FENAS – FE-MODELLING IN HYDROPOWER PROJECTS

FENAS - FE Modelling

The accurate tool for analysing

complex structures

FENAS is a Finite Element Non-linear Analysis Software. With its pre- and post-processor it is particularly adapted for complex structures which also require the consideration of non-linear response.

FENAS provides a complete set of finite elements, allowing the idealisation of any structure. Bar, plate and shell elements are integrated, as well as 3D solid elements. Special 2D and 3D elements are available for handling heat transfer problems.

FENAS -

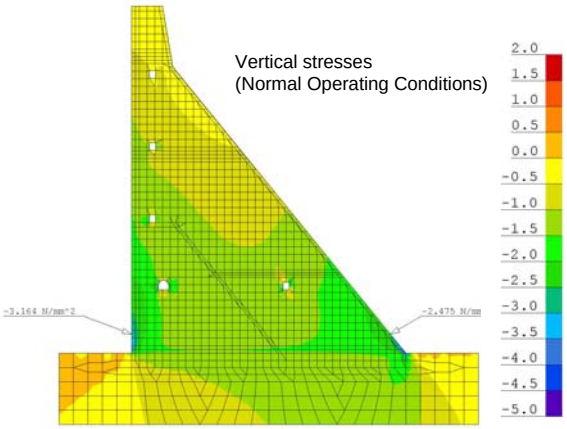
Analysis capabilities for designing

Roller-Compacted-Concrete dams

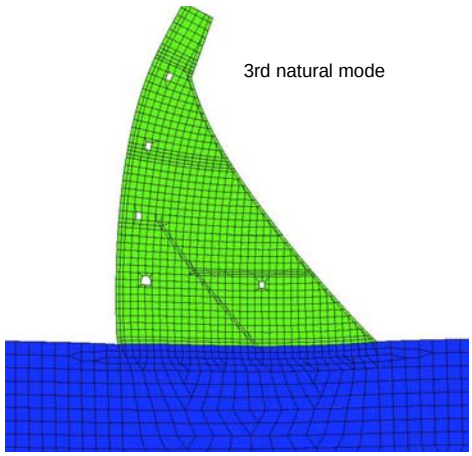
A wide range of analyses has to be performed in order to specify the required characteristic strength of the RCC mix, as well as to optimise and confirm the RCC dam design with regard to safety and serviceability.

FENAS is an economic and user-friendly analysis software for dealing with all the analyses essential within the design and optimisation process for a RCC dam.

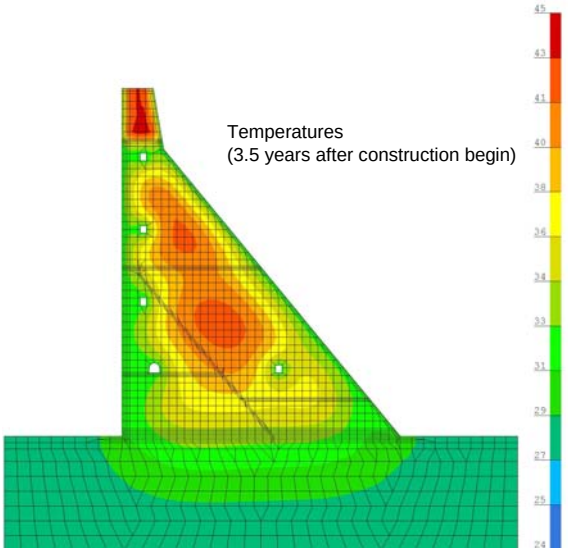
- static structural analyses
- frequency (eigenvalue) analyses
- dynamic structural analyses (response spectrum, time-history)
- thermal-stress analyses



Static structural analysis



Frequency analysis



Thermal-stress analysis

WALDER + TRÜEB ENGINEERING AG

COLENCO
Colenco Power Engineering Ltd

Hydropower & Hydraulic Structures

HYDROPOWER – FENAS REFERENCES (SELECTION)

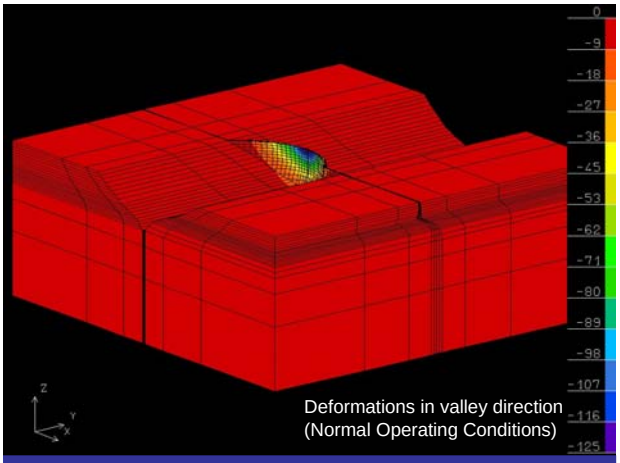
Hydropower & Hydraulic Structures

FENAS proved its capabilities in a number of hydropower and dam projects under design, under construction and in operation. The software covers nearly all engineering aspects therewith related.

FENAS -

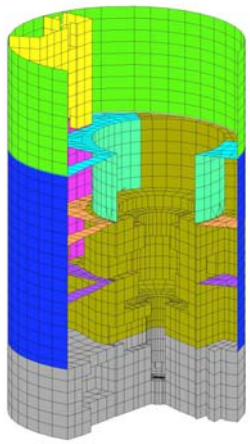
Hydropower & Hydraulic structures

Selected references



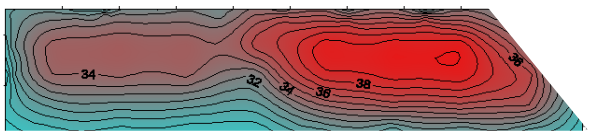
Deformations in valley direction
(Normal Operating Conditions)

Valle di Lei – Arch Dam – Switzerland
Height 200 m, Crest length 785 m
Feasibility studies – 3D structural analyses of arch dam alternative

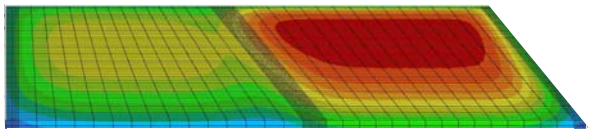


Sectional view of powerhouse shaft (machine block portion)

Avce – Pump Storage Scheme – Slovenia
1 turbine unit, 180 MW
Construction design – 3D structural and dynamic analyses of powerhouse shaft etc.

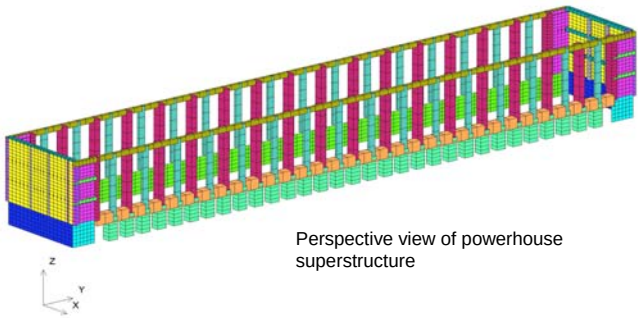


a) 2D temperature field as from thermocouple readings 18.07.2006



b) 2D temperature field as from FENAS simulation 18.07.2006

Yeywa – RCC Gravity Dam – Myanmar
Height 137 m, RCC volume 2.8 Mio.m³
Construction Stage 1&2 – Thermal as-built analysis for RCC properties and pre-cooling validation



Perspective view of powerhouse superstructure

Ryburg-Schwörstadt – Run-of-river HPP – Switzerland
Construction year 1927, 120 MW
Concession renewal – 3D dynamic analyses of powerhouse

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