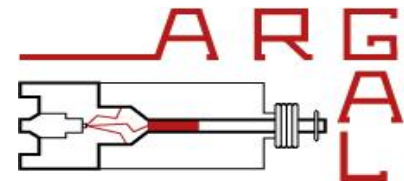


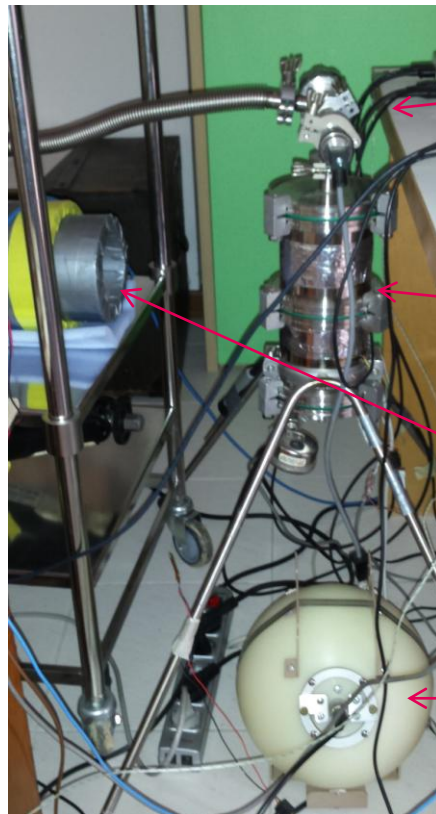
Nuovi test su anomalie LENR in polveri metalliche

Ubaldo Mastromatteo

OVERVIEW

- Experimental set up
- Data analysis





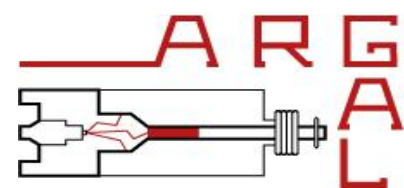
Vacuum and gas inlet

Reactor 2

Multichannel gamma detector

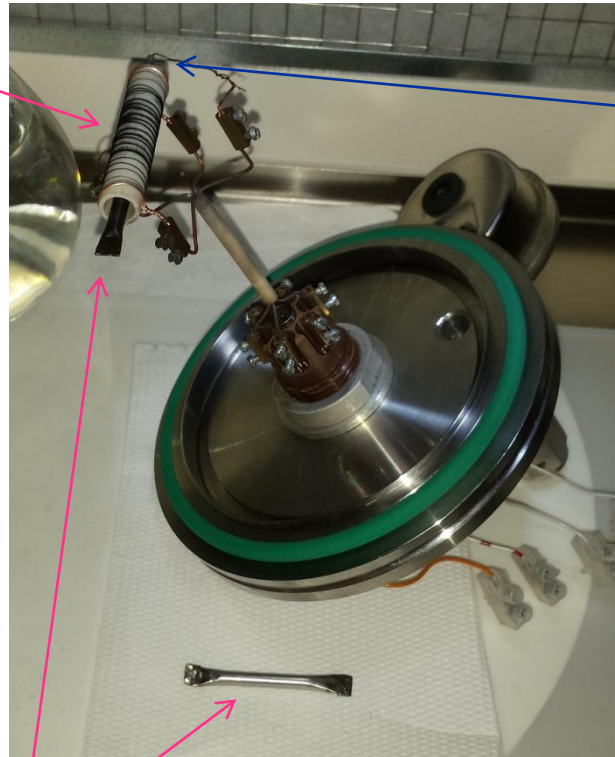
He3 neutron detector

Reactor 2 overview



Heater wound on ceramic tube

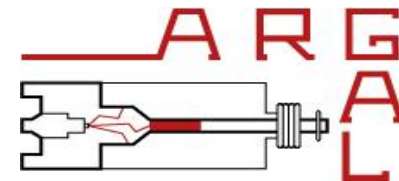
Horizontal heater set up



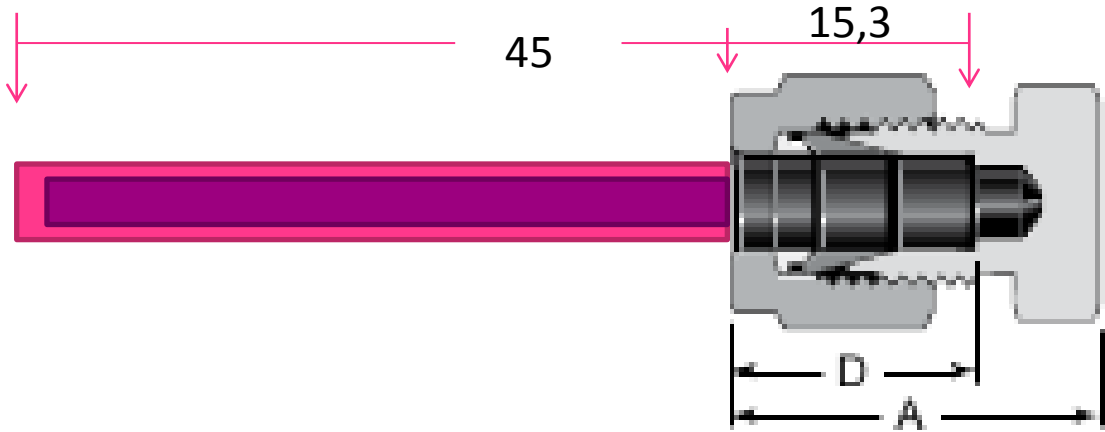
Pt 100 sensor

Reactor bottom closure with preliminary tests heater configuration

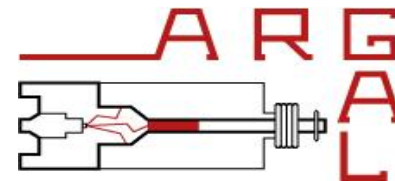
Capsule for horizontal set up test

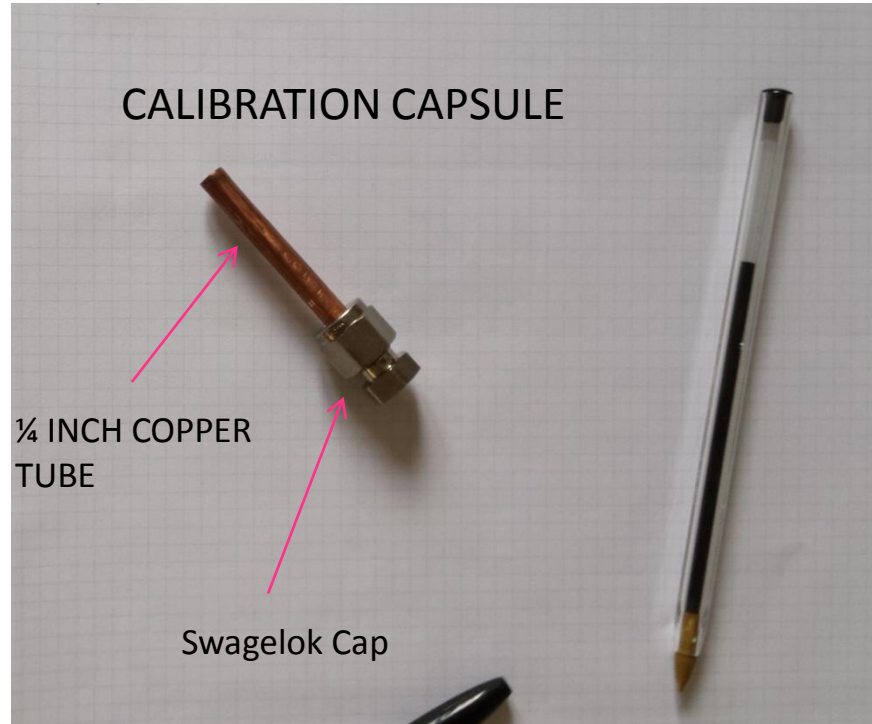


Caps and Plugs

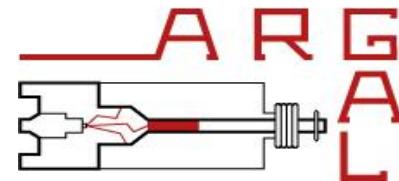


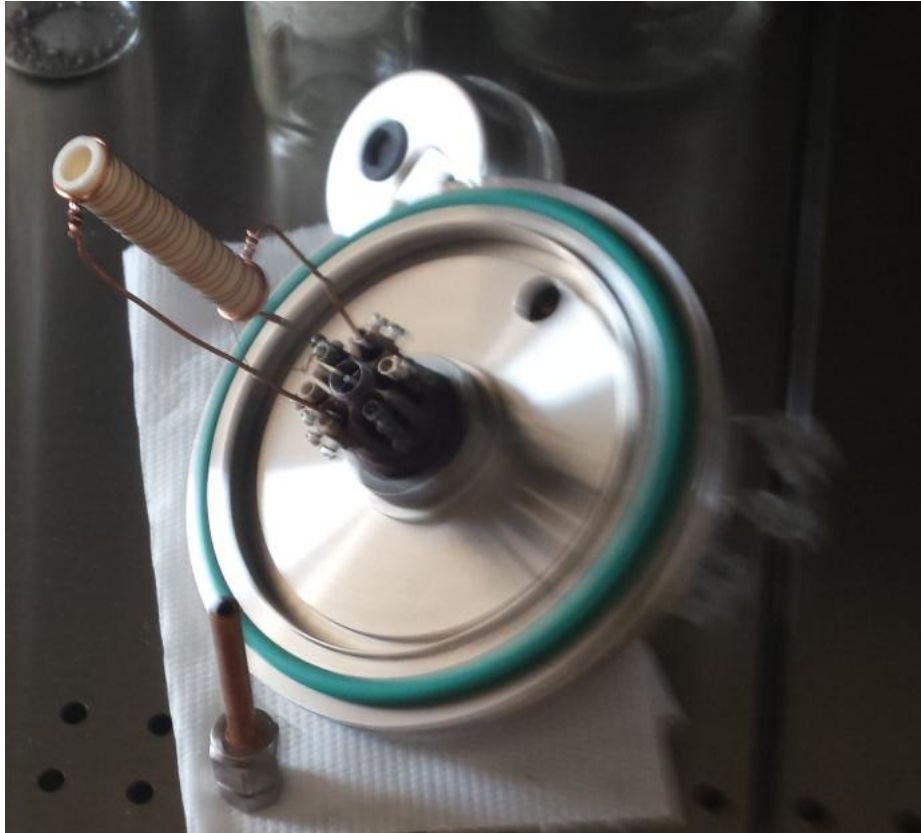
Sketch of a new capsule with a Swagelok cap as sealing.





Calibration dummy capsule





Bottom closure with vertical heater

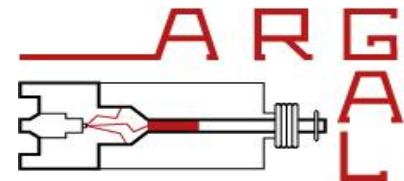
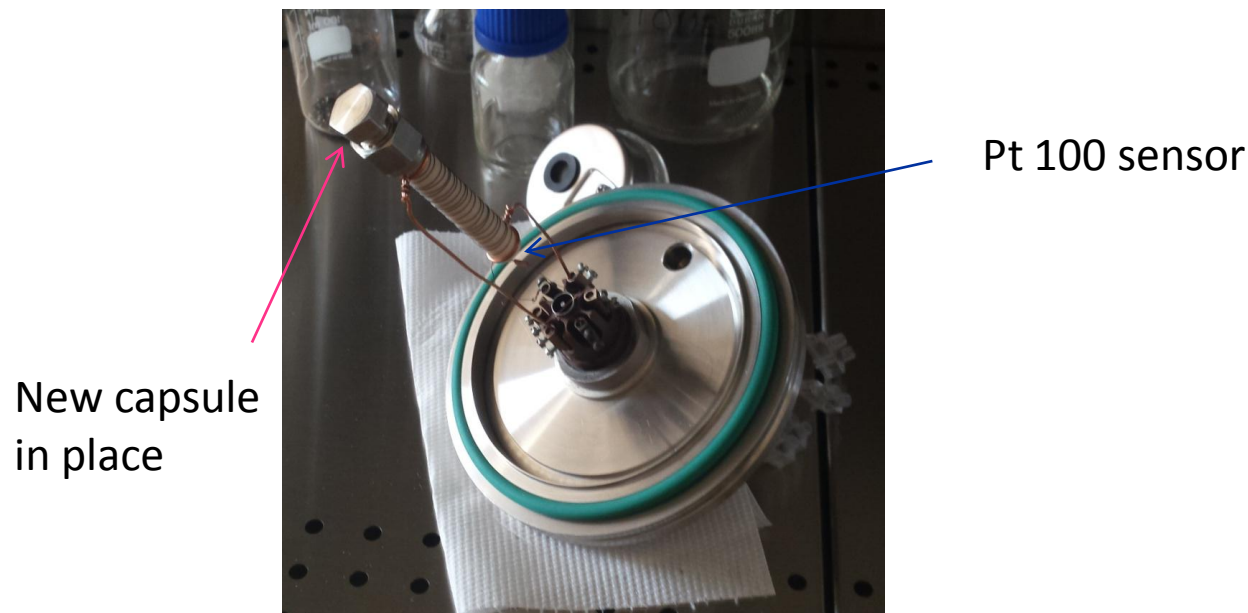
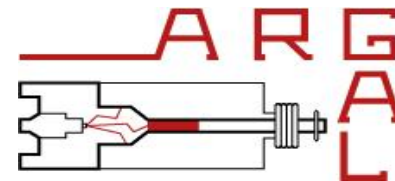


Photo 5: reactor bottom closure with the capsule in place

Vertical heater set up



Reactor bottom closure with the capsule in place



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IL NOME DI MARIA
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CALIBRATION

Reactor Pressure	Power in Watt	T c chamber	Ta ambient	Ti internal	Tc-Ta	Rth	Note:	P/Po
100	0							1,00
106	5	35,5	32	100	3,5	0,7	Swagelok	1,05
112	10	42,2	32,7	160	9,5	1,2	cap on ¼ inch	1,11
119	20	52,3	31,5	249	20,8	1,13	copper tube	1,18
124	30	61,2	31,2	317	30	0,92	Po = 100 mbar	1,23
131	40	70,5	31,4	375	39,1	0,91		1,30
141	50	79,83	32	423	47,83	0,873		1,40

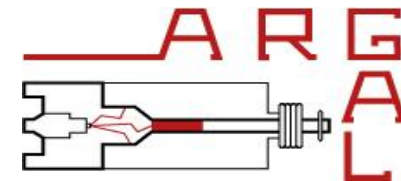
New tests data

TEST WITH SS CAPSULE FILLED WITH Ni, Fe AND LiAlH4 POWDER

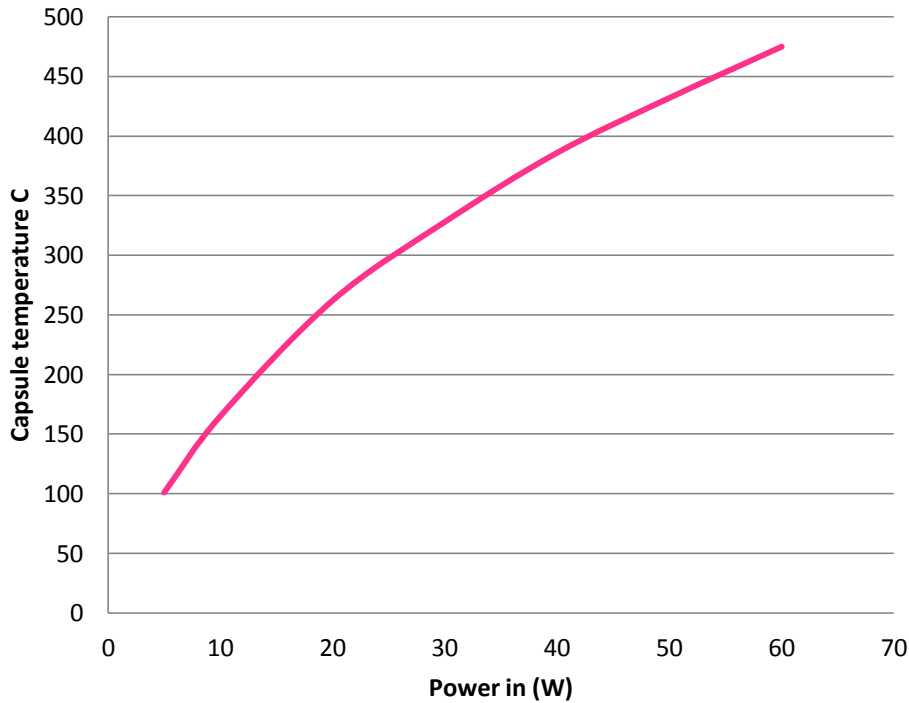
Reactor Pressure	Power in Watt	T c chamber	Ta ambient	Ti internal	Tc-Ta	Rth	Note:	P/Po
100	0							1,00
105	5	34	30,4	87	3,6	0,72	Swagelok	1,04
109	10	40,9	31	133	9,9	1,26	Cap on ¼ inch	1,08
116	20	51,9	31,5	203	20,4	1,05	SS bottom	1,15
122	30	61,3	31,8	255	29,5	0,91	Closed tube	1,21
129	40	70	32	299	38	0,85	Po = 100 mbar	1,28
137	50	78,83	32	339	46,83	0,883		1,36

SECOND CYCLE ON THE SAME CAPSULE STILL INTO THE REACTOR

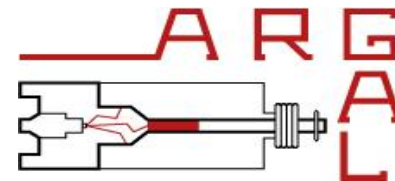
102	0							1,00
108	5	34,89	31,54	89,6	3,35	0,67	Swagelok	1,06
113	10	41,72	32,2	135	9,52	1,234	Cap on ¼ inch	1,11
122	20	53,1	32,6	205	20,5	1,098	SS bottom	1,20
129	30	61,7	32	260	29,7	0,92	Closed tube	1,26
136	40	70,5	32	300	38,5	0,88	Po = 102 mbar	1,33
143	50	78,5	31,8	340	46,7	0,82		1,40

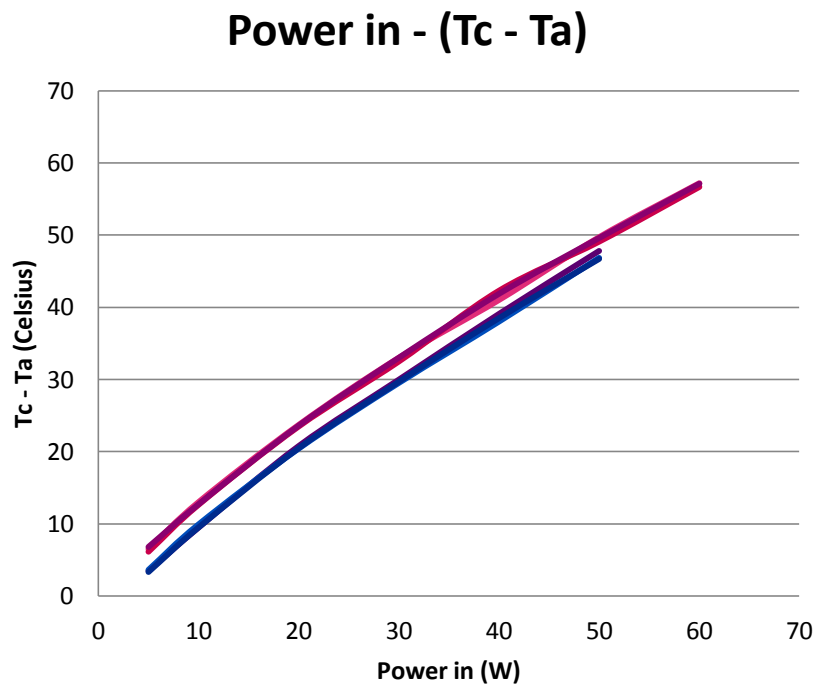


Power in - Internal temperature

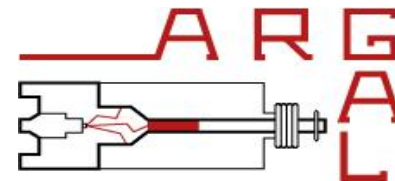


Graph 1. Temperature of a Pt100 inside the calibration copper tube versus the Power-in. The position of the Pt100 during the tests on the SS capsule was at the edge of the heater, so the measured temperature at the same power in is lower than for the calibration.

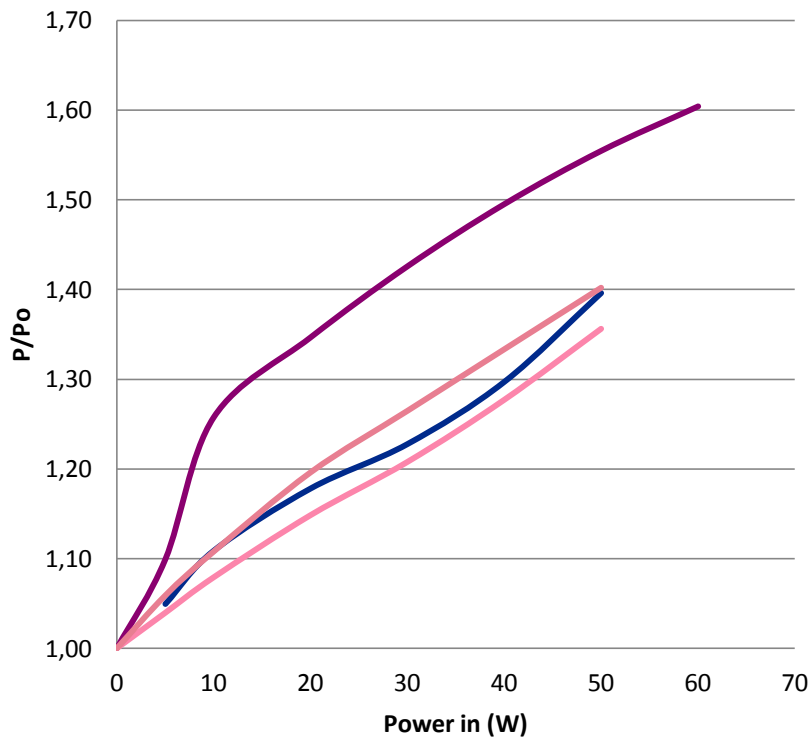




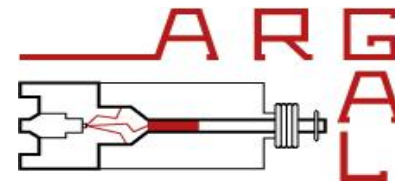
Graph 2. Temperature of the reactor surface versus the Power-in. The overlay of the curves for different test indicates the good reproducibility of the experiments, but also the absence of anomalous heat generation. At least one curve refers to a calibration test without powder in the capsule. We can see two sets of curves: the upper one refers to tests with the horizontal heater set up and smaller mass capsules, while the other three overlapping curves are from the vertical heater set up, one refers to calibration and the others two to the Swagelok sealed capsule.



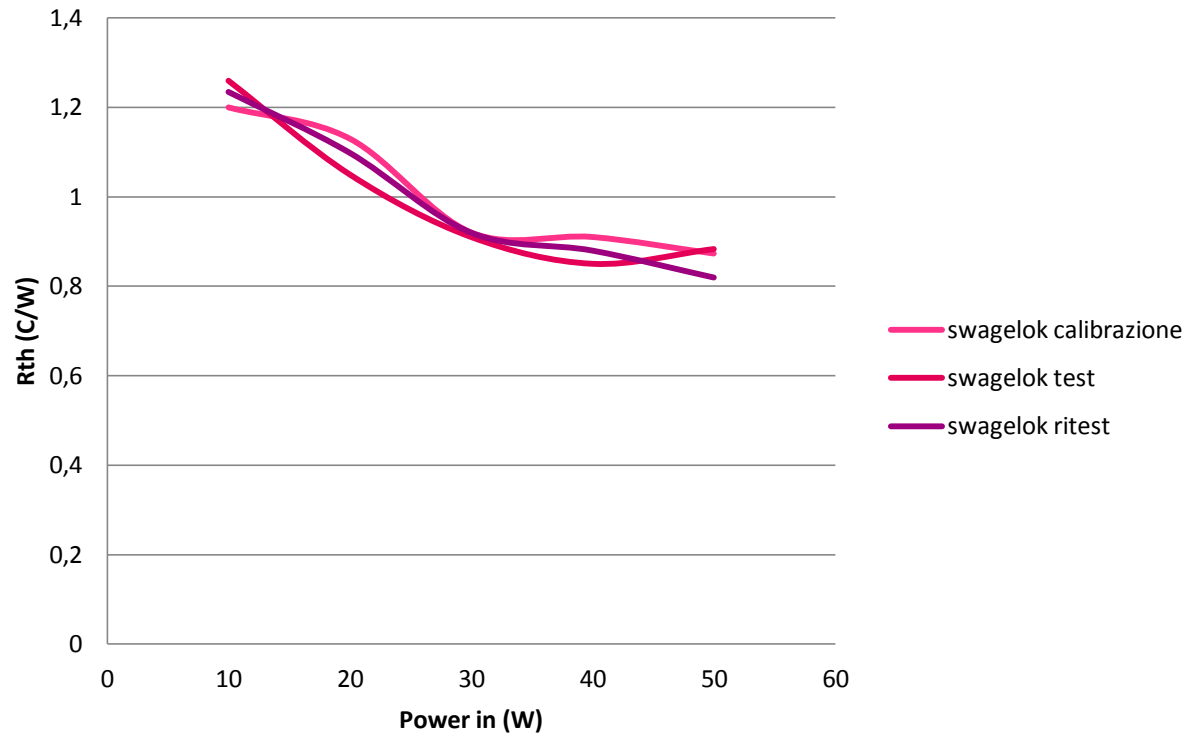
Normalized reactor pressure - Power in



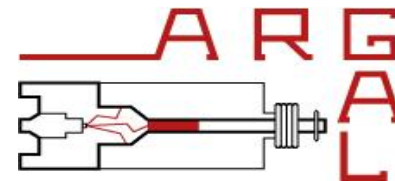
Graph 3. Normalized pressure in the reactor versus Power-in. The violet curve is from a test in the horizontal heater set up with the already reported sealing problems. Instead, the new capsule shows good sealing; in fact, the pink line is the first test with the hydride inside the capsule and shows linear behavior as expected. The blue line is for the second test on the capsule, while the light brown line is for the calibration with the copper tube



Thermal resistance Rth



Graph 4. The Rth behavior does not show any anomaly inside the reactor.



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Thank you for the attention