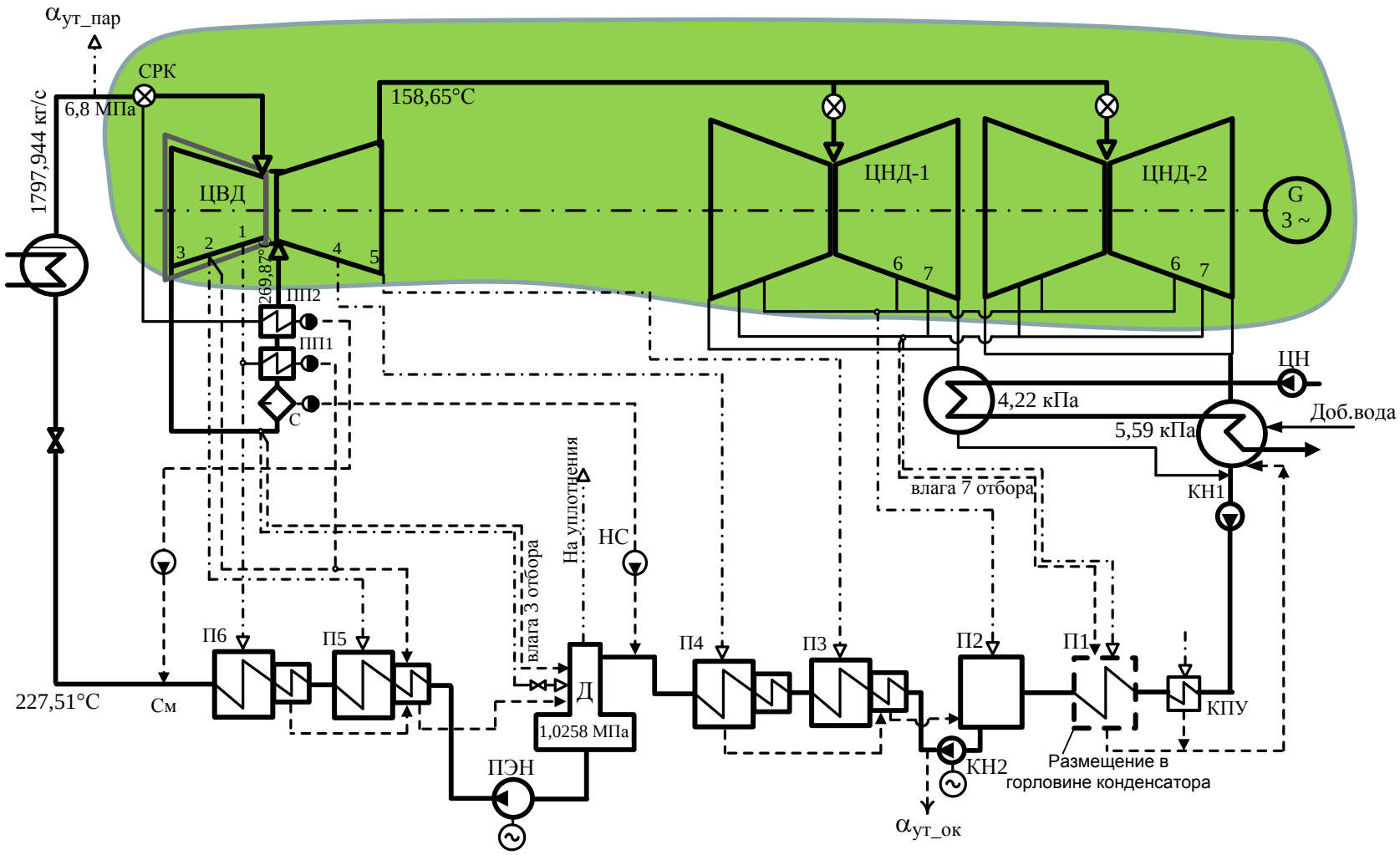
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СРК
6,8 МПа
1797,944 кг/с
158,65°С
ЦВД
ЦНД-1
ЦНД-2
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269,87°С
ПП2
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С
ЦН
4,22 кПа
5,59 кПа
Доб.вода
влага 7 отбора
КН1
На уплотнения
НС
влага 3 отбора
П6
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П1
227,51°С
См
Д
1,0258 МПа
ПЭН
КПУ
КН2
Размещение в
горловине конденсатора
αут_ок

Steam Turbines

Эолипил Герона

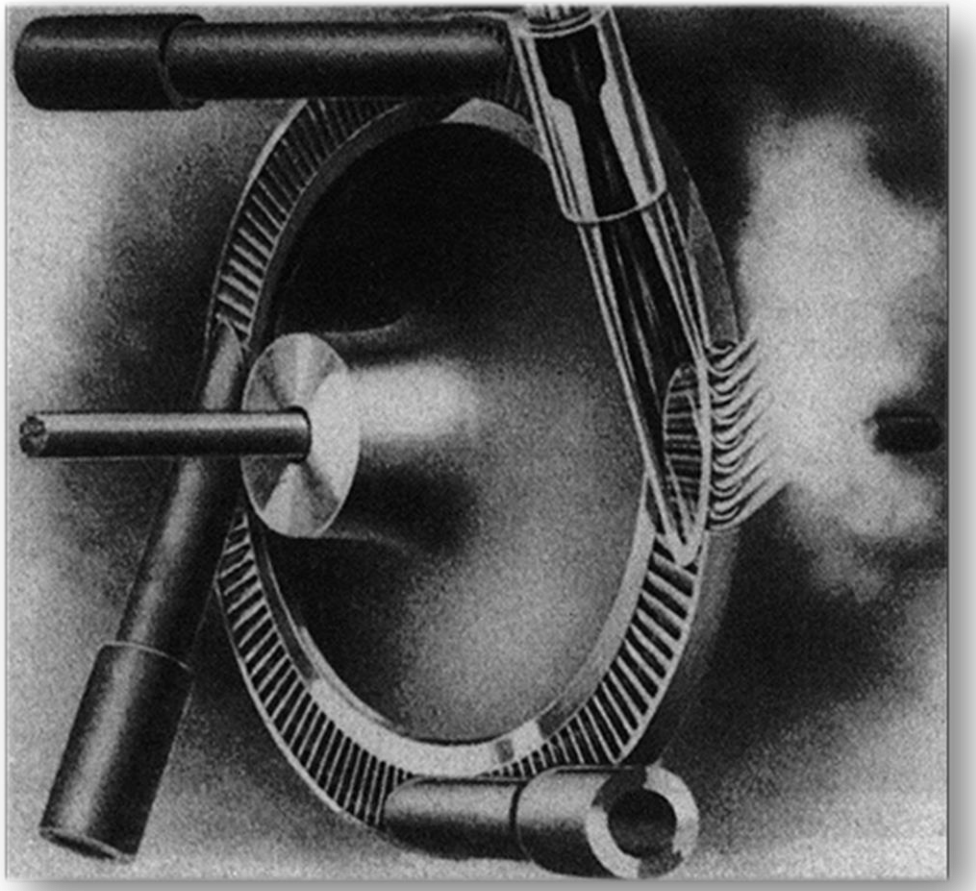
Hero's aeolipile

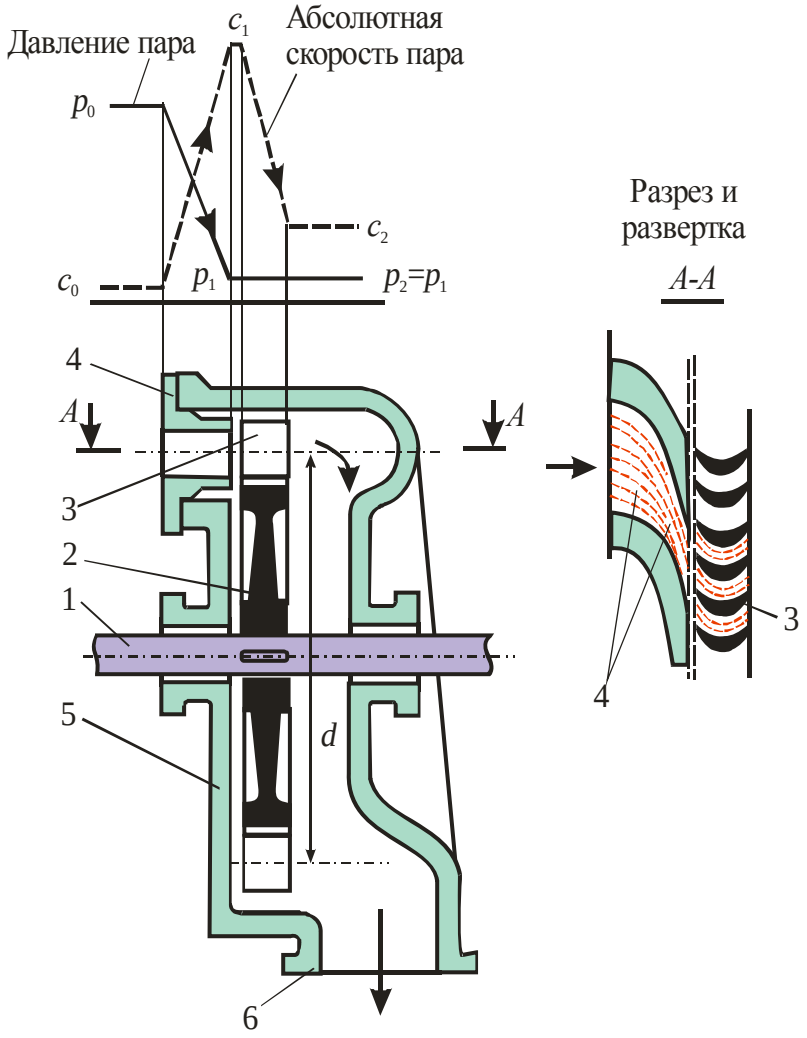
Hero of Alexandria (10–75 AD) is the inventor of the first steam-powered device

Gustaf de Laval
(1845 – 1913)

Charles Algernon Parsons
(1854 –1931)

De Laval steam turbine (1882)

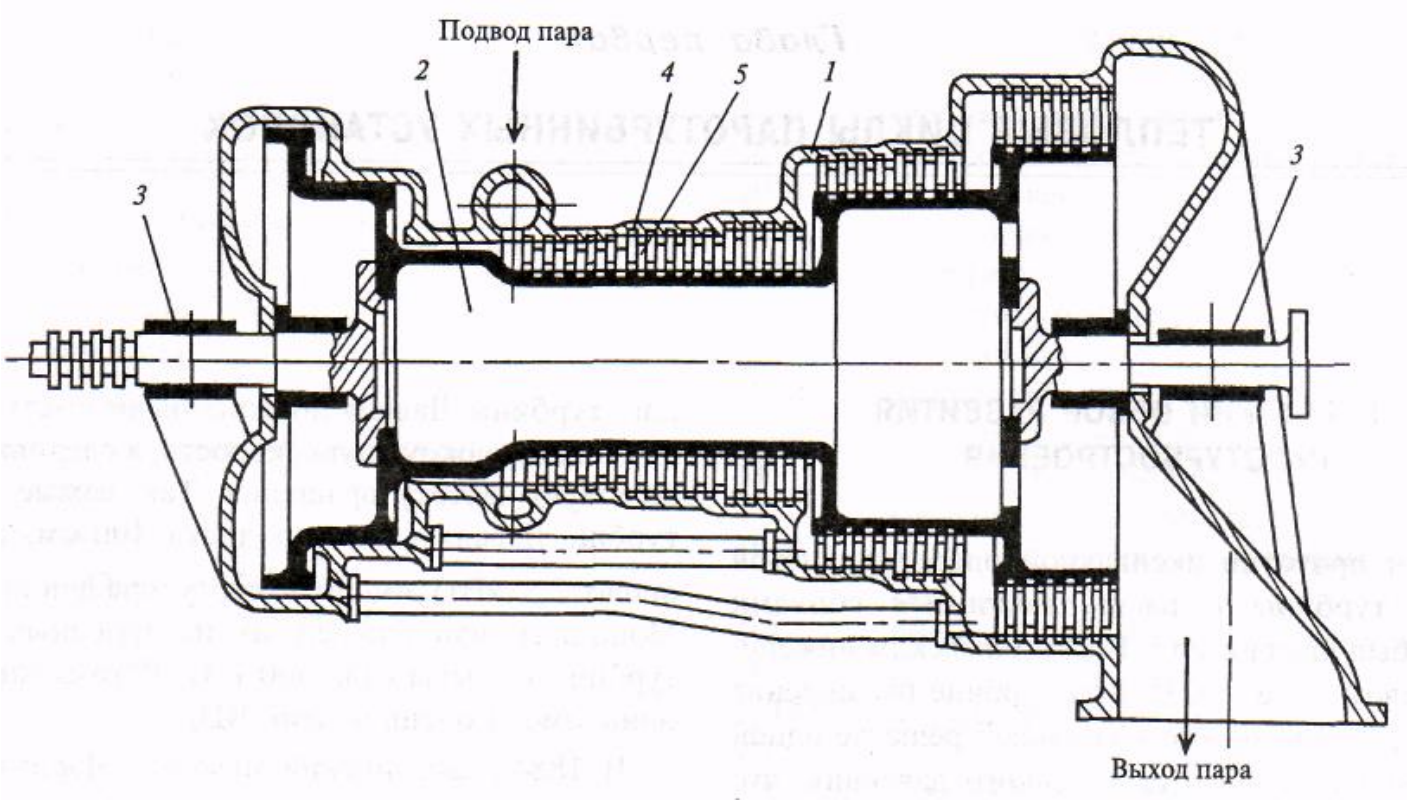




Schematic section of a single-stage impulse turbine:

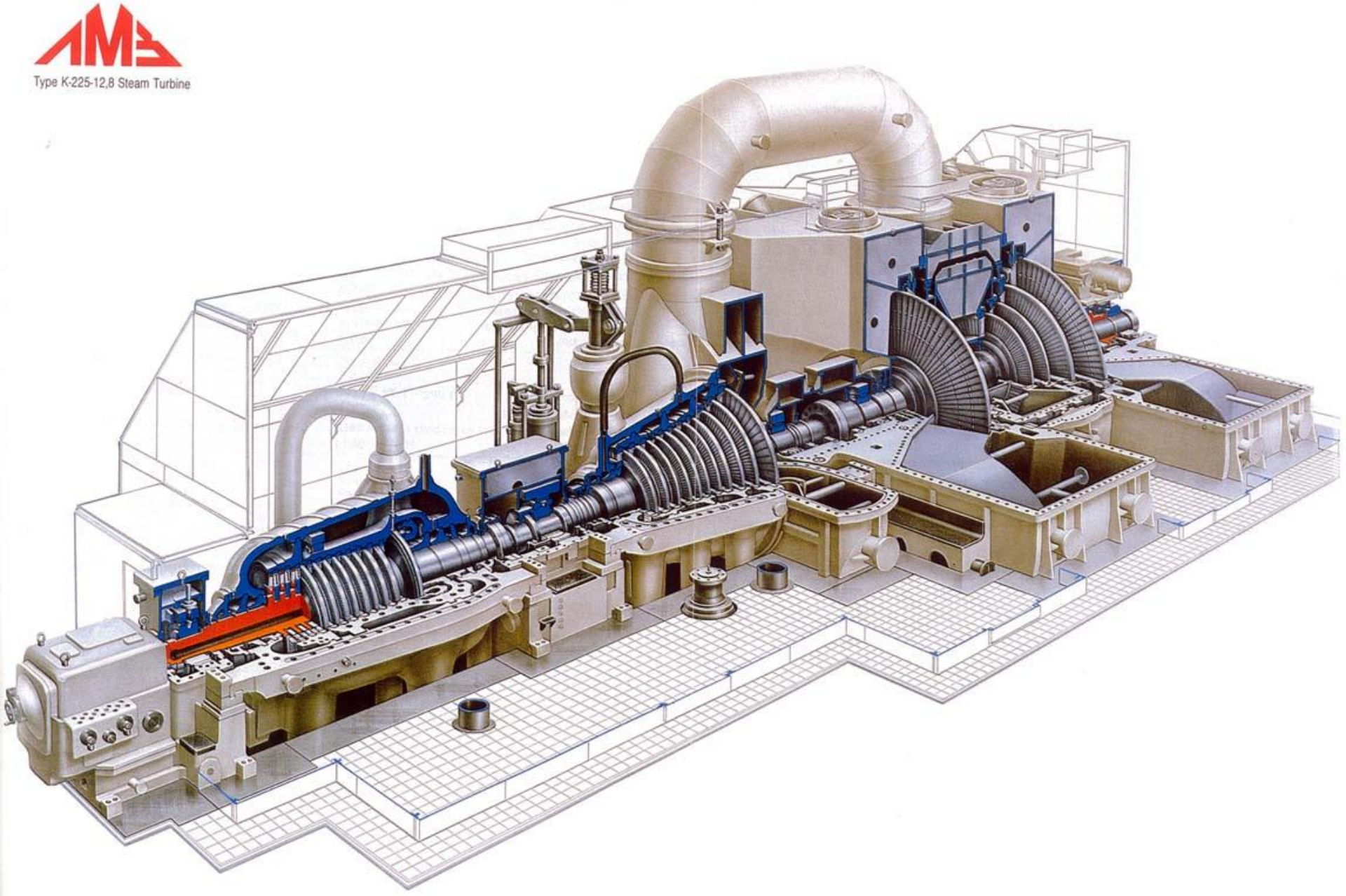
1 is shaft; 2 is disk; 3 is moving buckets; 4 is nozzle-bucket system; 5 is casing; 6 is outlet nozzle

Parsons' steam turbine (1884)

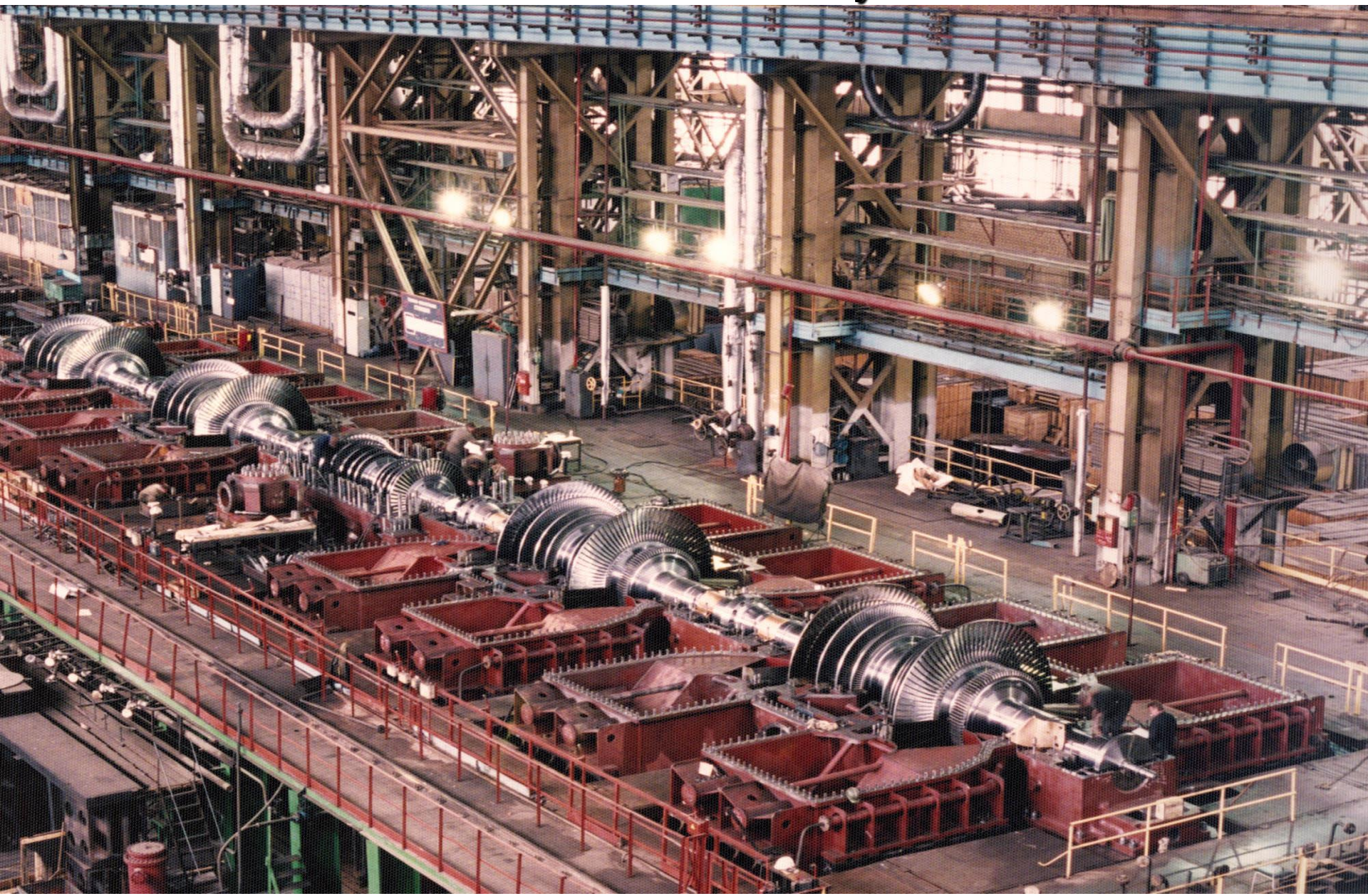


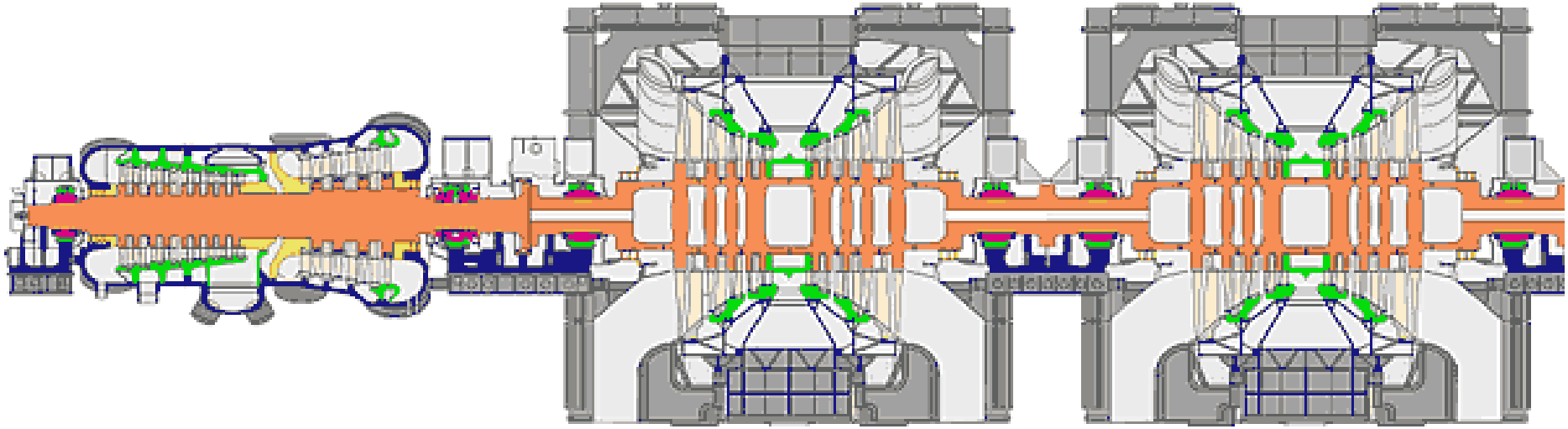
Multi-stage reaction turbine:
1 is casing; 2 is drum; 3 is bearing; 4 is nozzleblades of one of the stages; 5 is moving blades of one of the stages

Steam turbine К-215-12,7



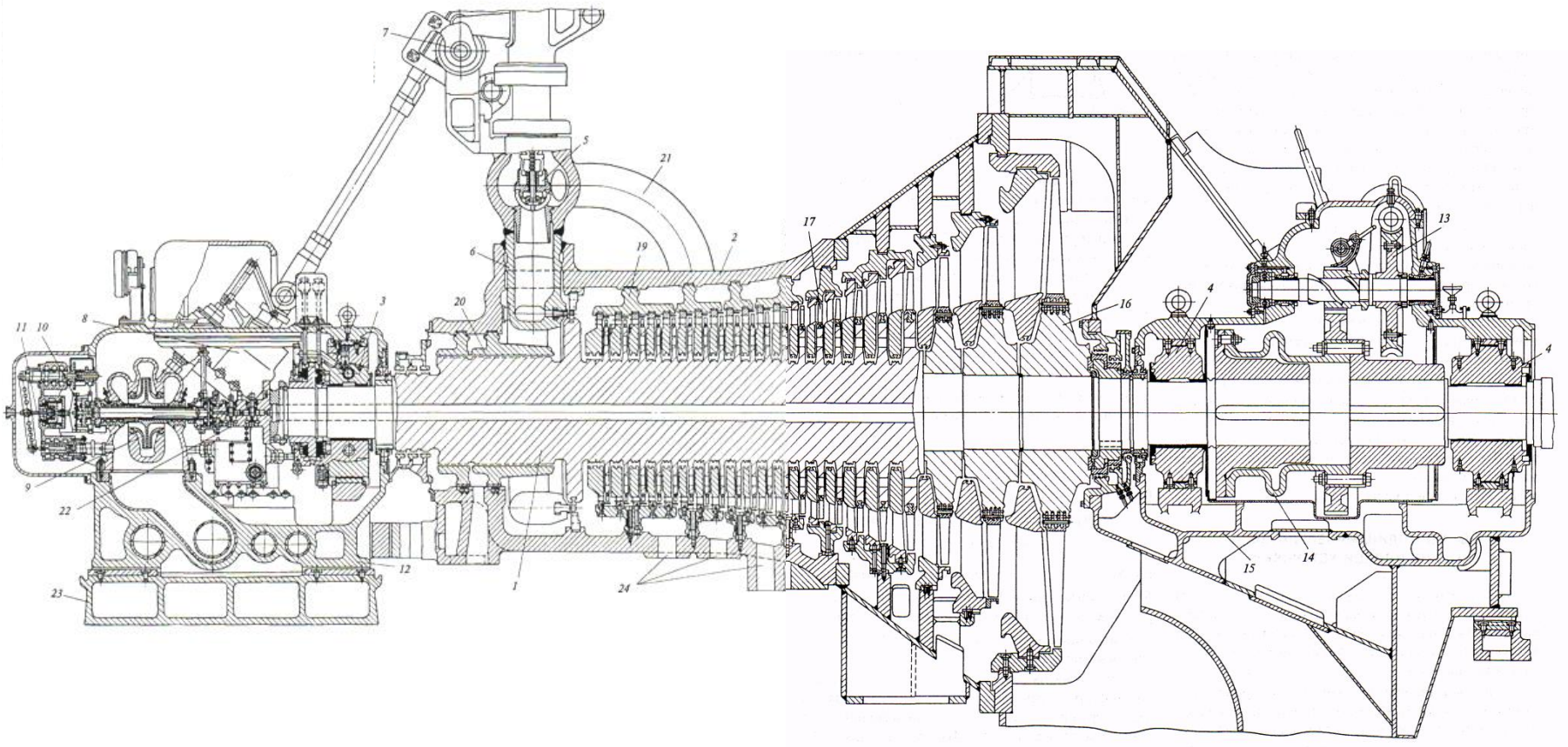
Steam turbine K-1000-5,8 / 50 for NPP on the LMZ test assembly bench





Longitudinal section of the turbine K-1200-6,8 / 25 OAO "Power Machines”

$L_{\text{last stage}}$ = 1740 mm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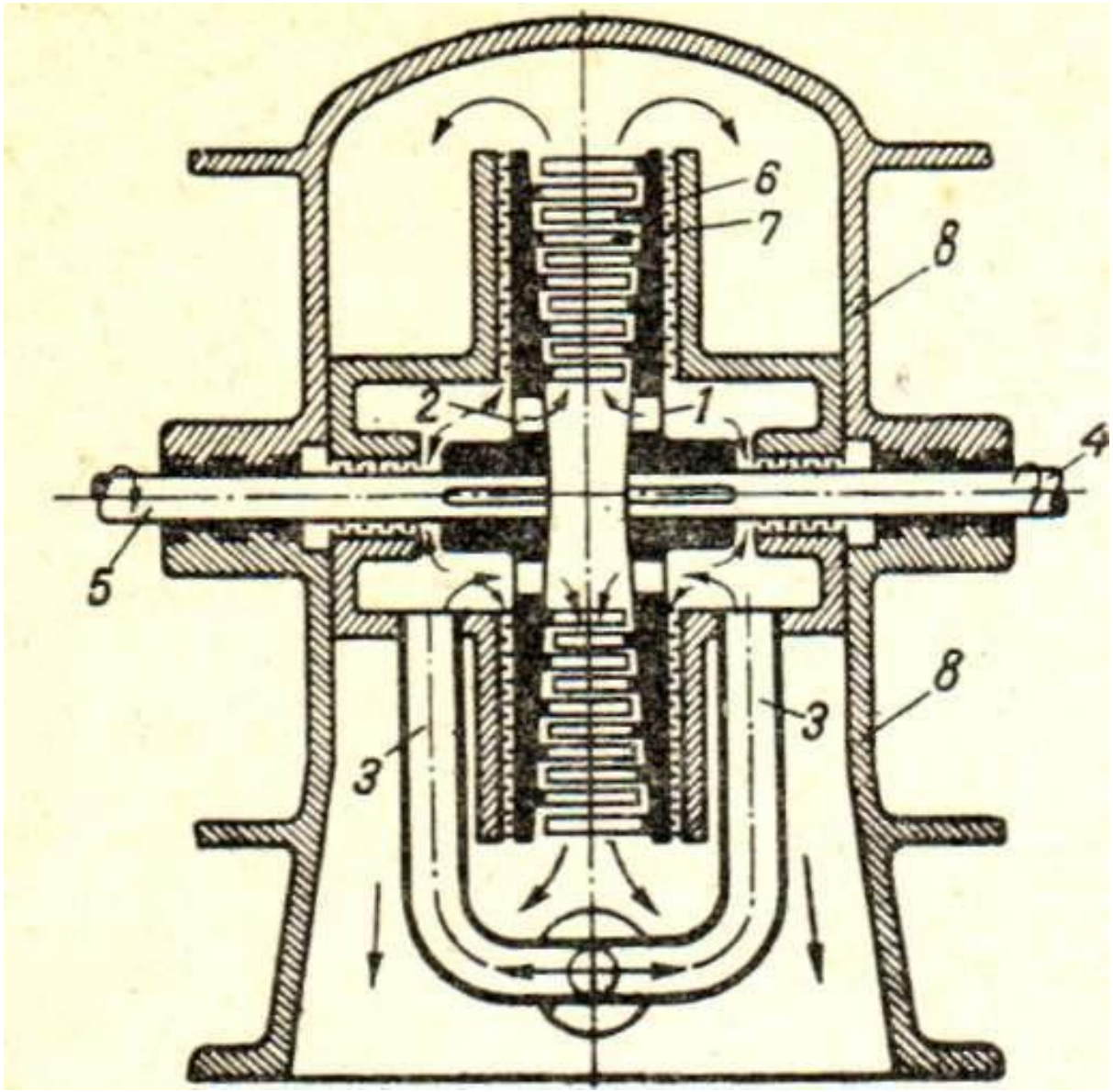
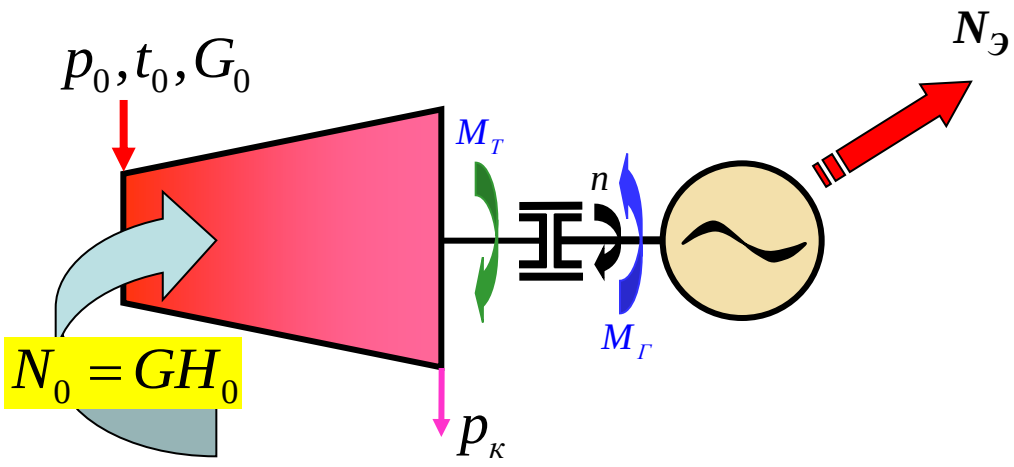


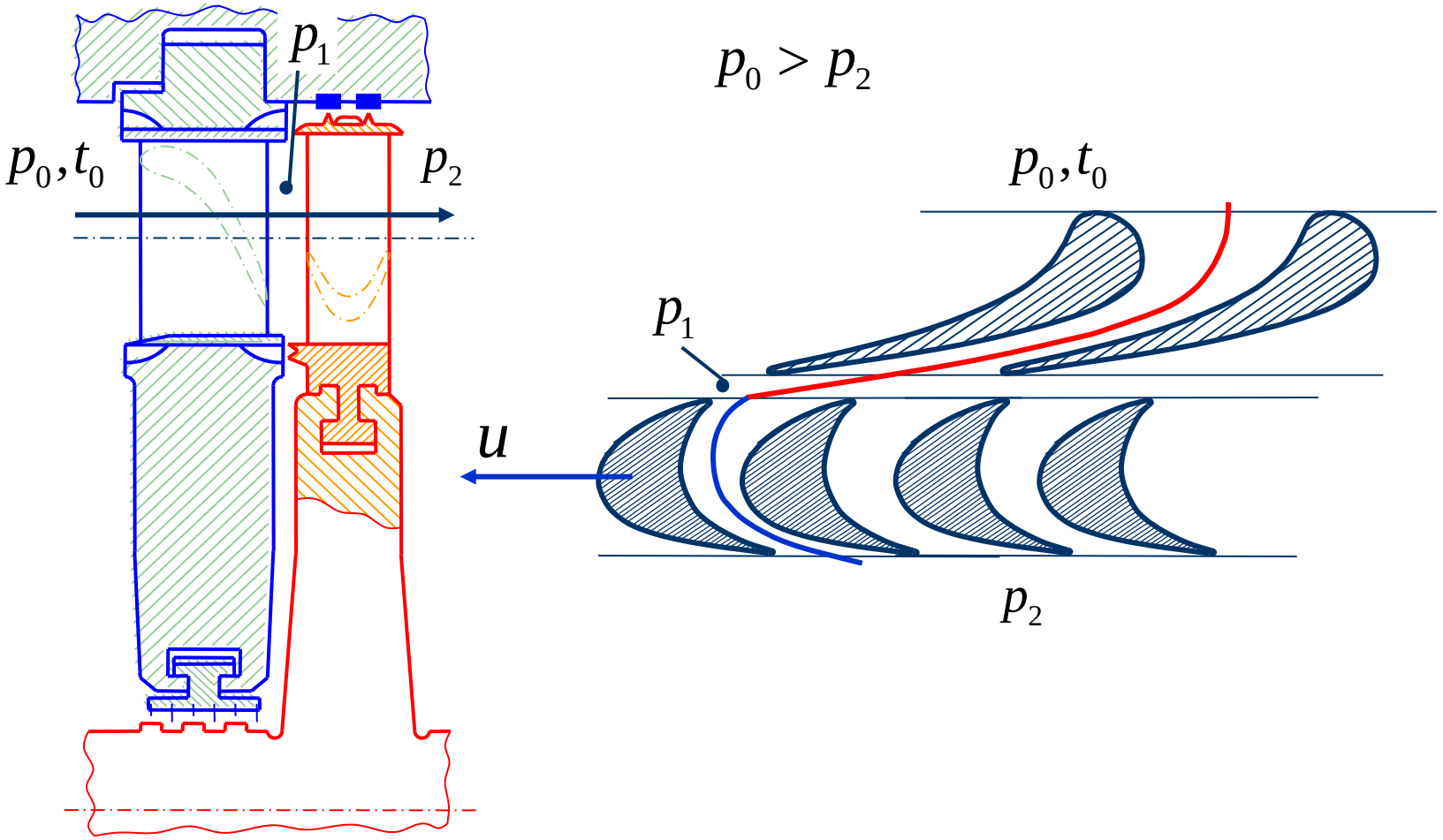
Schematic diagram of the **Yungstrem radial turbine.**
1,2 are turbine discs; 3 is live steam pipes; *4, 5* are shafts;
6,7 are blades of the intermediate stages.

Purpose of the turbine



Turbine is an engine to convert potential heat energy into mechanical energy of the turbine rotor.

2. GAS FLOW IN THE TURBINE STAGE CHANNELS



2.1. Basic equations of compressible fluid motion

System of equations **(!!!)**, ***adequately*** describes gas flow through channels:

- Equation of state
- Continuity equation
- Momentum equation
- Energy-conservation equation