www.waterpowermagazine.com

Volume 70, No. 4, April 2018

EDITORIAL

Editor Carrieann Stocks Tel: +44 (0) 20 8269 7777 carrieann.stocks@compelo.com Tweet: @waterpowermag

Contributing Editors Suzanne Pritchard,

Patrick Reynolds

Editorial Assistant Tracey Honney

ADVERTISING SALES

Diane Tite - Sales Manager Tel: +44 (0) 20 8269 7854 Diane.tite@compelo.com

Tim Price - Senior Account Manager Tel: +44 (0) 20 8269 7867 Tim.price@compelo.com

Glen Savage - Sales Manager, Power Group

PRODUCTION AND DESIGN

Production Controller Dave Stanford Classified Production Controller Sarah Lovesy Graphic Designer Karen Bishop



United Kingdom: Global Trade Media, Progressive House, 2 Maidstone Road, Foots Cray, Sidcup, Kent DA14 5HZ, UK. Tel: +44 20 8269 7700, Fax: +44 20 8269 7804, Email: carrieann.stocks@compelo.com

Italy: Ediconsult Internazionale, Piazza Fontane Marose 3, 16123 GENOVA, Italy Tel: +39 010 583 684, Fax: +39 010 566 578

Japan: Masayuki Harihara, Yukari Media Inc., 3-4 Uchihiranomachi, 3 Chome chuo-ku, Osaka 540-0037,

Japan: Tel: +81 6 4790 2222, Fax: +81 6 4793 0800. Email: ymi4886@cello.ocn.ne.jp

Subscription Office: For subscription enquiries, single copies or back issues: Progressive Intelligence Customer Subscriptions Department, 2 Maidstone Road, 2nd Floor, Sidcup, DA14 5HZ Tel: +44 845 155 1845, Fax: +44 20 8269 7877 Email:cs@progressiveintelligence.com

North America only

International Water Power & Dam Construction (ISSN 0306-400X) is published monthly by Global Trade Media, Progressive House, 2 Maidstone Road, Foots Cray, Sidcup DA14 5HZ, UK. The US annual subscription price is US\$605.99. Airfreight and mailing in the USA by agent named Worldnet Shipping Inc., 156-15, 146th Avenue, 2nd Floor, Jamaica, NY 11434, USA

Periodicals postage paid at Jamaica NY 11431. US Postmaster: Send address changes to International Water Power & Dam Construction, Worldnet Shipping Inc., 156-15, 146th Avenue, 2nd Floor, Jamaica, NY 11434, USA

Subscription Rates 1 YEAR SINGLE COPY UK£309.99 UK£32.99 UK USA/Canada airspeed US\$635.99 US\$67.99 €481.99 €50.99 Europe, inc EU, airspeed Rest of world airspeed Digital edition only: £216.99, €325.99, \$433.99

OMPELO

Published by Global Trade Media, a trading division of Progressive Trade Media Limited. Registered address: Progressive House. 2 Maidstone Road. Foots Cray, Sidcup, Kent DA14 5HZ, UK.

© 2016 Global Trade Media, a trading division of Progressive Trade Media Limited Printed by Stephens & George Print Group.

The paper used in this magazine is obtained from manufacturers who

operate within internationally recognised standards. The paper is made from Elementary Chlorine Free (ECF) pulp, which is from sustainable, properly managed forestation.

MEMBER OF THE AUDIT BUREAU OF CIRCULATION





News

World News

Spotlight

10 A workplace for women

Tracey Williamson, the first female Chair of the British Dam Society, says we have to keep encouraging women into civil engineering.

Africa

12 The Week ahead

What to expect at African Utility Week.

14 African ambitions

A tour of recent African hydro developments.

18 Partnerships that generate

Detailing the GIZ International Water Stewardship Programme and how it has impacted hydro projects in Kenya and Tanzania.

20 Capacity building in Africa

Voith shares knowledge and training with colleagues across Africa.

22 Extending hydro in Ethiopia

Why hydro is high on the agenda in the African country.

23 Powering Ndolela

A Gilkes turbine is providing cost effective hydropower to the Ndolela Estate agricultural farm in Tanzania.

24 Land of the dammed

A framework for the assessment of good governance in resettlement, with a focus on Ghana's Bui Dam.

26 Spotlight on Kariba

A multi-million project is underway to improve the reliability of Kariba Dam.

Contents

Technology

28 Innovative live-line inspection solution

Details on Hydro-Québec's LineRanger.

32 Unmanned systems present new opportunities

How a new method to survey bathymetry and inspect water structures was used at Keokuk Dam.

Design & construction

34 Getting constructive

Work in progress at Oroville Dam.

36 Raising Warragamba

Project proposed to raise the Australian dam for flood mitigation purposes.

New development

38 Look me in the eve

How can the hydro industry tackle concerns and emotions around proposed new developments?

Project finance

42 Preparing for hydro

Exchanging experiences of innovations in financing.

44 Funding options

New initiatives in finance.

Cover story (p18-19): Image courtesy 2018 GIZ International Water Stewardship Programme