



Huangdeng RCC Gravity Dam (H=203m)



# **8<sup>th</sup> INTERNATIONAL SYMPOSIUM ON ROLLER COMPACTED CONCRETE (RCC) DAMS**

**Kunming, China  
11<sup>th</sup>-12<sup>th</sup> Nov., 2019**

**Website:** <http://www.chincold-smart.com/meetings/RCC2019/>

**Sponsored By:**

Chinese National Committee on Large Dams (CHINCOLD)  
Spanish National Committee on Large Dams (SPANCOLD)

**Organized By:**

Huaneng Lancang River Hydropower Co., Ltd  
Kunming Engineering Corporation Limited  
China Institute of Water Resources and Hydropower Research  
POWERCHINA Sinohydro Bureau 14 Co., Ltd  
Others to be decided

**Co-sponsored By:**

Yunnan Provincial Water Resources Department  
Yunnan Provincial Energy Administration  
DATANG Yunnan Power Generation Co., Ltd.  
HUADIAN Yunnan Power Generation Co., Ltd.  
SPIC Yunnan International Power Investment Co., Ltd.  
Yunnan Institute of Water & Hydropower Engineering Investigation, Design and Research  
Yunnan Water Conservancy & Hydropower Investment Co., Ltd  
Others to be decided

## INVITATION

Chinese National Committee on Large Dams (CHINCOLD) and Spanish National Committee on Large Dams (SPANCOLD) have the honor to invite professionals to the 8<sup>th</sup> International Symposium on Roller Compacted Concrete (RCC) Dams, which will be held in 11<sup>th</sup> -12<sup>th</sup> Nov. 2019 in Kunming City, China.

RCC dams have the virtues of saving a great deal of concrete, building quickly, making project cost down and early bringing into playing project advantages and so on. Hence, the technique of constructing dams has been quickly spread and applied since it came out. Today there are more than 400 RCC dams in more than 40 countries. Great successful experiences and advanced technologies have been achieved. CHINCOLD and SPANCOLD have devoted to promote the technology from early 1990's. The first Symposium on RCC dams was jointly organized by the two committees in 1991 in Beijing China, which was a success start of the series of RCC Symposiums.

Following those successful and fruitful Symposiums held in Beijing (China) in 1991, Santander (Spain) in 1995, Chengdu (China) in

1999, Madrid (Spain) in 2003, Zaragoza (Spain) in 2012 and Chengdu (China) in 2015, the coming one jointly organized by CHINCOLD and SPANCOLD, will continue to contribute significantly to the knowledge and application of RCC technology with a wide range of contents and international scope. The Symposium will serve as a perfect venue for practitioners, engineers, researchers, scientists, managers and decision makers from all over the world to exchange ideas and technology about the latest developments dealing with RCC dams.

Beside international best practice, the participants will have the occasion to visit Wudongde Hydropower Project (H=270m, under construction), Baihetan Hydropower Project (H=289m, under construction), Huangdeng RCC Gravity Dam (H=203m, completed), Shibahe RFC Gravity Dam (under construction), Lvutang RFC Arch Dam (completed), and Xijiang CSGR Dam (under construction). A technical exhibition for enterprises related to hydropower and dams will be held during the Symposium.





## VENUE

Kunming is the capital of Yunnan province in Southwest China, is one of the most important economic, transportation, and communication centers in South-western China.

Kunming is the ideal venue for leisure traveler, which is reputed as “Spring City” as it’s warm climate, wonderful environment, developed economics, convenient traffic condition, as well as the food and culture.

Major tourist sites in Kunming include two Tang Dynasty Pagodas, Yuantong Temple, Yunnan Provincial Museum, Kunming City Museum, and Green Lake Park. Aside from

Kunming’s array of tourist attractions, the city serves as a great jumping-off point for Dali, Lijiang, and Tiger Leaping Gorge to the north as well as Jinghong, Xishuangbanna, Pu’er and Yuanyang to the south.

### Hotel information:

Hotel: Empark Grand Hotel of Kunming

Address: 1# Yingbin Road, Kunming, Yunnan, China

### Transportation from airport to the Hotel:

- 1) By Taxi: 40 minutes (cost 70-90 CNY)
- 2) By Bus: Kunming Airport Express Line 4, 50 mins (cost 25 CNY, depart every 30 mins)



## TOPICS

1. Materials and mixture proportions
2. Planning and design
3. Construction and quality control
4. Performance and monitoring
5. RCC dams on non-rock foundation
6. Rehabilitation of RCC dams and upgrading of old dams with RCC
7. Design, Construction and Performance of Cemented Material Dams (CMD)
8. Technological innovations and new trends
9. Other uses of RCC and cemented materials in dam construction and hydraulic structures

## LANGUAGE

Official languages of the Symposium are English and Chinese. Simultaneous translation will be provided for plenary sessions of symposium.

## CALL FOR FULL PAPERS

English papers are now invited on the related topics. Please submit your papers in the website of 8<sup>th</sup> International Symposium on RCC Dams. You are also welcomed to email papers to the correspondence address of the symposium. A short CV of each author and contact details including cell phone number, fax number and e-mail address should be included.

## IMPORTANT DATES

- ★ August 15<sup>th</sup>, 2019, Deadline for the receipt of full papers and early bird registration
- ★ September 30<sup>th</sup>, 2019, Deadline for registration

## INTERNATIONAL MILESTONE RCC PROJECT

To recognize major achievements of dam technology and define milestone projects in this field, with the support of international experts, CHINCOLD and SPANCOLD initiated the International Milestone Project Award on RCC Dams. This proposal gained the support of ICOLD and the positive responses from many ICOLD National Committees.

The milestone projects are representative of the main achievements in dam projects until now, and they are also the basis for the new projects. The

experiences of them can be used as a valuable reference for the future developments.

There are a great number of RCC dams constructed in the world. A number of them were recognized as International Milestone RCC Projects at the past Symposiums on RCC dams. The main basic eligibility criteria for an International Milestone RCC Dam Project must include:

(1) Technical innovation in design, construction, operation or other aspects.

(2) Good performance after

completion.

(3) Attention during the construction and operation stages to environmental protection and social aspects.

(4) Attention paid to raising awareness of technical achievements and advanced experience.

The Organizing Committee of the 8<sup>th</sup> Symposium on RCC Dams would like to invite experts and countries to recommend some projects as Candidate of International Milestone RCC Dam Projects.

## TECHNICAL EXHIBITION

During the Conference, a technical exhibition related to the hydropower and dams will be organized. Organizations and companies are welcomed to display their supplies and services to delegations from all over the world.

If you are interested in the exhibition, please kindly contact the secretariat for further details.

## PRE-SYMPOSIUM STUDY TOUT

On 9<sup>th</sup>-10<sup>th</sup>, Nov., the participants will have the opportunity to visit Shibahe RFC Gravity Dam (under construction), Lvutang RFC Arch Dam (completed), and Xijiang CSGR Dam (under construction).

### 8<sup>th</sup> Nov.

Arrival in hotel (to be decided) of Guiyang, Guizhou Province, China

### 9<sup>th</sup> Nov.

Visit to Lvutang Rock-Filled Concrete Dam (RFC) in Zunyi City in the morning and Shibahe RFC Gravity Dam in Renhuai City in the afternoon is arranged.

RFC dam is a kind of cemented material dam, cementing rockfill with a high-performance self-compacting concrete to build gravity dams and arch dams. RFC technology combines

the advantages of masonry and concrete, decreasing cement consumption, lowering the temperature rise of hydration heat and reducing the shrinkage of the concrete. Since the first RFC dam was constructed in 2005, RFC technology has been successfully applied in more than 80 dam projects (including dam rehabilitation) in China, with dam heights 30m-90m. According to practices, the cost of an RFC dam can be reduced by 10% to 30% compared with a concrete dam or an RCC dam. Lvutang dam is a RFC arch dam finished in Dec. 2019, with max. dam height of 53.5m and total RFC volume 52.3 thousand m<sup>3</sup>. Shibahe dam is a RFC gravity dam under construction with max. dam height of 57m and crest length of 228m. Total RFC volume is 170 thousand m<sup>3</sup>, 30% of which finished during past 7 months since Dec. 2018.



Lvutang RFC Arch Dam



Shibahe RFC Gravity Dam



Xijiang CSGR Dam

**10<sup>th</sup> Nov.**

Visit Xijiang cemented sand, gravel, and rock Dam (CSGR) in Leishan in the morning and then arrive Kunming City by high speed train from Kaili station.

Based on the concept and practice of the hardfill dam and the trapezoid CSG dam, CSGR dam was proposed and developed since 2004. Local materials, including sand, gravel, excavated rock, etc. are mixed and cemented by roller compacting and vibrating to build a dam. The CSGR dam further broadens the scope of local material utilization, with the maximum particle diameter increased from

80 mm to 150 mm and soft rock can also be used as aggregate. Special construction and detection equipment and digital monitoring system have been developed to control quality. Xijiang CSGR Dam is 1.5 km away from Xijiang Qianhu Miao village, which is the largest Miao nationality community. The maximum dam height is 49.5m, the dam crest length is 198.5 m. The dam crest width is 6 m, the upstream slope ratio is 1:0.6, and the downstream average slope ratio is 1:0.6. Weathered rock will be excavated and crashed as aggregate. This project is planned to start construction in Sept. 2019 .

This tour will end in Kunming on 10<sup>th</sup>, Nov., 2019.



## POST-SYMPIOSIUM STUDY TOURS

On 13<sup>th</sup> -15<sup>th</sup> Nov., the participants will have the opportunity to visit

### (1)Line 1

Kunming - Huangdeng RCC Gravity Dam - Kunming

#### 13<sup>th</sup> Nov

Take high speed train from Kunming to Dali (about 2 hrs) in the morning. A short visit will be arranged to Dali ancient city and after lunch, you will take bus to Huangdeng RCC Gravity Dam (about 6 hrs)

#### 14<sup>th</sup> Nov

Technical visit to Huangdeng RCC Gravity Dam.

Huangdeng RCC Gravity Dam, with the height of 203 m, which is the highest RCC dam finished in China, located in Lanping County, Yunnan Province, is the fifth stage hydropower station in the upper reaches of Lancang River in Yunnan Province. 2.5089 million m<sup>3</sup> RCC and 0.47 million m<sup>3</sup> CVC have been finished from March 2015 to March 2018, with average monthly placement 150,000 m<sup>3</sup>. Smart temperature control and digital construction control system has been used during the dam construction, which guarantee the quality. First impounding started in Nov. 2017 and the last unit was put into operation in Jan. 2019. The dam has been in good performance since its operation with leakage of 0.5L/s.

A workshop on key technologies of Huangdeng RCC dam will be organized for further discussion.



Huangdeng RCC Gravity Dam

**15<sup>th</sup> Nov**

Way back to Kunming by bus.

This tour ends in Kunming at about 22:00 on 15<sup>th</sup>, Nov., 2019. Participants are responsible for the cost and booking of their own travel and accommodations from this point onward.

**(2)Line 2**

Kunming - Wudongde Hydropower Project  
- Baihetan Hydropower Project – Kunming

**13<sup>th</sup> Nov**

Depart from Kunming to Wudongde Hydropower Project in the morning and visit the Wudongde Hydropower Project in the afternoon.

Wudongde HPP is the second largest hydropower project under construction in the world, and is the most upstream of the four giant hydropower stations in the lower reaches of the Jinsha River which are developed and constructed by China Three Gorges Corporation. It has a concrete double-curvature arch dam with a maximum height of 270 m. Dam construction started in March 2017 and will be finished in June 2020. The max. yearly placement is 951,000 m<sup>3</sup> and monthly placement 100,000 m<sup>3</sup>. Wudongde dam site has high slope of 1500-1800m with slope ratio of about 50°-60°, which increases its difficulties of construction. Low-heat Portland cement and smart construction control system have been used to control thermal stress.



Wudongde Hydropower Project

**14<sup>th</sup> Nov**

Leave for the Baihetan Hydropower Project in the morning and Visit Baihetan Hydropower Project in the afternoon.

Baihetan is the largest hydropower project under construction over the world. It has a concrete double-curvature arch dam with maximum height of 289m. The dam controls the watershed area of 430.3 million km<sup>2</sup>, accounting

for 91% of the watershed area above the Jinsha River. The total concrete volume of the dam is 8,030,000 m<sup>3</sup>. Dam construction started in April 2017 and will be finished in June 2021. Low-heat Portland cement and smart construction control system have been used to control thermal stress.



Baihetan Hydropower Project

15<sup>th</sup> Nov.

Way back to the Kunming by bus.

This tour will end in Kunming at about

18:00 on 15<sup>th</sup>, Nov., 2019. Participants are responsible for the cost and booking of their own travel and accommodations from this point onward.

## REGISTRATION FEES

The Registration Form is enclosed in the last of this bulletin.

Type of participant	Before 15 August 2019	After 15 August 2019
Participant	US\$ 600	US\$ 650
Accompanying person	US\$ 300	US\$ 350
Pre-Symposium study tour	US\$ 600	
Post-Symposium study tours	Wudongde Project and Baihetan Project: US\$ 600	
	Huangdeng RCC Project: US\$ 600	
Technical Exhibition	US\$ 3000	

•The Participant fee includes:

- ☆ Documentation and access to the sessions of the Symposium
- ☆ Working lunches
- ☆ Coffees in the morning and afternoon breaks
- ☆ Opening session
- ☆ Social event

•The Accompanying person fee includes:

- ☆ Credentials for the accompanying person
- ☆ City Tour
- ☆ Social event related
- ☆ Accompanying person program

•Pre and Post study tours fee includes:

- ☆ Local transport
- ☆ Hotel
- ☆ Meals
- ☆ Entrance ticket
- ☆ Tours are subject to change, if minimum number of delegates are not met

•Technical Exhibition fee includes:

- ☆ One Exhibition stand(Details to be announced soon)
- ☆ One free participant registration

**Registration will be confirmed after the total payment has been received. Total payment in the registration form could be paid on-line (Paypal) or by bank transfer to the following account:**

- Name of organization: Chinese National Committee on Large Dams
- Bank: Industrial and Commercial Bank of China, Shijitan Branch
- Account No.: 0200 0963 0900 0039 706
- Swift Code: ICBKCNBJBJM

\* CHINCOLD don't afford any incurred transfer fee

## CORRESPONDENCE ADDRESS

Registration forms, CV, papers and correspondence concerning on the 8<sup>th</sup> international Symposium on RCC dams could be sent to Secretariat as the following,

Dr. Lifeng ZHENG, Dr. Aili LI

Secretariat of RCC 2019

Chinese National Committee on Large Dams

Room 1266, IWHR Building A, A1 Fuxing Rd., Beijing 100038, P.R. China

Tel: +86-10-68789757

Cell Phone: +86-13522952589

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Email: [chincold-en@vip.126.com](mailto:chincold-en@vip.126.com); [chincolden@gmail.com](mailto:chincolden@gmail.com)

**Website:** <http://www.chincold-smart.com/meetings/RCC2019/>

**Registration online:** <http://www.chincold-smart.com/meetings/rcc2019/createaccount.html>



# 8<sup>th</sup> International Symposium on Roller Compacted Concrete (RCC) Dams

## Registration Form

11<sup>th</sup> -15<sup>th</sup> November, 2019, Kunming, China

**Please complete and return before June 30<sup>th</sup> , 2019**

**Please type or write in legible letters**

Last name \_\_\_\_\_ Given name \_\_\_\_\_

Prof.  Dr.  Mr.  Ms

Affiliation \_\_\_\_\_

Mailing address \_\_\_\_\_

\_\_\_\_\_ City \_\_\_\_\_ Country \_\_\_\_\_ Zip code \_\_\_\_\_

Telephone \_\_\_\_\_ Fax \_\_\_\_\_

E-mail \_\_\_\_\_

Country for visa application \_\_\_\_\_ Passport No. \_\_\_\_\_

**For the following, please tick appropriate:**

- I am planning to attend the Conference
- I am planning to submit a paper, paper title: \_\_\_\_\_
- I am willing to make a presentation, title: \_\_\_\_\_

Registration and Technical tours fee

Items	Price before 15 Aug. (USD)	Price after 15 Aug. (USD)	Number of persons	Total
Participant	600	650		
Accompanier	300	350		
Pre-Symposium study tour	600			
Post-Symposium study tour	Wudongde and Baihetan Project: 600			
	Huangdeng RCC Project: 600			
Technical Exhibition	3000			
In total:				

Signature \_\_\_\_\_

Date \_\_\_\_\_

Please return to:

Dr. Lifeng ZHENG, Dr. Aili LI

Secretariat of RCC 2019, Chinese National Committee on Large Dams

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