RENRISK.
IDENTIFYING THE BEST PROJECT.
The major portion of the profitability of a hydropower plant stems from decisions made during the early design phases. At this early stage of the project, the project owner is most able to influence the outcome of a project at a moderate cost.

For this reason, a careful evaluation of all possible project options is a crucial task at the start of each project. In traditional project design, optimization of a project is a time and cost intensive trial and error process, where the technical and financial aspects of the project are evaluated individually, mostly by “best expert guess”.

**RenRisk**

allows us to analyze projects as a whole and to evaluate them objectively. The best possible project option is identified by combining both technical and financial criteria taking into account the probabilistic nature of the input parameters.

**RenRisk** utilizes the Monte Carlo method to analyze a multitude of project options for thousands of hydrological and geological conditions and market scenarios to find the best solution for the project.

**RenRisk** is specially designed to identify the project option with the highest, risk-adjusted economic return and to determine the associated risk profile.

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**STANDARD PROJECT APPROACH**

- Project idea
- Site identification
- Alternative study of 5 layouts
- Calculation of of 30,000,000 business cases
- Selection of best layout based on technical criteria
- Financial evaluation
- Uncertainty whether it is the best possible project
- Certainty that it is the best possible project

**THE RENRISK APPROACH**

- Project idea
- Site identification
- Alternative study of 5 layouts
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**SUCCESS STORIES**

**HEPP INDONESIA**

- Initial Layout: Installed capacity 10 MW, Expected CAPEX USD 19.4 MM, Construction time 24 months, Internal Rate of Return 23.5 %
- RenRisk Layout: Installed capacity 10 MW, Expected CAPEX USD 20.1 MM, Construction time 18 months, Internal Rate of Return 25.7 %

**INCREASING NPV BY MORE THAN**

30%

**HEPP PERU**

- Initial Layout: Installed capacity 420 MW, Expected CAPEX USD 830 MM, Construction time 48 months, Internal Rate of Return 6.8 %
- RenRisk Layout: Installed capacity 172 MW, Expected CAPEX USD 395 MM, Construction time 36 months, Internal Rate of Return 13.3 %

**INCREASING NPV BY MORE THAN**

USD 260 MM

**HEPP CHILE**

- Initial Layout: Installed capacity 45 MW, Expected CAPEX USD 21 MM, Construction time 42 months, Internal Rate of Return 8.8 %
- RenRisk Layout: Installed capacity 43 MW, Expected CAPEX USD 28 MM, Construction time 23 months, Internal Rate of Return 14.1 %

**INCREASING NPV BY MORE THAN**

USD 85 MM

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**THE RENRISK APPROACH INCLUDES THE FOLLOWING STEPS**

1. Conducting a site visit and identifying suitable sites for the project facilities
2. Selecting the project layouts to be evaluated by RenRisk
3. Collecting base data relating to hydrology, geology and market aspects
4. Running RenRisk includes:  
   - Automatic variation of the main parameters (e.g. design discharge, dam height, water velocity in conveyance systems, etc.) of each project layout  
   - Application of probability functions to the base data to create statistically relevant scenarios  
   - Identification of the project option with the highest, risk-adjusted economic return, its main technical and financial parameters and the associated risk profile
5. Delivering a tailor-made and optimum project to the Client

**BENEFITS UTILIZING RENRISK**

- Clear identification of the best possible project
- Replacing uncertainty with certainty
- Optimization of the project based on NPV
- Optimized basis for bankability
- Minimization of risks