Section</i>		
–	National Tutorial (Online) on Partial Discharge Monitoring for Power Transformers, Gas Insulated Switchgear, Cable and Rotating Machines, 17-18 June 2021	69
–	Online Training on Substation Engineering, 21 – 23 June 2021	71
–	Training Program (Online) on Microgrid, 23-24 June 2021	73
STATISTICAL DATA		
•	<i>Water Resources Section</i>	75
•	<i>Energy Section</i>	77
WATER & ENERGY ABSTRACTS		
•	<i>Water Resources Section</i>	79
•	<i>Energy Section</i>	80
FAR & NEAR IN WATER AND ENERGY		
•	<i>News - Water Resources Section</i>	81
•	<i>News - Energy Section</i>	82