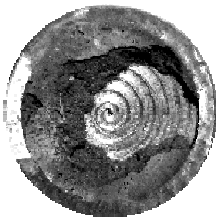


INTERNATIONAL CAVITATION EROSION TEST
Test Rig Identification Card

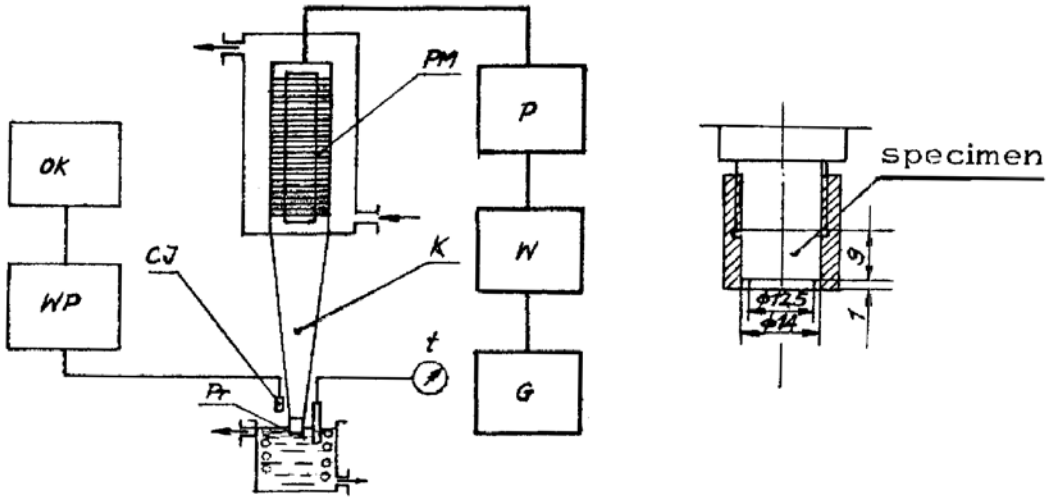
Facility: vibratory rig

Principle of vibration generation:

magnetostriction /~~piezoelectricity~~/

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

1. Sketch of the sample (~~counter-sample~~) with dimensions and showing mounting method



Notation: PM – magnetostrictive transducer, K – horn, Pr – specimen, P – polarizer, W – amplifier, G – generator, CJ – inductive sensor, WP – measuring amplifier, OK – cathode oscilloscope, T - thermometer

2. Basic operational data

input power:	500 W
oscillation frequency:	8.114 kHz
oscillation amplitude(p-p):	50 µm
standard temperature:	20±1.5 ˚C

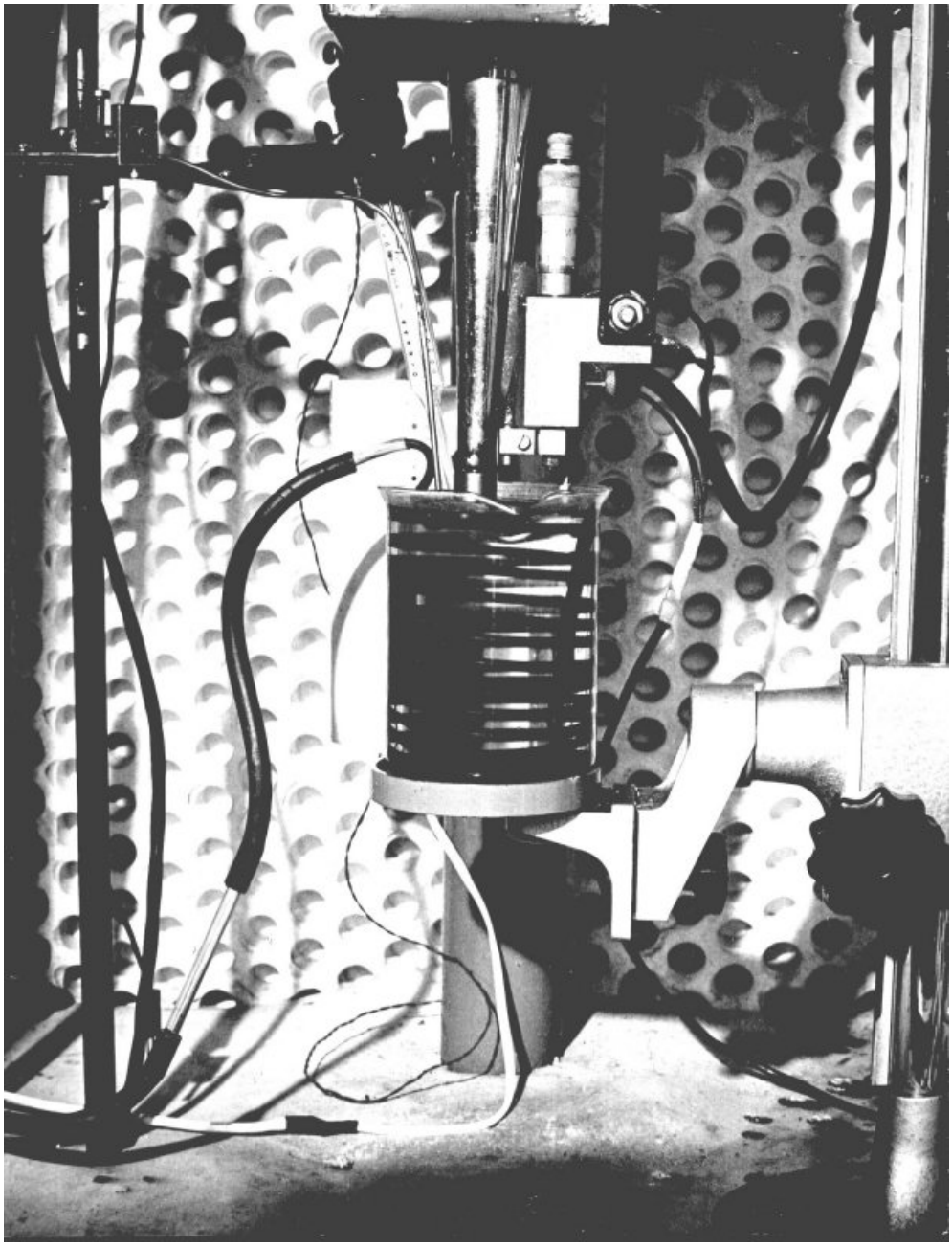
open/~~pressurised~~ vessel

sample submergence depth (open vessel):	4±1 mm
vessel diameter: ..... 90 mm height:	140 mm
sample area subjected to damage:	122.7 mm^2

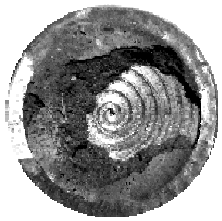
other data: .....

.....

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



The Vibratory Cavitation Erosion Test Apparatus



INTERNATIONAL CAVITATION EROSION TEST

Laboratory Results Summarisation

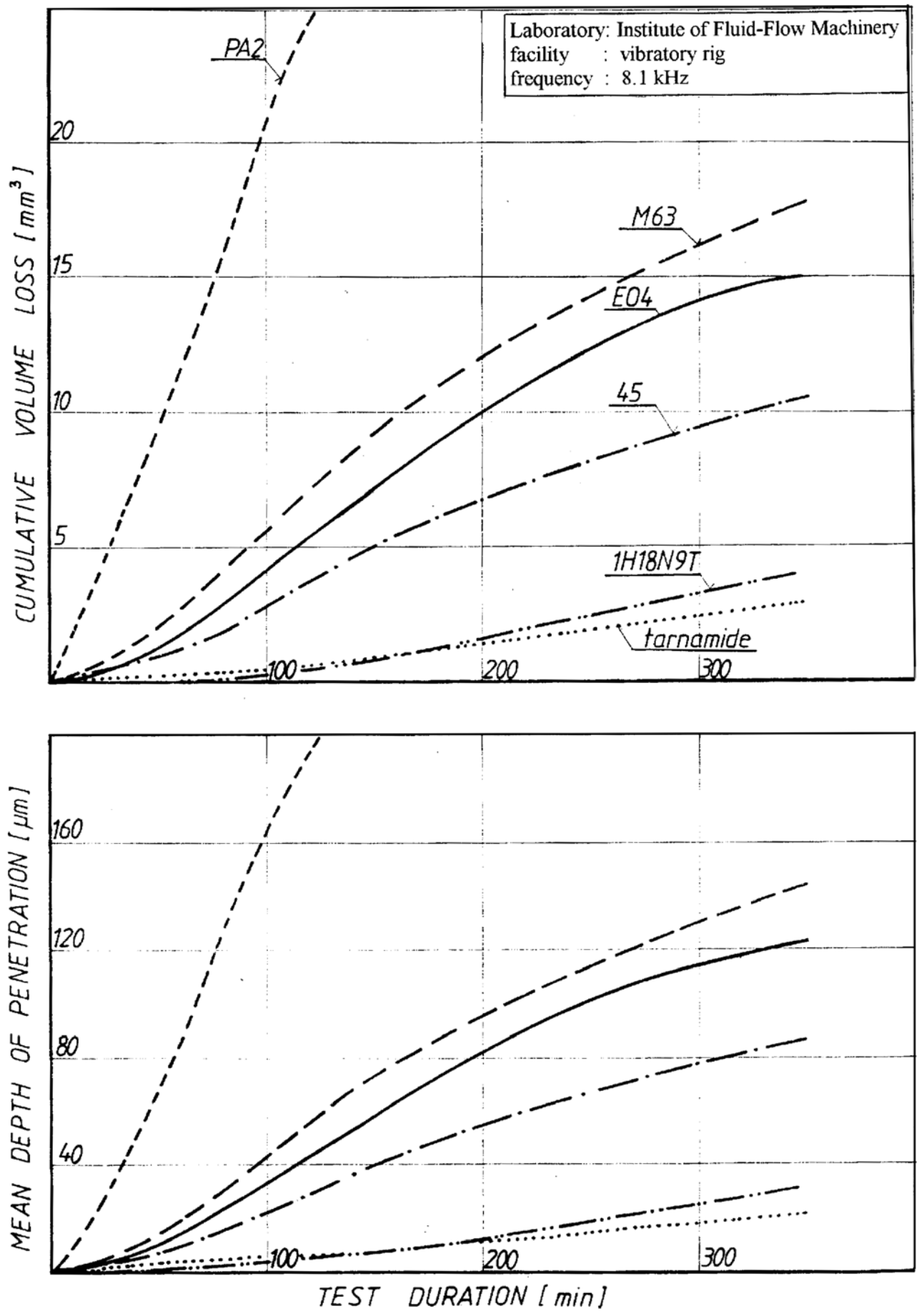
Laboratory: **POLISH ACADEMY OF SCIENCES**
INSTITUTE OF FLUID-FLOW MACHINERY
GDANSK, Poland

Facility: VIBRATORY RIG

oscillation frequency: 8.1 kHz *tip/sample distance:* 3 mm
amplitude: 50 µm *impinged area:* 122.7 mm^2

working liquid: tap water, pH 7.4, 8.3 mg O_2/dm^3, 20˚C

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	360	45.44808	122.7	370.4	810.0	0.4	13	1.73	0.575
M63	360	18.17187	122.7	148.1	680.0	1	30	0.57	0.285
E04	360	15.09210	122.7	123.0	720.0	7	30	0.48	< 0.134
45	360	10.79760	122.7	87.0	620.0	2	44	0.38	0.155
1H18N9T	360	4.19634	122.7	34.2	460.0	22	109	0.132	0.130
tarnamide	360	2.87118	122.7	23.4	310.0	30	28	0.073	0.063


Laboratory: Institute of Fluid-Flow Machinery
facility : vibratory rig
frequency : 8.1 kHz
PA2
M63
E04
45
1H18N9T
tarnamide
CUMULATIVE VOLUME LOSS [mm³]
MEAN DEPTH OF PENETRATION [μm]
TEST DURATION [min]
5
10
15
20
40
80
120
160
100
200
300

VR 108