The future of Low Pressure End Stage Blades starts here - with us

Customer Event Steam Turbine and Generators 2023



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Siemens Energy low pressure blade development mission

Future Requirements

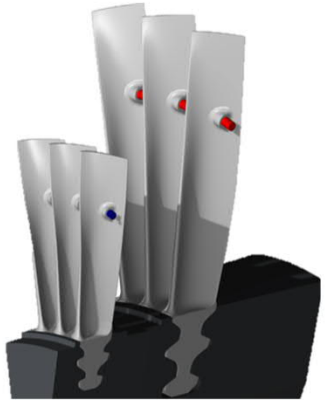
Unrestricted operation at low load conditions

High Efficiency

High backpressure at low load conditions

High number of start-stop-cycles

Long service periods



Siemens Energy Solutions

Optimizing airfoils, design features and interacting components using numerical simulations

LP-part validation at model turbine test bed

Long time on-site blade vibration measurements

Active control systems like blade health monitoring

Future Siemens Energy low pressure end stage blades

Reliable robust and efficient designs for extended operational flexibility

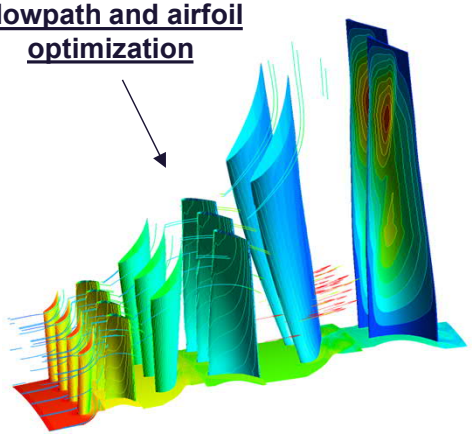
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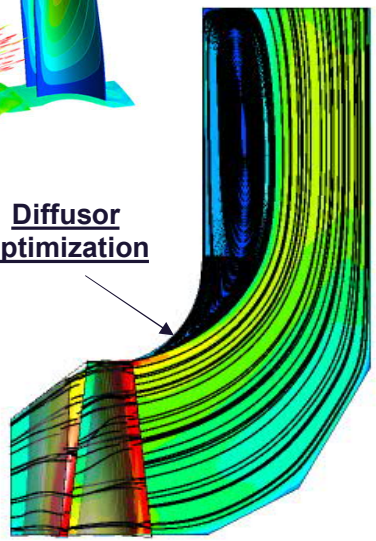
Maximize efficiency and minimize losses

3D Computational Fluid Dynamics

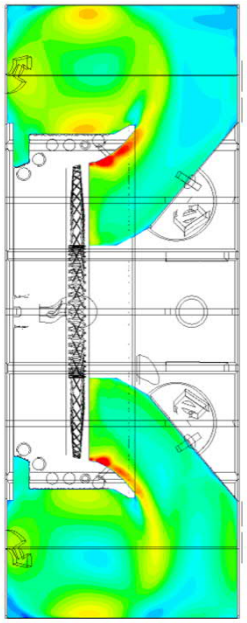
Flowpath and airfoil optimization

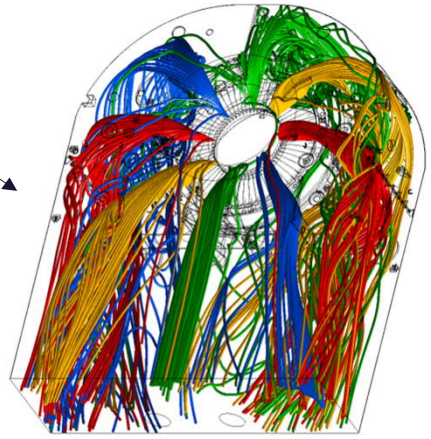


Diffusor optimization

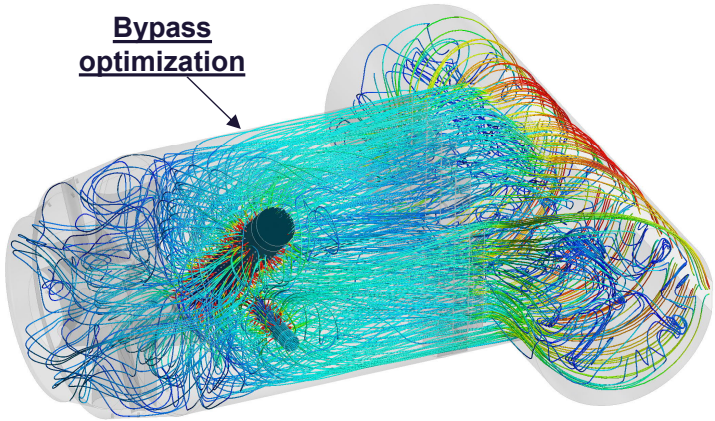


Optimization of pressure recovery and exhaust casing





Bypass optimization



Development of efficient designs

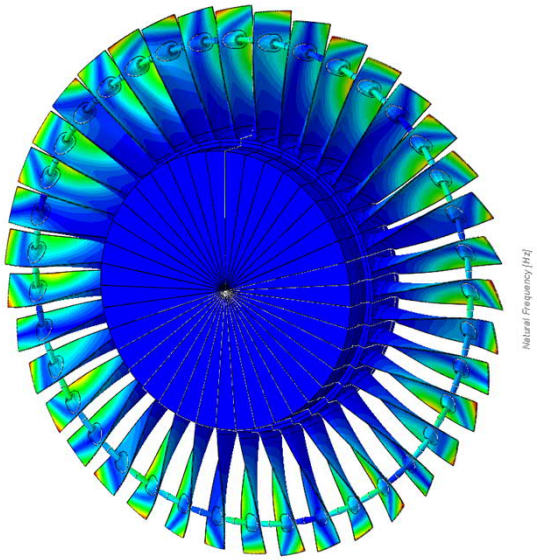
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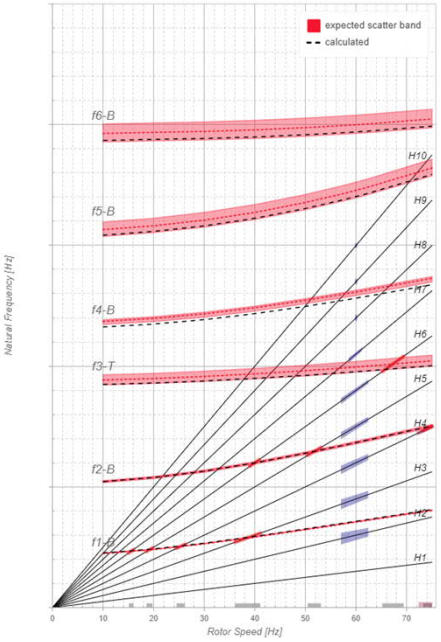
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Ensure mechanical integrity of LP blades

3D Finite Element Analysis

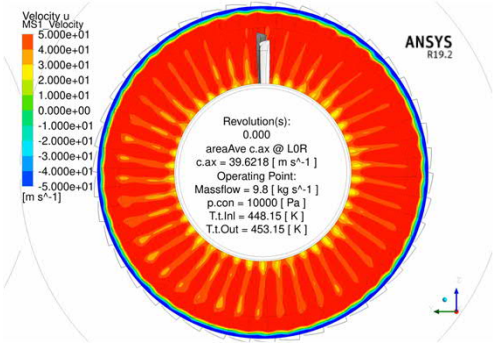
Assessment of vibrational behaviour



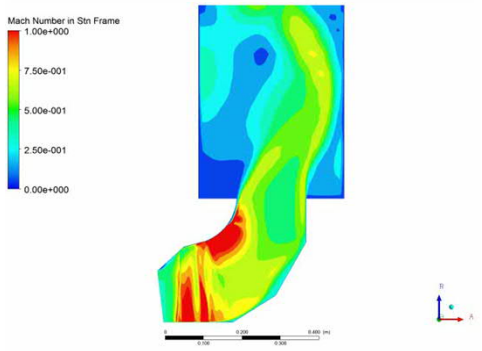


Fluid-Structure-Interaction

Probability of rotating instabilities



Excitation due to diffusor humming



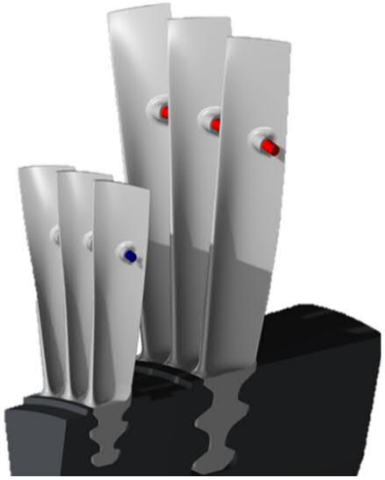
Development of robust designs

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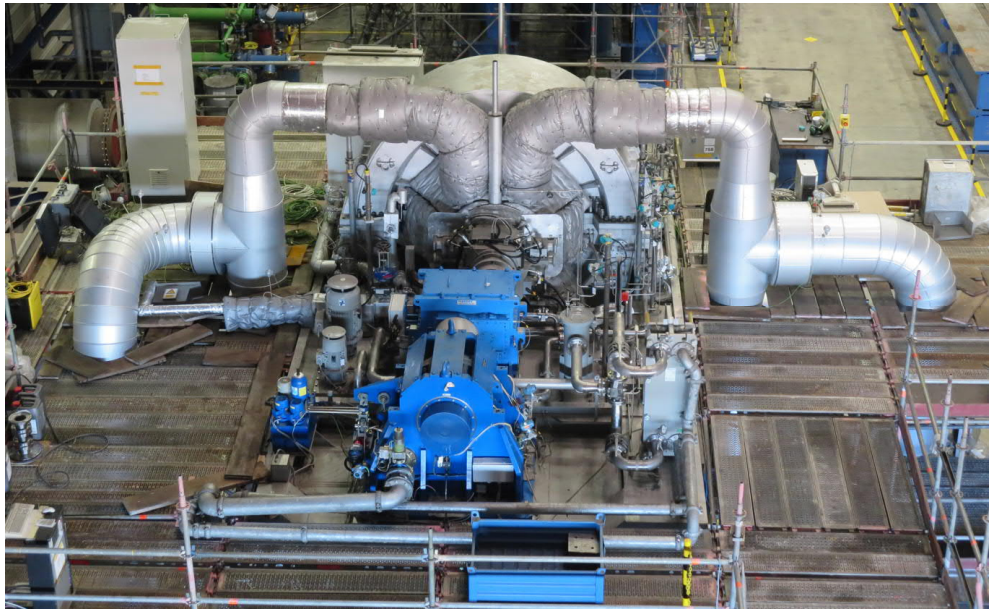
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Model turbine test bed

Development



Validation



Model turbine test bed facilitates the validation of newly developed LP-Parts

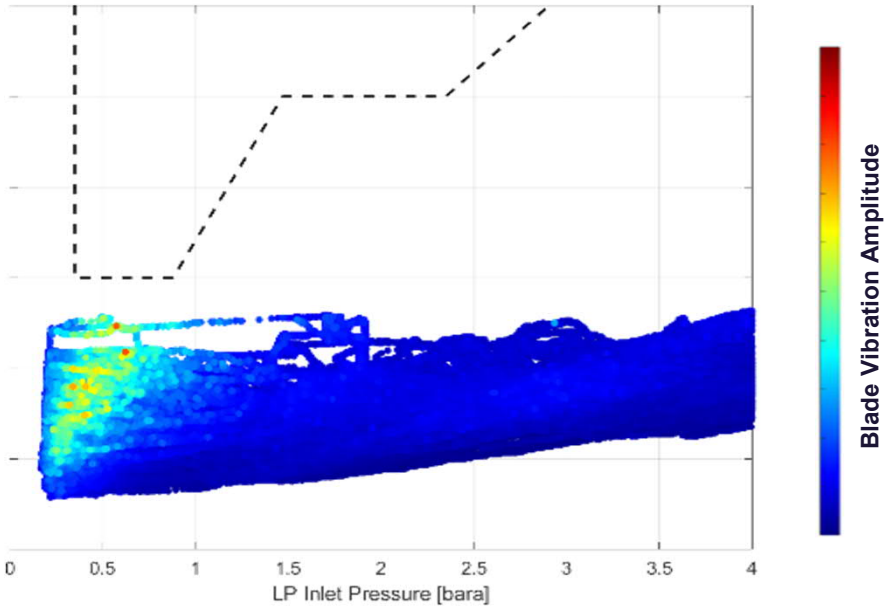
No release for operation without successful validation

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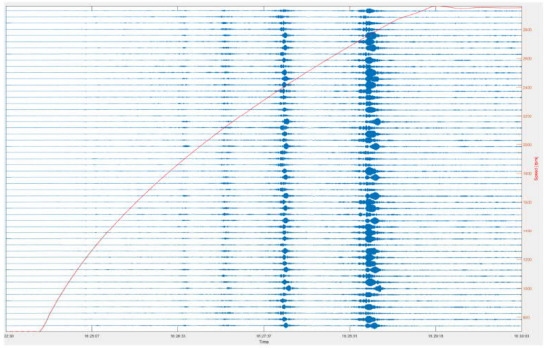
Blade Vibration Monitoring

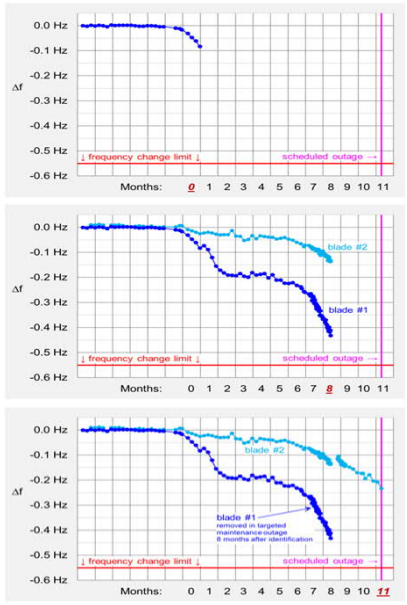
Longtime Measurements



Blade-Health-Monitoring

Non-Contact Blade Vibration Measurement





Monitoring of LP moving blade vibration behavior over whole lifetime

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Key Take Away – Future of low pressure end stage blades

- Reliable robust and efficient designs for extended operational flexibility
- No release for operation without successful validation
- Monitoring of LP moving blade vibration behavior over whole lifetime

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Contact

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