

# ICOLD Committee on Hydraulics for Dams

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SwedCOLD Temadagen 2018-04-10



# Medlemmar

**Chairman B. P. MACHADO**

**Vice-Chairperson J. GUO**

**Former Chairmen A. LEJEUNE; B. PETRY**

25 medlemsländer

# Uppdrag fram till 2017

- Att färdigställa bulletin

TECHNICAL ADVANCEMENTS IN  
SPILLWAY DESIGN

# Innehåll – kapitel 2

## **LARGE CAPACITY SPILLWAYS**

- Layout
- Operation
- Risk management
- Data från 4 länder

# Innehåll – kapitel 3

## **HIGH HEAD SPILLWAYS**

- Scour process
- Evaluation methods
- Difficulties in evaluations
- Scour control

# Innehåll – kapitel 4

## **STEPPED SPILLWAYS**

- Main uses
- Hydraulics
- Design features

# Innehåll – kapitel 5

## LABYRINTH SPILLWAYS

1. DISCHARGE CAPACITY
2. **NAPPE BEHAVIOUR AND ARTIFICIAL AERATION**
3. CYCLE EFFICIENCY
4. TAILWATER SUBMERGENCE
5. CYCLE WIDTH RATIO
6. WEIR PLACEMENT AND ABUTMENT EFFECTS ON HYDRAULIC EFFICIENCY
7. ENERGY DISSIPATION AND RESIDUAL ENERGY
8. DEBRIS
9. HYDRAULIC DESIGN AND ANALYSIS
10. **PHYSICAL AND NUMERICAL (CFD) MODELLING**

before 2000

# Innehåll – kapitel 6

## PKW SPILLWAYS (after 2000)

- 6.1. GENERAL DESCRIPTION
  - 6.2. GEOMETRY AND TYPES
  - 6.3. DISCHARGE CAPACITY
  - 6.4. MAIN GEOMETRICAL PARAMETERS
  - 6.5. TAILWATER SUBMERGENCE
  - 6.6. FLOATING DEBRIS
  - 6.7. AERATION AND ENERGY DISSIPATION**
  - 6.8. HYDRAULIC DESIGN EQUATIONS FOR A-TYPE PIANO KEY WEIRS AND DESIGN METHOD
  - 6.9. PHYSICAL AND NUMERICAL (CFD) MODELLING**
  - 6.10. STRUCTURAL AND CONSTRUCTION ISSUES
  - 6.11. ENGINEERING
  - 6.12. ONGOING RESEARCH
  - 6.13. PROTOTYPE PIANO KEY WEIR EXAMPLES
  - 6.14. REFERENCES
-





**Labyrinth and Piano Key Weirs-  
PKW 2011**

*James*

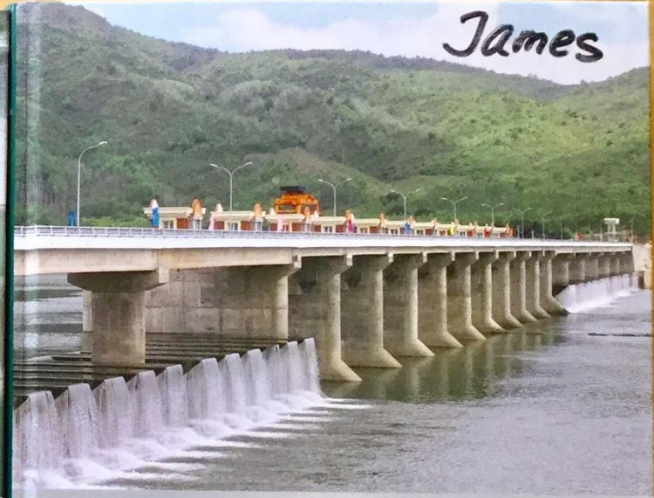
S. Erpicum - F. Laugier - J.L. Boillat - M. Pirotton - B. Reverchon - A.J. Schleiss  
**Editors**



**Labyrinth and Piano Key Weirs II  
PKW 2013**

*James*

S. Erpicum - F. Laugier - M. Pfister - M. Pirotton - G.M. Cicéro - A.J. Schleiss  
**Editors**



*James*

**Labyrinth and Piano Key Weirs III  
PKW 2017**

Sébastien Erpicum - Frédéric Laugier - Michel Ho Ta Khanh - Michael Pfister  
**Editors**



# Innehåll – kapitel 7

## **TUNNEL, SHAFT AND VORTEX SPILLWAYS**

# Innehåll – kapitel 8

## **SPELLWAYS IN VERY COLD CLIMATE**

# Innehåll – kapitel 9

## **COMPOSITE MODELLING OF HYDRAULIC STRUCTURES**

# Innehåll – kapitel 10

## **ECONOMICS, RISK AND SAFETY IN SPILLWAY DESIGN**

# Arbete framöver

- **New chairman** Anton Schleiss
- **En ny bulletin** *Recent and future challenges for spillways of dams,*  
förslag diskuteras under Wien-mötet I juli.
- **Innehåll fastställs** under Ottawa-mötet 2019.

# Ny bulletin

- High velocity flow on chutes & outlet structures (cavitation, air entrainment, waves, flow bulking, splashing,...)
- Uprating of existing spillways for increased design discharge