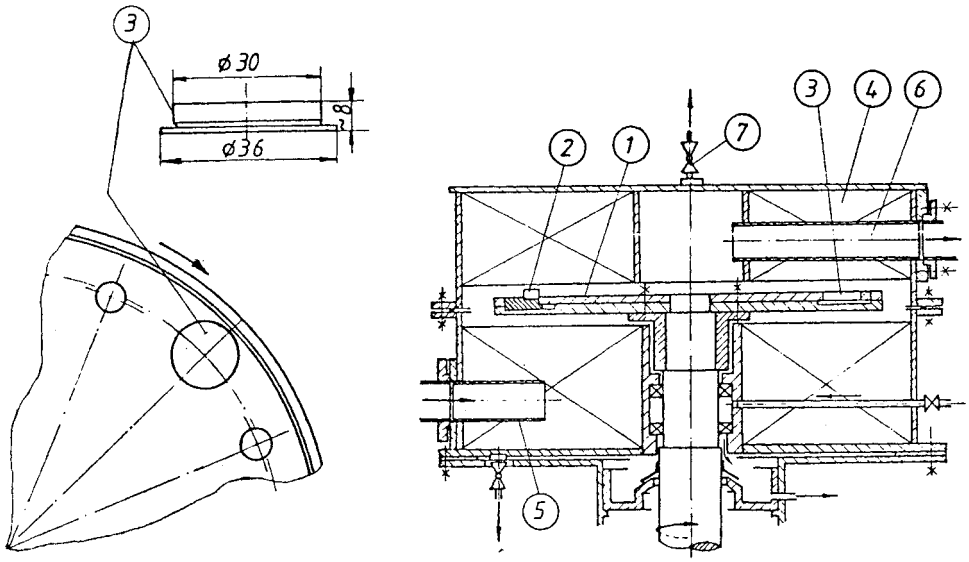
INTERNATIONAL CAVITATION EROSION TEST
Test Rig Identification Card

Facility: rotating disk

Laboratory: **Institute of Fluid-Flow Machinery of the Polish Academy of Sciences**, Gdansk, Poland

1. Sketch of the disk with cavitators and specimens as well as basic dimensions (disk diameter; mounting radius and size of cavitators and specimens)

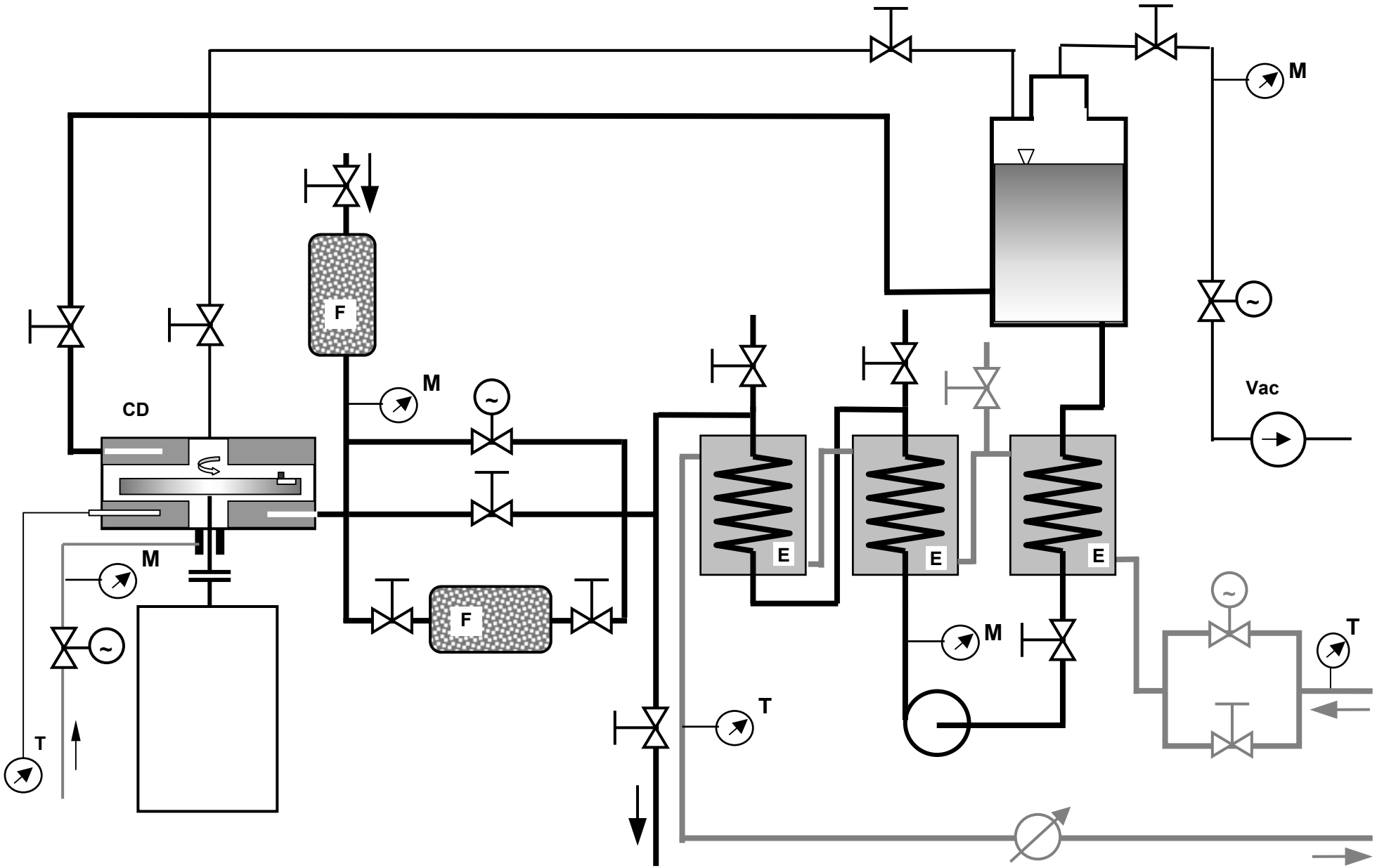


Rotating disk facility in the IMP PAN lab (Gdansk, Poland)**: 1 - disk, 2 -cavitator, 3 - specimen, 4 - stagnator vane, 5,6 - working liquid inlet and outlet, respectively, 7 de-airating valve**

2. Basic design and operational parameters

main motor power:	40	kW
rotation speed:	2950	rpm
peripheral speed of a cavitator/specimen	42.5	m/s
mean pressure in the test chamber:	155.5	kPa
standard temperature:	20±1	°C
specimen area subjected to damage:	706.5	mm^2
gap between the disk and stagnator vanes	20	mm
other data		
number of specimens/cavitators	8	
mounting radius of specimens/cavitators	274/270	mm
cavitator size	Ø12/8	mm

designer/manufacturer: Institute of Fluid-Flow Machinery of the Polish Academy of Sciences



Schematic of the rotating disk facility in the IMP PAN lab:
CD – cavitating disk, P – impeller pump, E – heat exchangers, F – filters, M – manometers, T – thermometers
——— main hydraulic circuit, ——— auxiliary hydraulic circuit

INTERNATIONAL CAVITATION EROSION TEST

Laboratory Results Summarisation

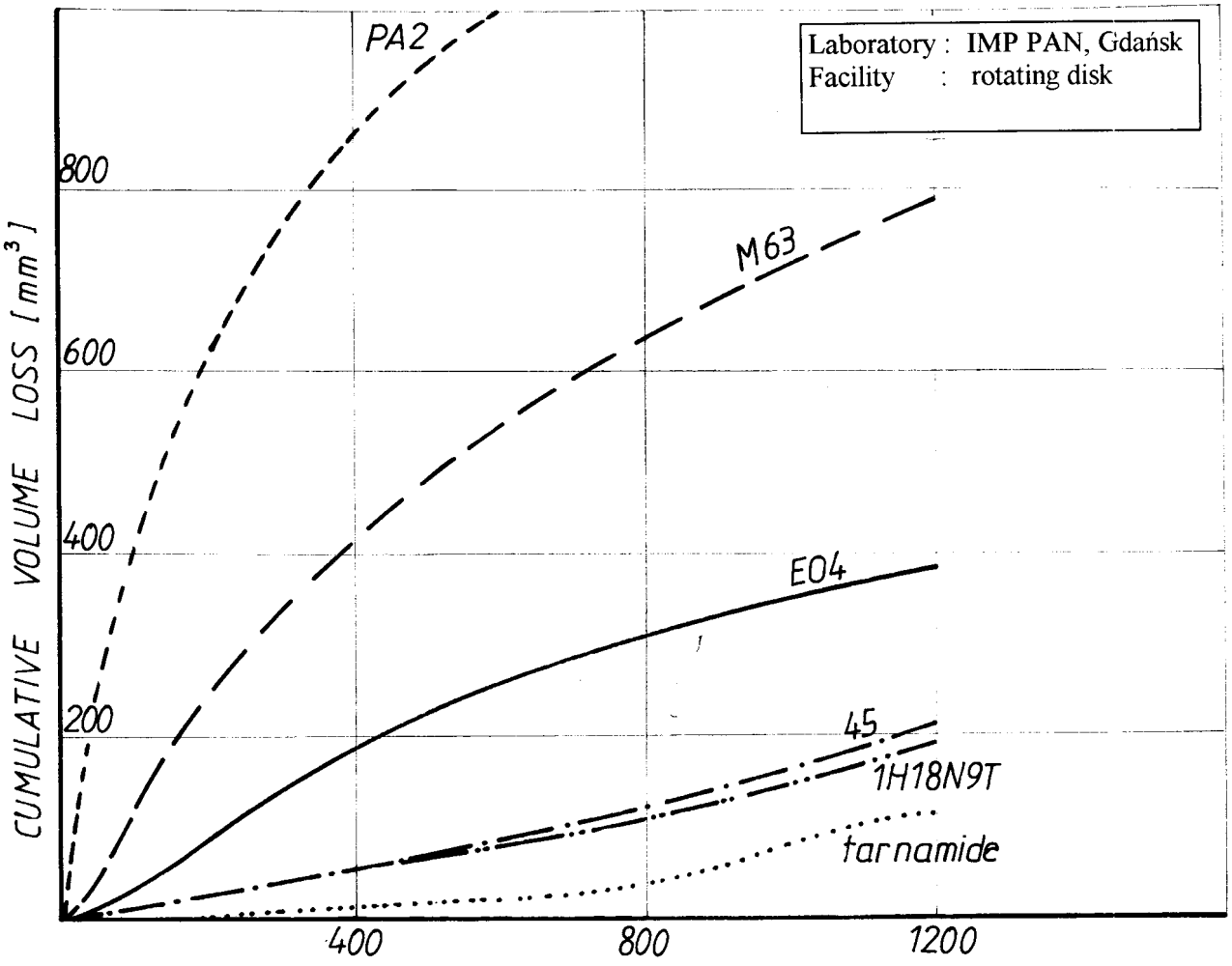
Laboratory: **POLISH ACADEMY OF SCIENCES**
INSTITUTE OF FLUID-FLOW MACHINERY
GDANSK, Poland

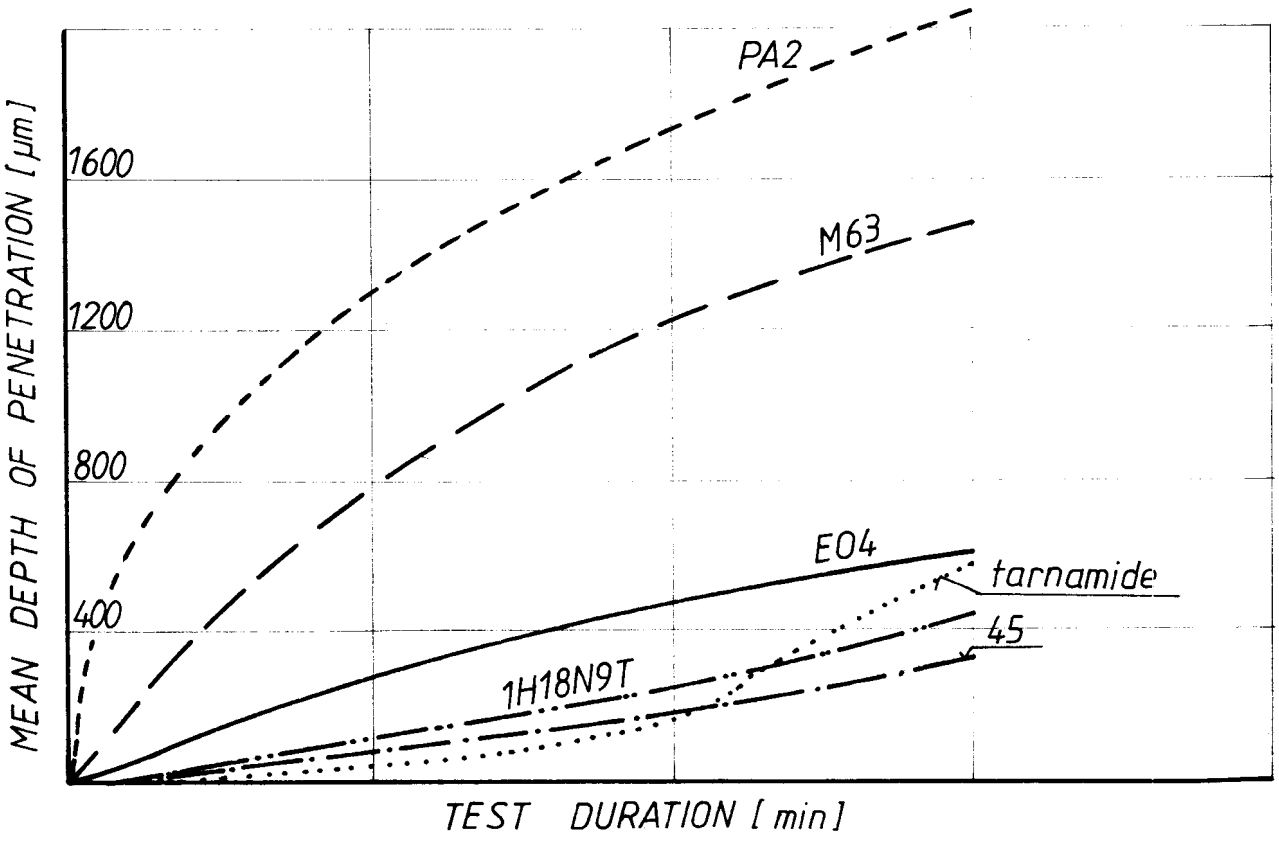
Facility: ROTATING DISK

rotational speed : 2950 r.p.m
cavitator velocity: 43 m/s
mean pressure : 1550 hPa
specimen area subjected to damage: 706.5 mm^2
tap water, pH 7.4, temperature: 20 C, oxygen: 8.3 mg O /dm

working liquid: tap water, pH 7.4, temperature: 20 °C, oxygen: 8.3 mgO_2/dm^3

material	*Test duration*	*Volume loss*	*Eroded area*	*Mean&Max Depth of Penetration*		*Incubation period*		*MDPR*	
						$\tau_{0.2}$	τ_{inc}	*max*	*ultimate*
	min	mm^3	mm^2	μm	μm	min	min	μm/min	
PA2	1200	1338.93	661.2	2025	5525	0.04	10	35.7	0.907
M63	1200	763.46	517.6	1475	3725	0.9	30	3.50	0.580
E04	1200	386.28	643.8	600	3225	1.1	40	0.77	0.415
45	1200	200.26	625.8	320	2875	8	>450	>0.43	0.281
1H18N9T	1200	190.08	432.0	440	2825	12	>585	>0.45	0.359
tarnamide	1200	108.85	197.9	550	1175	50	750	1.47	1.516


Laboratory : IMP PAN, Gdańsk
Facility : rotating disk
PA2
M63
E04
45
1H18N9T
tarnamide
800
600
400
200
400
800
1200
CUMULATIVE VOLUME LOSS [mm³]


PA2
M63
E04
tarnamide
45
1H18N9T
1600
1200
800
400
MEAN DEPTH OF PENETRATION [μm]
TEST DURATION [min]

RD 022