PROGRAMME of the 6th International Symposium on Roller Compacted Concrete (RCC) Dams

Zaragoza, Spain

23 to 25, October 2012

Organized by

www.rcc2012.es
Tuesday, 23 October

09:00 – 09:30 **Opening Session**

09:30 – 11:00 **Special Conferences**

Chairman: *L. Berga (Spain)*

- RCC dams in Spain. *J.C. de Cea (Spain)*
- RCC and CMD dams in China. *Jia Jinsheng (China)*
- New developments in RCC dams. *M.H.R. Dunstan (United Kingdom)*

11:00 – 11:30 **Opening of the Technical Exhibition**

11:00 – 11:30 **Coffee Break**

11:30 – 13:15 **Session 1. New Developments in RCC Dams**

Chairman: *F. Hijós (Spain)*

Co-Chairman: *Ji Guojin (China)*

**Presentation of oral communications**

- Experiences with RCC dams in Mexico. *F. I. Arreguin-Cortes, R. Murillo-Fernández (Mexico)*
- Recent development in RCC dams technology in Morocco. *A.F. Chraibi (Morocco)*
- Construction of an RCC dam in a very wet climate. *J. Waters, D. Cameron-Ellis, M.R.H. Dunstan, L. Houlberg, C. Hicks (Australia)*
- Diemer Basha Dam Status & Potential RCC mixes. *E. Schrader, I.U. Haq, M. Arshad Pervez (United States)*
- Guandi Highly RCC Gravity Dam – Challenges, Solutions and Lessons. *Chen Qiang, Hu Xiaohong, Zhao Yong-Gang, Zhang Lian-Ming, Yuan Qion (China)*
- Portugues Dam: Challenges and Success in Foundation Documentation and Treatment. *S. Myers, J. Conway (Puerto Rico)*
- Structural Features of Gomal Zam RCC Arch-Gravity Dam. *Chongjiang Du (Alemania)*
- RCC Dam Water-Proofing by Means of High Pressure Polymer Injections Compared to Water-Proof membranes. *A. Gonzalo (Spain)*
- New Technology on Vertical Conveyance of Concrete by Full-Bin System in Guangzhou Dam Project. *Wu Xiurong, Chen Zurong (China)*
- The Use of 400 MM RCC Lifts in the Enlarged Cotter Dam. *P. Buchanan, D. Nott, B. Egaliat, B. Forbes (Australia)*

13:15 – 14:15 **Lunch**

14:15 – 16:00 **Session 2. Planning and Design (Part I)**

Chairman: *J. Yagüe (Spain)*

Co-Chairman: *ZHENG Cuiying (China)*

**Presentation of oral communications**

- Discussions on Design Principle for Super High Gravity Dams Based on Simulation Test of Hydraulic Fracturing. *Jia Jinsheng, Wang Yang, Feng Wei, Chang Qingrui (China)*
- HRB Waldbärenburg: First RCC Dam Experience in Germany. *B. Lange, F. Hering, R. Schlegel, G. Leyendecker, F. Ortega (Germany)*
- Influence of Different Layer Thickness and Intermittent Time on High RCC Gravity Dam Temperature Stress. *Li Song-Hui, Zhang Guo-Xin, Liu Yi (China)*
- Joint Vision by Designer and Contractor for the Design of an RCC Dam. *L. Canale, Ö. Özen, E. Eroğlu (Switzerland)*
- Main Design Features of a RCC Gravity Dam in Portugal. *A. Camelo, N. Antunes, D. Botelho (Portugal)*
MINIMUM REQUIREMENTS FOR THE FOUNDATION OF RCC DAMS IN BORDER-LINE TERRAINS. M. Romana (Spain)

MOVING SUCCESSFULLY FROM A CONVENTIONAL CONCRETE INTO AN RCC DESIGN FOR PORTUGUESE DAM. P. Vázquez, A. Gonzalez (Puerto Rico)

NONLINEAR BEHAVIOUR OF A ROLLER COMPACTED CONCRETE DAM UNDER STRONG EARTHQUAKE. D. Grenier, A. Si-Chaib, A. Alami (France)

SIMULATION OF TEMPERATURES AND STRESSES DURING CONSTRUCTION OF A RCC DAM. L.M. Lacoma, J. Rodriguez, J. Marti, F. Martinez (Spain)

STUDYING THE EFFECT OF STARTING TIME OF CONCRETE ON THERMAL RESPONSE OF ROLLER COMPACTED CONCRETE DAM. M. Esmailnia Omran, Z. Ghadiri (Iran)

16:00 – 16:30 Coffee Break

16:30 – 18.00 Session 2. Planning and Design (Part 2)

Chairman: J. Yagüe (Spain)
Co-Chairman: ZHENG Cuiying (China)

Presentation of Oral Communications

- Design of Foundation Remediation for a RCC Dam. E. Yildiz, A. Fikret Gürdil (Turkey)
- The Development of the Design of CHANGUINOLA I Dam. G. Erlandsson, D. Cameron-Ellis, Q.H.W. Shaw, M.R.H. Dunstan (Denmark)
- The Foundation of Hardfill DAMS. Effects of Seismicity. M. Romana, A.R. Martinez-Sidera (Spain)
- The Influence of Low Stress-Relaxation Creep on Large RCC Arch & Gravity Dam Design. Q. Shaw (South Africa)
- Three Recent Geomembrane Projects on New RCC DAMS. A. Scuero, G. Vaschetti (Switzerland)
- Study and Application of Improved Equivalent Stress of Finite Element Method of Gravity DAMS. Yang Huichen, Jia Jinsheng, Zheng Cuiying (China)
- De Hoop Dam: South African RCC Adventures. H.J. Wright, J. Van Zyl (South Africa)

18:00 – 18:30 Lecture

- Innovations in RCC DAMS. B. Forbes (Australia)

20:30 Welcome Dinner

Wednesday, 24 October

09:00 – 09:30 Lecture

- RCC as Dam Construction Material. R. Ibáñez de Aldecoa (Spain)

09:30 – 11.00 Session 3. Material and Mixtures (Part 1)

Chairman: A. Zaragoza (Spain)
Co-Chairman: F. Delorme (France)

Presentation of Oral Communications

- Accelerate Curing Test: History, Development and Applications. J. E. López, E. Schrader (Colombia)
- Changes in the World Economy Influences the Choice of Cementitious Materials at CHANGUINOLA I. E. Lose, M.R.H. Dunstan (Denmark)
- CHOOSE OF POZZOLANS FOR USE IN THE CEMENTITIOUS CONTENT OF LARGE RCC DAMS. U Myint Zaw, Ondrej Voborny, Nguyen Hong Ha, David Morris, M.R.H. Dunstan (Burma)
- RAW MATERIALS SELECTION AND RCC MIXTURE OPTIMIZATION IN EL PUENTE DE SANTOLEA’S DAM. J. Gracia, M. Cabedo (Spain)
- EXPERIENCE MADE WITH RETARDER ADMIXTURES AT TWO RCC DAMS IN MYANMAR. U Myint Zaw, U Zaw Min San, S.L.L. Cowie, C. Rohrer (Burma)
- FEASIBILITY STUDY OF USING ONE PORTION OF AGGREGATE IN KAHIR RCC DAM. M. Shahgholi, M. Jafarbegloo, M.R. Hajialikhani (Iran)
- LIMESTONE FILLER USED AS MINERAL ADMIXTURE IN THE RCC MIX FOR LA BREÑA II DAM (SPAIN). R. Ibáñez de Aldecoa, G. Noriega, F. Romero, A. Sandoval, M. Sanz (Spain)

**SESSION 3. MATERIAL AND MIXTURES (PART 2)**

**Chairman: A. Zaragoza (Spain)**

**Co-Chairman: F. Delorme (France)**

**PRESENTATION OF ORAL COMMUNICATIONS**

- PRACTICE OF HIGH-INTENSITY BASALT GRAVEL AGGREGATE PRODUCTION SYSTEM IN GUANDI HYDROPOWER STATION. Zhao Yunliang, Zhang Chaofeng (China)
- RCC MIX DESIGN DEVELOPMENT FOR ENCISSO DAM. M. Allende Álvarez, D. Cruz García, F. Ortega Santos (Spain)
- RCC MIXTURES FORMULATION FOR TABELLOUT DAM. M. Khalfallah, A. Si-Chaib, K. Mokrani (France)
- RESULTS OF MIX DESIGNS IN ZIRDAN RCC DAM. M. Jafarbegloo, M.R. Hajialikhani (Iran)
- RIZZANESE RCC DAM : USE OF LOW COST RCC IN A THICK CROSS SECTION. F. Delorme, A. Lochu, R. Valon (France)
- THE EXPERIMENTAL ANALYSIS OF ALKALI-CARBONATE REACTIONS ON RCC DAMS IN IRAN. N. Tavakoli Shirazi, G. Hossein Akbari (Iran)
- THE LOW STRESS RELAXATION CREEP CHARACTERISTICS OF FLYASH-RICH RCC. Q.H.W. Shaw, M.R.H. Dunstan (South Africa)
- USE OF A HIGH SHRINKAGE AGGREGATE IN A NEW RCC DAM. D. Nott, B. Forbes, D. Brigden (Australia)

**LUNCH**

**SESSION 4. CONSTRUCTION AND QUALITY CONTROL (PART 1)**

**Chairman: WU Shiyong (China)**

**Co-Chairman: R. Lafuente (Spain)**

**PRESENTATION OF ORAL COMMUNICATIONS**

- DIGITAL MONITORING SYSTEM AND APPLICATION ON LUDILA PROJECT. Zhang Guo-Xin, Li Song-hui, Liu Yi (China)
- FEEDBACK ANALYSIS ON CAUSES AND MECHANISM OF CRACK FORMATION AND EFFECTS OF TEMPERATURE CONTROLLING AND CRACK PROTECTING DURING CONSTRUCTION OF RCC DAMS. Liu Youzhi, Xu Bo, Zhang Guo-Xin, Shi Ziming, Liu Tao (China)
- INVESTIGATION OF DIFFERENT PARAMETERS ON SHEAR STRENGTH AND PERMEABILITY OF CONSTRUCTION JOINTS. Mokhtar Pouryani, F. Ghadermazy, H.R. Araghyan, Sh. Mahzarnya (Iran)
- QUALITY CONTROL IN ZIRDAN RCC DAM. M. Jafarbegloo, M.R. Hajialikhani (Iran)
DEVELOPMENT OF THE RCC FOR MIDDLE VAITARNA DAM, INDIA. V.B. Astankar, G.V. Rao, S. Mane, M.R.H. Dunstan (India)

RCC DAM CONSTRUCTION QUALITY CONTROL – NUCLEAR GAUGE DENSIMETER CALIBRATION. J.E. López, E. Schrader (Colombia)

USE OF A GEOGRAPHIC INFORMATION SYSTEM AS A TOOL DURING THE CONSTRUCTION OF THE PIRRIS RCC DAM IN COSTA RICA. D. Núñez Morales, F. Ortega Santos (Costa Rica)

A UNIQUE CEMENT AND FLY ASH SUPPLY SYSTEM FOR THE CHANGUINOLA I PROJECT IN PANAMA. A. Ligthart, C. Hicks (Holland)

ASSESSMENT OF RCC CONSTRUCTION METHODOLOGY BETWEEN YEYWA AND UPPER PAUNGLAUNG RCC DAMS IN MYANMAR. U Myint Zaw, U Zaw Min San, S.L.L. Cowie, C. Rohrer (Burma)

16:00 – 16:30 Coffee Break

16:30 – 18:30 Session 4. Construction and Quality Control (Part 2)
Chairman: WU Shiyong (China)
Co-Chairman: R. Lafuente (Spain)

Presentation of oral communications

- Characterization and Quality Control of RCC Dam Presa del Puente (Teruel, Spain). J. Arroyo Alonso, L. Fernández Almiñana, A. Sánchez Lallana (Spain)
- Construction Technology of RCC Dam Composed of Sandstone Aggregate in Tropical Rainforest. Zhu Hongbin, Yang Baihua, Fu Jianping, Cui Dan (China)
- Design and Build of Rizzane RCC Dam. A. Lochu, F. Delorme, P. Carlioz (France)
- Design and Construction of Nakai RCC Dam, Laos. G. Stevenson, R. Douglas, M. Matsuzaki (Canada)
- Dynamic Construction Simulation of High Roller Compacted Concrete Dam. Denghua Zhong, Haotian Chang, Mingchao Li (China)
- El Puente de Santolea’s Dam Experience. M. Cabedo, B. Roldán, J.I. López (Spain)
- Rapid Construction Technology of Guandi RCC Gravity Dam. Zhao Yunliang, Zhang Chaofeng (China)
- Enciso Dam: Geological and Geotechnical Constraints of the Foundation. Consolidation Treatment. M. Allende Álvarez, D. Cruz García, A. Soriano Martínez, A. Andrino Sigilo, D. Chullá Sanz (Spain)

18:30 – 19:00 Special Conference

- Lessons Learned and Innovations for Efficient RCC Dams. F. Ortega (Spain)

20:30 Social Event
Thursday, 25 October

09:00 – 11:00 **SESSION 4. CONSTRUCTION AND QUALITY CONTROL (PART 3)**
Chairman: **P. Vazquez-Ruiz (Puerto Rico)**
Co-Chairman: **YANG Baihua (China)**

**PRESENTATION OF ORAL COMMUNICATIONS**
- LESSONS LEARNED IN ZIRDAN RCC DAM. M.R. Hajialikhani, M. Jafarbegloo (Iran)
- NOT ONLY SIZE MATTERS CONSTRUCTING NAKAI RCC DAM FOR NAM THEUN 2 PROJECT IN LAOS. A. Rousselin, F. Delorme, B. Taquet (France)
- PRACTICAL EXPERIENCES FOR CONSTRUCTION OF RECENT RCC DAMS IN IRAN CONSIDERING ADVANCED TECHNOLOGIES. A. Dolatkhahi, R. Peyrovdin, M. Navidi Kashani, S. Mahzarnia (Iran)
- RCC DAM CONSTRUCTION – CONVEYORS OR TRUCKS. J.E. López, E. Schrader, L. Gaekel (Colombia)
- RCC DAM CONSTRUCTION TECHNIQUE INNOVATION OF JINANQIAO HYDROPOWER STATION ON JINSHAJIANG RIVER. Li Xianzhen (China)
- RCC DAMS BUILT BY SPANISH CONSTRUCTION COMPANIES ABROAD. A. Capote del Villar, R. Ibáñez de Aldecoa, V. Florez Casillas (Spain)
- APPLICATION OF RCC DAM CONSTRUCTION TECHNIQUE IN XIANGJIABA HYDROPOWER STATION. Gao Peng, Mei Xuedong, Peng Gang, Wang Yi (China)
- REVIEW OF THE CONSTRUCTION OF THE SON LA RCC DAM. Nguyen Hong Ha, Marco Conrad, David Morris (Vietnam)
- SCENARIO OF RCC DAMS IN MEXICO. A. Garduño Gallo, M.A. Montero Catalán (Mexico)
- LONGITUDINAL JOINT BEHAVIOR IN A TWO STAGE CONSTRUCTION OF CASTANHÃO DAM. W. Jardim, M. Pinto (Brasil)

11:00 – 11:30 **Coffee Break**

11:30 – 12:45 **SESSION 4. CONSTRUCTION AND QUALITY CONTROL (PART 4)**
Chairman: **P. Vazquez-Ruiz (Puerto Rico)**
Co-Chairman: **YANG Baihua (China)**

**PRESENTATION OF ORAL COMMUNICATIONS**
- STUDY ON EXISTING PROBLEMS AND COUNTERMEASURES OF ROLLER COMPACTED. Dong Hao-Wen, Tang Shun-Cheng, Ji Wei (China)
- IMMERSION VIBRATED RCC (IVRCC) FIRST WORLD EXPERIENCE AT DE HOOP RCC DAM IN SOUTH AFRICA. J.F. van Niekerk, J. van Niekerk, F. Ortega Santos (South Africa)
- CONSTRUCTION OF GUANDI RCC DAM. Shiyong Wu, Shangyuan Yan, Lei Yao, Dan Zhao, Fugang He (China)
- THE SPECIFICATION OF THE EFFECTIVE METHOD FOR DEMOLITION OF HARDENED ROLLER COMPACTED CONCRETE (RCC) USED IN KERMAN GHADROUNI DAM. M. Abbasi, M.R. Jamshidi Jam (Iran)
- DESIGN AND CONSTRUCTION ADVANTAGES OF HARDFILL SYMMETRICAL DAMS - CASE STUDY: SAFSFAF DAM IN EASTERN ALGERIA. T. Guillemot, M. Lino (France)
- NEW PROGRESS OF CEMENT-SAND-GRAVEL DAMMING IN CHINA. Wu Xiurong, Chen Zhen Hua, Lin Shengzhu (China)
- STUDY ON DESIGN OF MIXING PROPORTION FOR CEMENTED SAND AND GRAVEL (CSG). Feng Wei, Jia Jinsheng, Ma Fengling (China)
- CRACKING PREVENTION OF GUANDI RCC GRAVITY DAM. Li Guoshan, Zhu Haixia, Zhao Yong-Gang, Zhang Lian-Ming (China)
- FINAL DESIGN OF A 135-M HIGH RCC DAM IN VENEZUELA. F. Ortega Santos, C. Granell, A. Soriano, A. Andres, A. Bello, A. Hitcher (Germany)
12:45 – 13:15  **Lecture**  
- PERFORMANCE OF RCC DAMS. **E. Schrader** (United States)

13:15 – 14:15  **Lunch**

14:15 – 16:00  **Session 5. Performance and Monitoring**  
Chairman: **A. Soriano** (Spain)  
Co-Chairman: **SUN Yuelin** (China)  

**Presentation of Oral Communications**  
- DAM SAFETY MONITORING TO ASSESS VAL DAM BEHAVIOR. R. Gómez López de Munain, J. Merino Vílchez, M. G. de Membrillera Ortúño (Spain)  
- EVALUATION OF SAFETY AND STRUCTURAL STABILITY OF JEGIN RCC DAM DURING OPERATION PERIOD. M. Esmaeilnia Omran, H. Mahdiloo Torkamani (Iran)  
- MONITORING MODEL FOR DISPLACEMENT FIELD OF RCCD. Chen Xudong, Gu Chongshi, Xu Baosong (China)  
- PROPOSING A STANDARDIZED APPROACH TO STRESS-STRAIN INSTRUMENTATION FOR RCC DAMS. M. Conrad, Q.H.W. Shaw, M.R.H. Dunstan (Switzerland)  
- QUANTITATIVE MICROCRACK ANALYSIS OF RCC SUFFERED DIFFERENT FREEZING-THAWING DAMAGE DEGREES BY DIP TECHNIQUE. Shuguang Li, Wei Feng, Juntao Tian, Gaixin Chen, Yihui Lu (China)  
- SEEFPAGE ANALYSIS OF GUANGZHAO RCC GRAVITY DAM. Xiaohui Qian, Hao Yang, Lin Luo (China)  
- THE SUMMARY OF SAFETY MONITORING AND OPERATION ABOUT RCC GRAVITY DAM IN CHINA. Du Xiaokai, Zhao Quansheng, Dang Lincai (China)  
- THE TENSILE STRENGTH OF RCC FOR DAMS. T.P. Dolen, M.R.H. Dunstan (United States)

16:00 – 16:30  **Coffee Break**

16:30 – 18:00  **Session 6. Other Applications of RCC**  
Chairman: **K. Hansen** (United States)  
Co-Chairman: **J.M. Buil** (Spain)

**Presentation of Oral Communications**  
- RCC USE IN COFFERDAMS. K.D. Hansen, D.L. Johnson (United States)  
- LESSON LEARNED – MORE THAN 100 RCC OVERTOPPING SPILLWAYS IN THE UNITED STATES. R.P. Bass, T. Fitzgerald, K.D. Hansen (United States)  
- SOME KEY EXPERIENCES ON THE RCC COFFERDAM CONSTRUCTION OF THE THREE GORGES PROJECT. Chen Xianming, Li Jinghua, Xiong Jinhong (China)  
- RCC IN SMALL PROJECTS. L. Pinilla B. (Chile)  
- HYDRAULIC SCALE MODEL OF A 50 METERS HIGH STEPPED SPILLWAY ON A RCC DAM IN THE SULTANATE OF OMAN. P.E. Loisel, P. Jehanno, C. Guilbaud, S. Al Hadhrami (France)  
- STUDY ON UNDERFLOW ENERGY DISSIPATION TECHNOLOGY OF HIGH RCCD FLOOD DISCHARGE. Peng Wen-ming, Zhang Lian-ming, Zhao Yong-gang, Hu Xiao-hong (China)  
- THE HIGHEST RCC DAM IN THE LAO P.D.R. -INTRODUCTION OF NAM NGIEP I HYDROPOWER PROJECT- N. Kita, T. Kamachi, M. Asakawa, T. Tada (Afghanistan)

18:00 – 18:30  **Closing Session**

**Awards Ceremony: International Milestone Projects**

18:30  **Farewell Cocktail**