

CAMPBELL MACHINE

Identification of dynamic characteristics of blading



- RPM: up to 4000
- Working pressure: 1 mBar
- Engine: 1.4 MW
- Blade excitation: oil jet / electro-magnetic
- Torsional excitation possible



EROSION TEST RIG

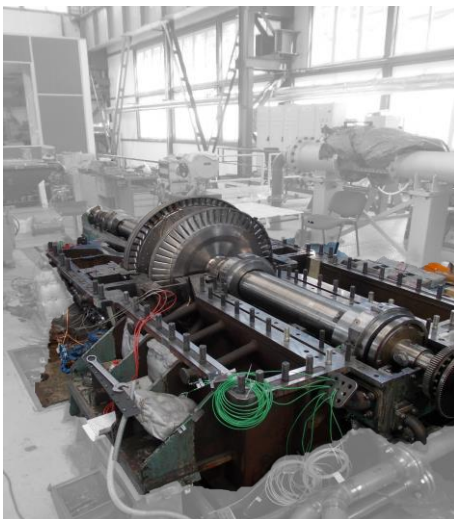
Measurement of water droplet erosion resistance of materials and protection layers



- RPM: up to 14 000
- Maximal impact velocity: 610 m/s
- Working pressure: 3 kPa
- Droplet diameter: 0,15 - 0,41 mm
- Test time: 4 to 6 hours / sample

EXPERIMENTAL STEAM TURBINES

Experimental verification of flow and dynamic response of turbine flow path



T1MW steam turbine:

- Inlet parameters: $p_0 \leq 5$ bar, $t_0 \leq 270$ °C, mass flow: 30 t/h
- Max. turbine power: 1 MW
- RPM: up to 4700
- Single or double rotor configuration
- Sensor instrumentation (pressure, temperature, mass flow, torque)

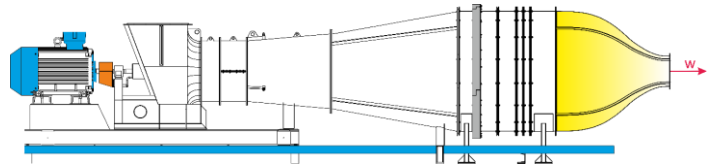
Parní turbína T10MW:

- Inlet parameters: $p_0 \leq 15$ bar, $t_0 \leq 270$ °C, mass flow: 70 t/h
- Max. turbine power: 10 MW
- RPM: up to 7500 (12000 rpm in the range -1MW - 1MW)
- Sensor instrumentation (pressure, temperature, mass flow, torque)

AIR AERODYNAMIC TUNNELS



- Flow velocity: $Ma = 0,05$ až $0,25$
- Pressure: 1,05 bar
- Temperature: 20 °C
- Turbulence intensity: up to 0,4 %.
- Pneumatic probe calibration up to $Ma = 0,25$



CONTROL VALVE TEST RIG

Measurement of control valve characteristics



Air channel:

- Inlet pressure: 1 bar
- Ambient temperature: 20°C
- Outlet pressure: 10 mbar to 1 bar

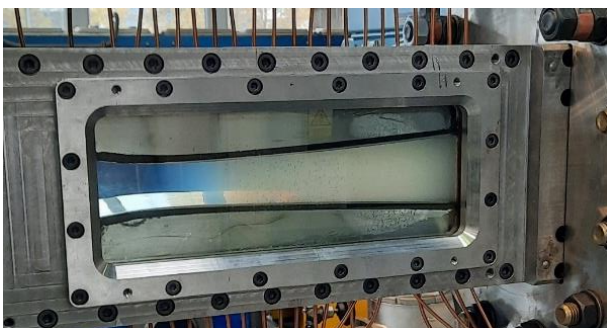
Steam channel:

- Pressure: 1 ÷ 15 bar
- Temperature: 200 ÷ 300 °C

STEAM NOZZLE

Testing in superheated and wet environment
in Laval nozzle

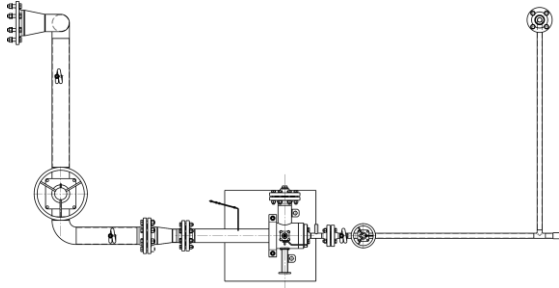
- Steam inlet parameters: $p_0 = 1$ bar, $t_0 = 130 - 170$ °C
- Mass flow: 2 t/h
- Sensor instrumentation



STEAM EJECTOR TEST RIG

Steam ejector testing

- Inlet steam parameters: $p_0 \leq 15$ bar, $t_0 \leq 270$ °C, mass flow: 1,5 t/h
- Sensor instrumentation



SEALS TEST RIG

- Steam inlet pressure: 1 ÷ 15 bar
- Steam inlet temperature: 200 ÷ 300 °C
- RPM: up to 1500
- Mass flow: do 2 t/h



BEARING TEST RIG

Measurement of static and dynamic properties of bearings

- Max. bearing diameter: 300mm
- Static and dynamic load: 65kN
- Measurement of power loss, temperature distribution, oil consumption, load capacity
- Measurement and identification of dynamic oil film properties of plain bearing: dynamic stiffness, damping

