

# Creation of a PKW Database Discussion

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**ABSTRACT:** Piano Key Weir description involves a lot of geometrical parameters which designations are now well defined. A naming convention has been developed to enhance exchanges and cooperation between the numerous developers. This nomenclature was presented and discussed during the workshop and the updated version is included in the present proceedings (Pralong et al., pp. 277-284). In order to make easier the access to experimental or field data from different sources, a Database is required. This document relates the proposal which was presented and discussed during the workshop. The carrying out of this Database is expected in a near future.

## 1 INTRODUCTION

The naming convention for PKW presented in the proceedings (Pralong et al., pp. 277-284) was developed and approved in order to enhance exchanges and cooperation between the numerous developers and for the designers of PKWs. This nomenclature offers a unicity in terminology for the hydraulic and geometrical related parameters.

The next step to valorize the existing information consists in the development of a Database to gather the results of studies performed all around the world. The idea for a Database lies on the existing need to share knowledge for PKW design and for PKW understanding.

## 2 DATABASE OVERVIEW

A Database for PKW is simplified by the fact that the geometry can be globally described through a reasonable amount of parameters. Likewise from a hydraulic point of view, essentially discharge capacity curves are required.

The database layout presented during the workshop is divided into two Excel sheets. The first, so-called “*Parameters*” aims to describe the PKW structures and the framework of the projects, the second, so-called “*Measurements*” contains the rating curves providing the relation between the overflowing discharge and the upstream total hydraulic head.

The *Parameters* sheet is organized as summarized in Table 1 and the *Measurements* sheet content is presented in Table 2. The Database enables quick comparisons thanks to Filters on geometrical parameters values as well as on upstream heads and discharge capacity. It also allows identifying the sources of Data with contact addresses and publication references.

Table1. Content summary of the Excel *Parameters* sheet

Column	Description
[°]	Name of the series, It contains the provenance of the data (E= experimental, P= prototype and N= numerical), the source and year
Description	Framework of the project
Model scale	Geometrical scale of the study.
Geometry	Columns dedicated to the geometrical parameters.
Main dimensionless parameters	Columns automatically filled from the corresponding geometrical parameters
Approach conditions	Description of the approach flow, either “channel” or “reservoir”
General comments	Important remarks about measurements or type of the structure.
Source	Source of data
Website	Internet address of the Institute or Company owner of the data
Contact	Contact person at the Institute or Company

Table2. Content summary of the Excel *Measurements* sheet

Column	Description
[°]	Same name mentioned in the sheet “ <i>Parameters</i> ”
$H_u$ [m]	Total upstream hydraulic head ( $h_u + V^2/2g$ ). If only the upstream flow height ( $h_u$ ) is available, it will be mentioned in “ <i>Parameters</i> ” sheet
$Q_{PKW}$ [m <sup>3</sup> /s]	Discharge overflowing the PKW for a given total hydraulic head.
$H_u/P_i$	Ratio between upstream hydraulic head and height of the inlet key This column is automatically filled
$q_{sW}$ [m <sup>3</sup> /s.m]	Specific discharge related to PKW width ( $W$ ). This column is automatically filled

### 3 TERMS AND CONDITIONS FOR USING THE PKW DATABASE

The use of the Database will be submitted to rules concerning the *Introduction of Data*, the *Use of Data*, the *Responsibility* and some additional agreements. It has still to be defined if the access to the Database will be open or restricted to the Data providers.

### 4 DATABASE ACCOMODATIONS

The Database will be hosted at the University of Liege where an administrator will be in charge of the logistic aspects.

### 5 CONCLUSIONS AND PERSPECTIVES

A working group, constituted of members of the author’s institutions, will develop a detailed project which will then be submitted to all potential Data providers. After validation, the carrying out of this Database is expected in a near future.

### REFERENCE

Pralong, J., Vermeulen, J., Blancher, B., Laugier, F., Erpicum, S., Machiels, O., Piroton, M., Boillat, J-L., Leite Ribeiro M. and Schleiss, A.J. 2011. Proposal of a naming convention for the Piano Key Weir geometrical parameters. *International Workshop on Labyrinth and Piano Key weirs*, Liège, Belgium.