”Cassiopée” software

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“Cassiopée” Software:
a Tool to Assist in the Hydraulic Dimensioning of Upstream and Downstream Fish Passage Devices

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Funded by the French Biodiversity Agency, “Cassiopée” software has first been developped for the design and the verification of upstream and downstream fish passage facilities aggregating multiple tools required for dimensioning:

- pool-type fishways (with submerged orifices, rectangular and triangular notches and/or vertical slots) and pre-barrages;
- baffle fishways (Denil, Fatou, super-active bottom or chevron types);
- ramp with evenly distributed protruding blocks;
- fish-friendly intakes (inclined or oriented racks and head-losses, flow control device, downstream transfer channel, distance and speed at the point of impact of downstream jet).

A module is dedicated to the verification of the fishways passability, depending on the criteria for each species .

Figure 1: Groups of calculation modules illustrated by pictures of fishways handled by Cassiopée (Credits: S. Richard, D. Courret OFB).

Based on different calculation modules, which can be independent or linked in order to carry out complex operations, “Cassiopée” allows an iterative design approach ranging from the definition of the geometric characteristics of the devices to hydraulic simulations of their operating conditions. In a simple and user-friendly interface, it presents the calculation results as clear tables and graphs.

A general user guide and an illustrated quick start guide allow you to quickly get to grips with the software. Contextual documentation provides detailed information on the different tools and hydraulic formulas used for the calculations.

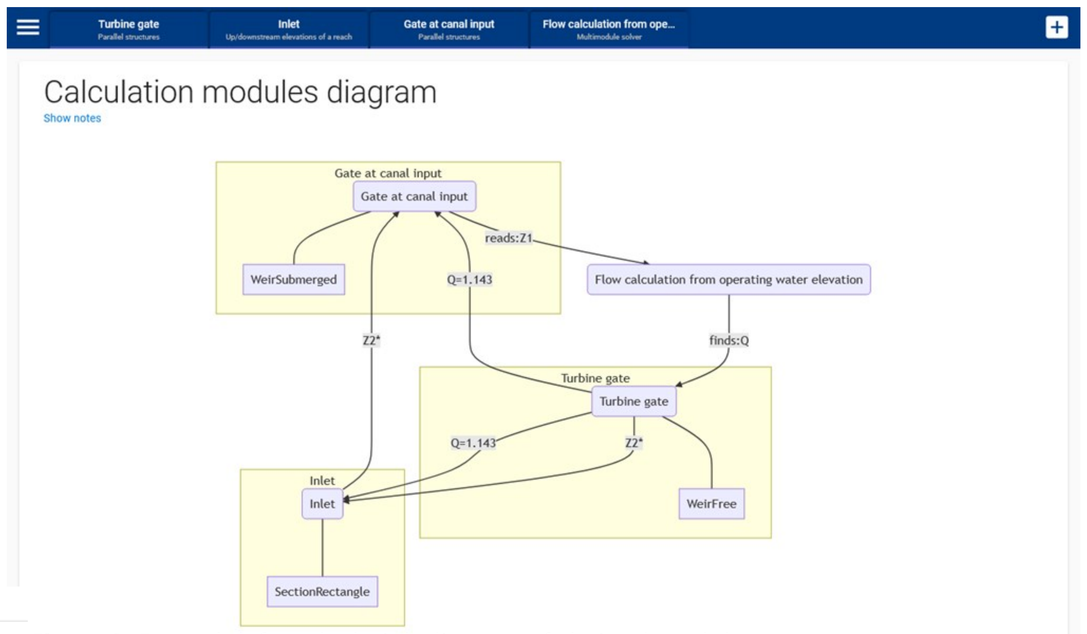

Figure 2: Example of a calculation diagram of chained modules.

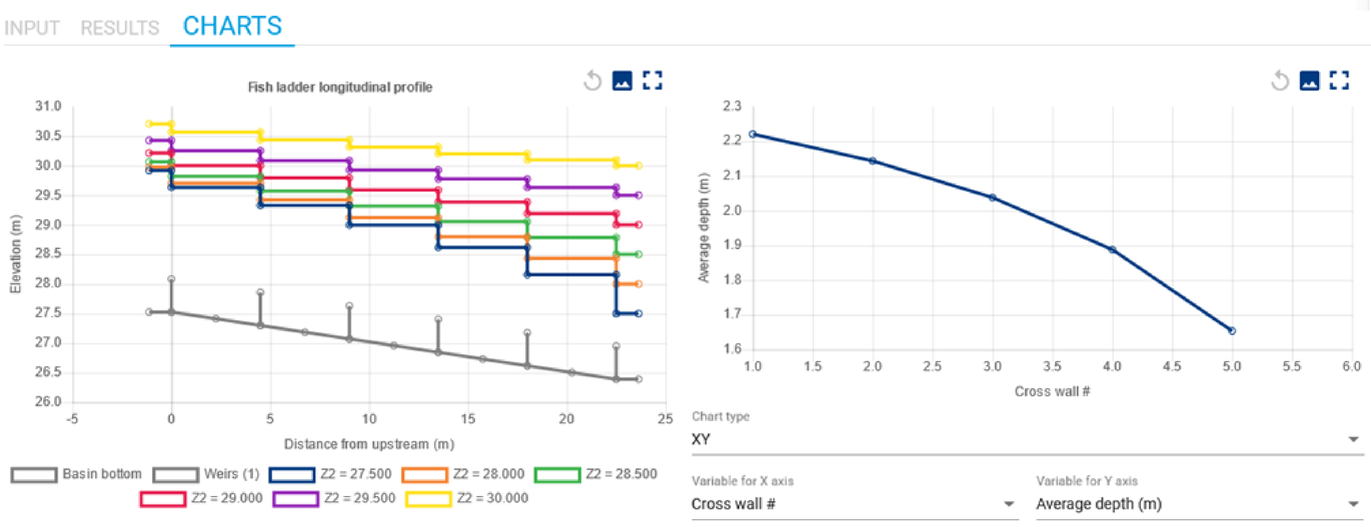

Figure 3: charts of the water surface in a fish ladder for several downstream water elevation and a chart showing the average water depth in each pool for one downstream water elevation.

Available in French and English, “Cassiopée” is an open source and free software accessible online (https://cassiopee.g-eau.fr) or as an offline application for Windows, Linux, macOS and Android.

Designed as a practical tool resulting from the transfer of research products, it is intended to be widely used by the hydraulic engineering community as a working and educational tool.

Entirely open-source and freely available on :

https://cassiopee.g-eau.fr

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