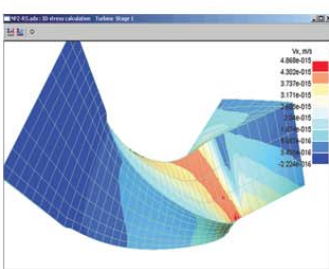
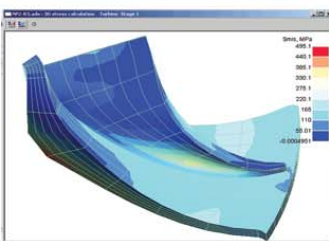
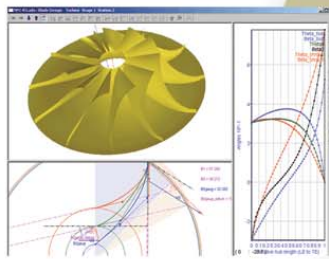
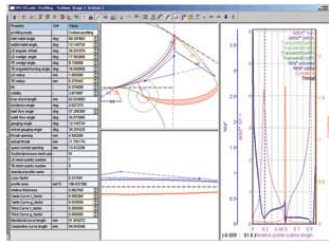
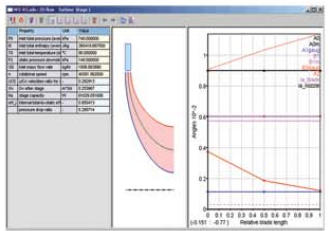
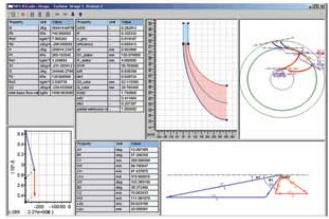
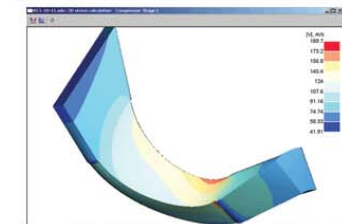
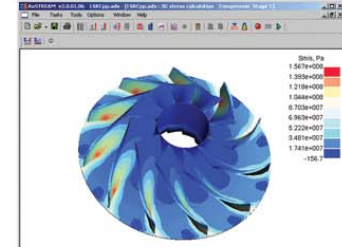
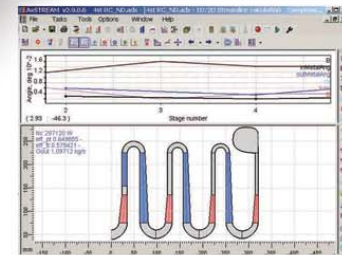
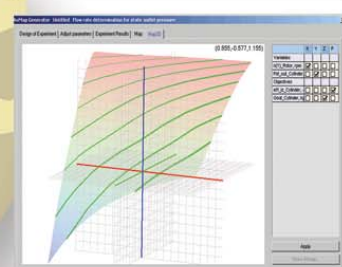
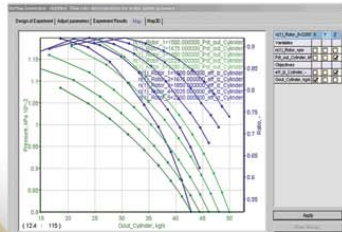
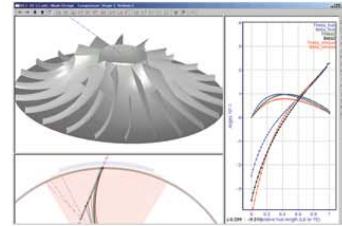
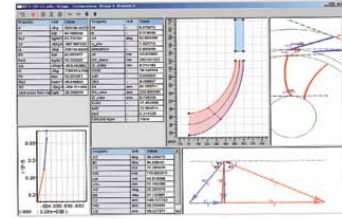


Turbomachinery Conceptual Design and Optimization.

Radial turbines



Centrifugal compressors



- Mixed Axial/Radial flow path design “from scratch” using a small number of basic parameters and a set of geometric constrains.
- A standardized interface for turbine and compressor design. Uniform set of modules for optimization, profiling and exporting.
- The calculation model may include different elements: blade, nozzle, stage, duct, valve, plenum, heat exchanger, volute, return channel etc.
- Preliminary flow path design and sizing with functionality to pre-screen and visualize hundreds of designs. Capability to choose an optimal number of stages, blades and flow path dimensions.
- Flow path meanline analysis and optimization which supports “as-designed” and “off-design” operational conditions.
- Meanline and throughflow analysis of radial turbine stages.
- Meanline and throughflow analysis of mixed type compressors with axial and radial stages. Enhancement and optimization of stage radial and meridional dimensions.
- Performance maps generation including flow path of variable geometry: vanes rotating schedule.
- Integrated multidisciplinary optimizer based on design-of-experiment (DoE) methodology capable of building characteristics curves and searching for optimal solution of multi-criteria problems.
- Generation of the cascades with interactive editing and optimization. Flow and boundary layer calculation.
- Camberline/Thickness profiling methods with interactive editing.
- 3D airfoil design in automatic and interactive modes with geometric and strength criteria monitoring. 3D blade design with custom lean.
- Embedded system for express 3D structural and modal analysis with automatic mesh generation.
- Embedded system of 3D CFD analysis in blade channel with automatic building of the designed models.
- Corporate-value features - loadable custom-defined fluid models and loss models and material databases.
- Export 3D airfoil geometry for detailed CFD analysis to NUMECA, CFX and Fluent solvers.
- Export 3D airfoil geometry in IGES formats for CAD/CAE packages.