

AGATA Capsule and Cryostat Status based on the capsule history file

Welcome to Léa

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AGATA Capsule History File structure

← C ← B ← A Summary tab

Oper		C011	Total of 77 capsules	5/9/25 10:22	AGATA CAPSULE STATUS																
Capsules		Owner	Date		Net impurity 10 ¹⁰ /cm ³		Voltage		Last performances (initial or after annealing/repair)				Last annealing or repair	Residual Initial Warranty	Repair Warranty	Mounted in	Localisation	On the Array	Encapsulation technologie		Comment
Name	s/n number		Delivery	Accepted	Front	Rear	Depletion V	Operating V	Date	SE Core	SE Seg	Efficiency							Old	New	
A001	73952	France (GANIL)	01/11/2005	01/08/2006	0,5	1,44	3750	5000	29/09/2021	2,24	2,04	71,1	30/09/2021	0%	#N/A	ATC09	Host_Lab	On the Array	O		
A002	74030	Germany (Munich)/Italy	01/03/2006	22/04/2008	1,18	0,5	2500	4000	18/07/2017	2,3	3,01	77,7	01/11/2017	0%	#N/A		Mirion		O		
A003	74009	UK (Liverpool)	01/11/2006	01/03/2008	0,48	1,35	2500	4500	27/07/2022	2,23	2,07	72,6	29/07/2022	0%	0%	ATC13	Host_Lab	On the Array	O	N	
A004	74095	Turkey (Ankara)	01/09/2007	01/07/2008	1,16	0,49	2500	5000	27/11/2024	2,28	2,17	75	11/12/2024	0%	0%	ATC03	Host_Lab		O		
A005	73949	Sweden	11/12/2007	01/02/2009	1,07	1,72	4250	5000	01/09/2025				26/04/2023	0%	#N/A		Mirion		O	N	
A006	74096	Italy (INFN)	28/11/2008	01/04/2009	1,8	0,52	2500	5000	10/12/2020	2,15	2,27	79	25/06/2024	0%	#N/A	ATC14	Host_Lab		O		
A007	74216	Italy (INFN)	28/07/2009	29/06/2012	1,59	0,42	2000	4500	02/06/2022	2,09	2,19	78	29/07/2022	0%	#N/A		Mirion		O		
A008	74108	Germany (IKP)	25/08/2010	15/02/2011	1,78	0,38	2750	5000	12/03/2025	2,19	2,01	74	20/03/2025	0%	100%	ATC12	Host_Lab		O		
A009	74209	UK (Liverpool)	30/11/2010	14/12/2012	1,36	0,58	2000	4500	01/03/2021	2,29	2,24	79	31/03/2021	0%	#N/A	ATC20	Host_Lab	On the Array	O		
A010	74369	Italy (INFN Milano)	29/07/2015	28/09/2015	1,03	0,95	2500	5000	28/09/2015	2,02	2,03	76	#N/A	0%	#N/A	ATC01	Host_Lab		O		
A011	74556	France (IN2P3)	21/03/2016	15/04/2016	1,34	0,6	3250	5000	28/11/2024	2,17	2,06	78	11/12/2024	0%	#N/A	TC7	GSi		O		
A012	74503	France (CEA Saclay)	26/07/2016	15/09/2016	1,9	0,77	3250	5000	12/05/2023	2,17	2,06	70	25/05/2023	0%	0%	ATC23	Host_Lab	On the Array	O		
A013	74674	Germany (TU Darmstadt)	19/07/2017	01/10/2017	1,68	0,58	3750	5000	01/10/2017	2,31	2,05	80	28/07/2025	0%	#N/A		IKP		O		
A014	74602	Germany (IKP)	02/12/2016	01/02/2017	1,97	0,66	4000	5000	29/09/2021	1,92	2,04	77,3	30/09/2021	0%	#N/A		Mirion			N	
A015	74658	France (IPHC)	28/04/2018	23/03/2018	1,47	0,42	3000	5000	17/02/2023	2,35	2,1		01/05/2023	0%	#N/A		IKP			N	
A016	74693	Finland	01/07/2019	01/03/2019	1,7	0,78	3750	5000	13/06/2019	2,02	1,96	79	#N/A	0%	#N/A	ATC17	Host_Lab	On the Array		N	
A017	74848	Hungary	29/05/2021	27/05/2021	1,8	0,95	3750	5000	27/05/2021	2,02	1,96	79,3	#N/A	20%	#N/A	ATC18	Host_Lab	On the Array		N	
A018	74913	UK (UWS)	16/11/2021	05/11/2021	1,57	0,73	3500	5000	05/11/2021	2,09	1,94	83,9	#N/A	40%	#N/A	ATC19	Host_Lab	On the Array		N	
A019	75109	France (GANIL)	29/09/2022	22/09/2022	1,78	0,69	2500	5000	22/09/2022	2,03	1,92	78	#N/A	60%	#N/A	ATC02	Host_Lab	On the Array		N	
A020	75118	France (IPHC)	09/12/2022	10/11/2022	1,7	0,4	2750	5000	10/11/2022	2,08	1,91	79,6	#N/A	60%	#N/A	ATC21	Host_Lab	On the Array		N	
A021	75199	UK (Liverpool)	29/01/2024	25/01/2024	0,77	1,88	4750	5000	04/12/2024	2,15	1,98	80	11/12/2024	100%	100%	ATC25	IKP			N	
A022	75216	Spain	01/05/2024	24/04/2024	1,52	0,53	4250	5000	19/04/2024	2,2	2,05	79,2	#N/A	100%	#N/A	ATC22	Host_Lab	On the Array		N	
A023	75219	UK (Liverpool)	24/09/2024	19/09/2024	1,7	0,5	3000	5000	20/09/2024	2,18	2,07	81,9	#N/A	100%	#N/A	ATC24	IKP			N	
A024	75225	GSi	22/07/2024	18/07/2024	1,7	0,61	4000	5000	19/07/2024	2,11	2,06	77,6	#N/A	100%	#N/A		IKP			N	
A025	75289	France (Ganil)	24/06/2025	20/06/2025					20/06/2025	2,14	2,1	82	#N/A	100%	#N/A		IKP			N	
A026	xxx	Italy (INFN)							#REF!	#REF!	#REF!	#REF!	#REF!	0%	#N/A		Mirion				
A027									#REF!	#REF!	#REF!	#REF!	#REF!	0%	#REF!						

Summary
tab

Cryostat status
tab

tab for
each capsule

Statistical tab
(to be defined)

→ Data automatically transferred to Summary tab

Summary capsules tabs

Open		C101	Total of 86 capsules		1/9/26 14:04			
Capsules		Owner	Date		Net impurity 10 ¹⁰ /cm ³		Voltage	
Name	s/n number		Delivery	Accepted	Front	Rear	Depletion V	Operating V
A001	73952	FRANCE-IN2P3-GANIL	01/11/2005	01/08/2006	0,5	1,44	3750	5000
A002	74030	ITALY-INFN-Padova	01/03/2006	22/04/2008	1,18	0,5	2500	4000
A003	74009	UK-Liverpool	01/11/2006	01/03/2008	0,48	1,35	2500	4500
A004	74095	TURKEY-Ankara	01/09/2007	01/07/2008	1,16	0,49	2500	5000
A005	73949	SWEDEN	11/12/2007	01/02/2009	1,07	1,72	4250	5000
A006	74096	ITALY-INFN-Padova	28/11/2008	01/04/2009	1,8	0,52	2500	5000
A007	74216	ITALY-INFN-Milano	28/07/2009	29/06/2012	1,59	0,42	2000	4500
A008	74108	GERMANY-IKP-Cologne	25/08/2010	15/02/2011	1,78	0,38	2750	5000
A009	74209	UK-Liverpool	30/11/2010	14/12/2012	1,36	0,58	2000	4500
A010	74369	ITALY-INFN-Milano	29/07/2015	28/09/2015	1,03	0,95	2500	5000
A011	74556	FRANCE-IN2P3	21/03/2016	15/04/2016	1,34	0,6	3250	5000
A012	74503	FRANCE-CEA-Saclay	26/07/2016	15/09/2016	1,9	0,77	3250	5000
A013	74674	GERMANY-TU Darmstadt	19/07/2017	01/10/2017	1,68	0,58	3750	5000
A014	74602	GERMANY-IKP-Cologne	02/12/2016	01/02/2017	1,97	0,66	4000	5000
A015	74658	FRANCE-IN2P3-IPHC	28/04/2018	23/03/2018	1,47	0,42	3000	5000
A016	74693	FINLAND	01/07/2019	01/03/2019	1,7	0,78	3750	5000
A017	74848	HUNGARY-Atomki	29/05/2021	27/05/2021	1,8	0,95	3750	5000
A018	74973	UK-UWS	16/11/2021	05/11/2021	1,57	0,73	3500	5000
A019	75109	FRANCE-IN2P3-GANIL	29/09/2022	22/09/2022	1,78	0,69	2500	5000
A020	75118	FRANCE-IN2P3-IPHC	09/12/2022	10/11/2022	1,7	0,4	2750	5000
A021	75199	UK-Liverpool	29/01/2024	25/01/2024	0,77	1,88	4750	5000
A022	75216	SPAIN-IFIC-Valencia&IEM-M	01/05/2024	24/04/2024	1,52	0,53	4250	5000
A023	75219	GERMANY-GSI	24/09/2024	19/09/2024	1,7	0,5	3000	5000
A024	75225	UK-Liverpool	22/07/2024	18/07/2024	1,7	0,61	4000	5000
A025	75289	FRANCE-IN2P3-GANIL	24/06/2025	20/06/2025	1,58	0,46	3000	5000
A026	75316	ITALY-INFN-Milano	27/11/2025	25/11/2025	1,8	0,2	4000	5000
A027		France-IN2P3-GANIL						
A028								
A029								
A030								
A101	74064	GERMANY-TU Darmstadt	29/04/2026					

Capsule's

- name,

- s/n number

- owner

Taken from manuals

- Net impurity

- Depletion Voltage

- Operating Voltage

Summary capsules tabs

Open		AGATA CAPSULE STATUS					
Cap	Last performances (initial or after annealing/repair)				Last annealing or repair	Residual Initial Warranty	Repair Warranty
	Name	Date	δE_{Core}	$\bar{X} \delta E_{Seg}$	Efficiency		
B001	03/10/2009	2,17	2,06	82,2	#N/A	0%	#N/A
B002	25/03/2021	2,15	2,43	75,6	29/03/2021	0%	#N/A
B003	25/10/2021	1,97	2,19	79,5	28/10/2021	0%	#N/A
B004	04/12/2024	2,01	2,11	73	20/03/2025	0%	#N/A
B005	23/05/2024	2,14	2,06	73,5	27/05/2024	0%	0%
B006	18/11/2024	2,19	2,05	69	20/11/2024	0%	0%
B007	24/09/2025	1,99	2,17	73	29/09/2025	0%	#N/A
B008	13/12/2023	2,14	1,16	78,6	29/01/2024	0%	0%
B009	26/04/2024	2,15	2,26	76	07/05/2024	0%	0%
B010	17/11/2025	2,09	2,06	76	25/11/2025	0%	0%
B011	04/12/2025	2,07	2,22	81	22/12/2025	0%	#N/A
B012	21/12/2011	2,34	2,07	81,7	01/05/2022	0%	#N/A
B013	10/12/2020	2,26	2,47	73,4	19/01/2021	0%	#VALEUR!
B014	17/11/2025	2,04	2,1	82	25/11/2025	0%	#N/A
B015	25/06/2025	2,01	2,02	78	28/07/2025	0%	0%
B016	23/06/2026	2,24	2,08	84	26/06/2026	0%	0%
B017	08/06/2026	2,16	2,1	75	01/06/2026	0%	#N/A
B018	28/05/2021	2,11	2,04	85	#N/A	0%	#N/A
B019	10/11/2022	2,08	2,06	80,1	10/11/2022	20%	0%
B020	27/07/2022	2,15	1,97	79,6	#N/A	20%	#N/A
B021	07/12/2022	2,24	1,96	82,3	#N/A	40%	#N/A
B022	18/07/2023	2,09	1,92	82,2	18/07/2023	40%	#N/A
B023	25/10/2024	2,13	2,03	83,6	#N/A	100%	#N/A
B024	10/12/2025	2,03	2,05	81,7	01/12/2025	100%	#N/A
B025	24/02/2025	2,19	1,99	83	#N/A	100%	#N/A
B026	#REF!	#REF!	#REF!	#REF!	#REF!	0%	#REF!
B027	#REF!	#REF!	#REF!	#REF!	#REF!	0%	#REF!
B028	#REF!	#REF!	#REF!	#REF!	#REF!	0%	#REF!
B029	#REF!	#REF!	#REF!	#REF!	#REF!	0%	#REF!
B030	#REF!	#REF!	#REF!	#REF!	#REF!	0%	#REF!
B101	11/03/2026	2,23	2,08	70	11/03/2026	0%	100%
					#REF!		

Automatically upgraded from
capsule tabs

- Lastest performances:
Initial or after lastest annealing /
repair

- Residual warranty level:
Initial and after repair

Summary capsules tabs

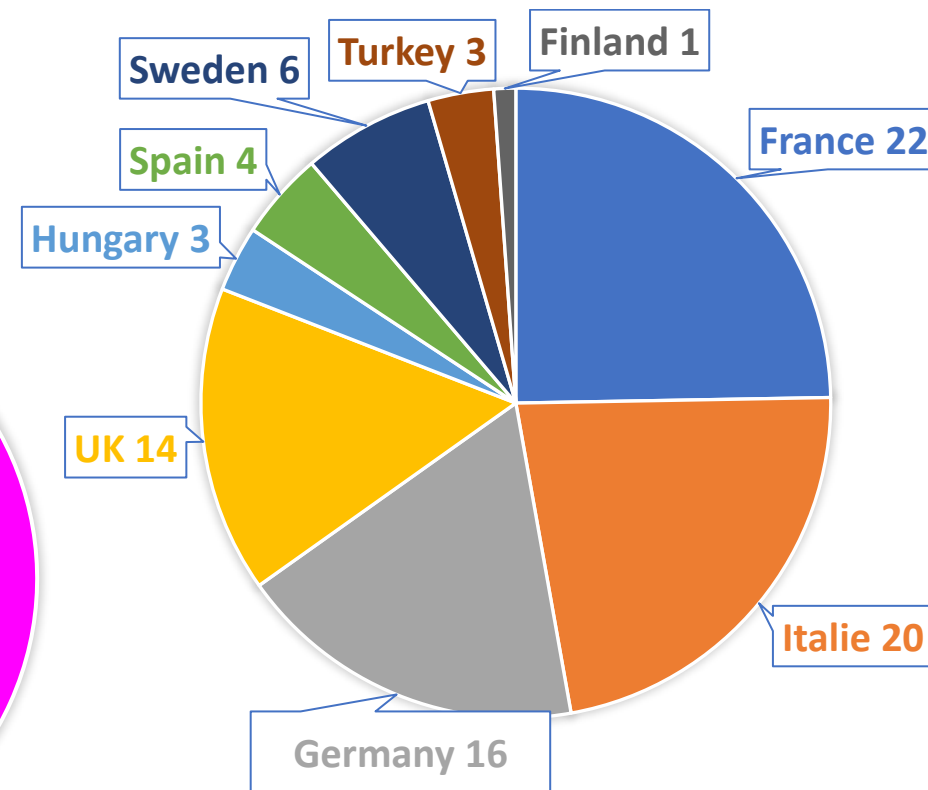
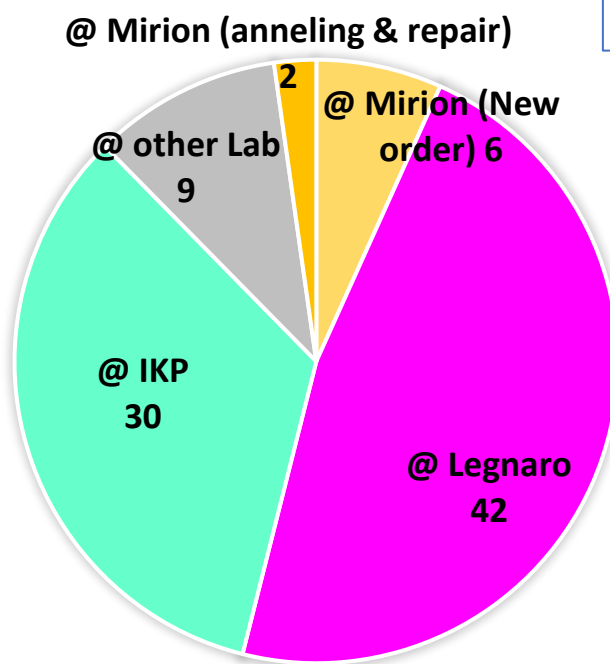
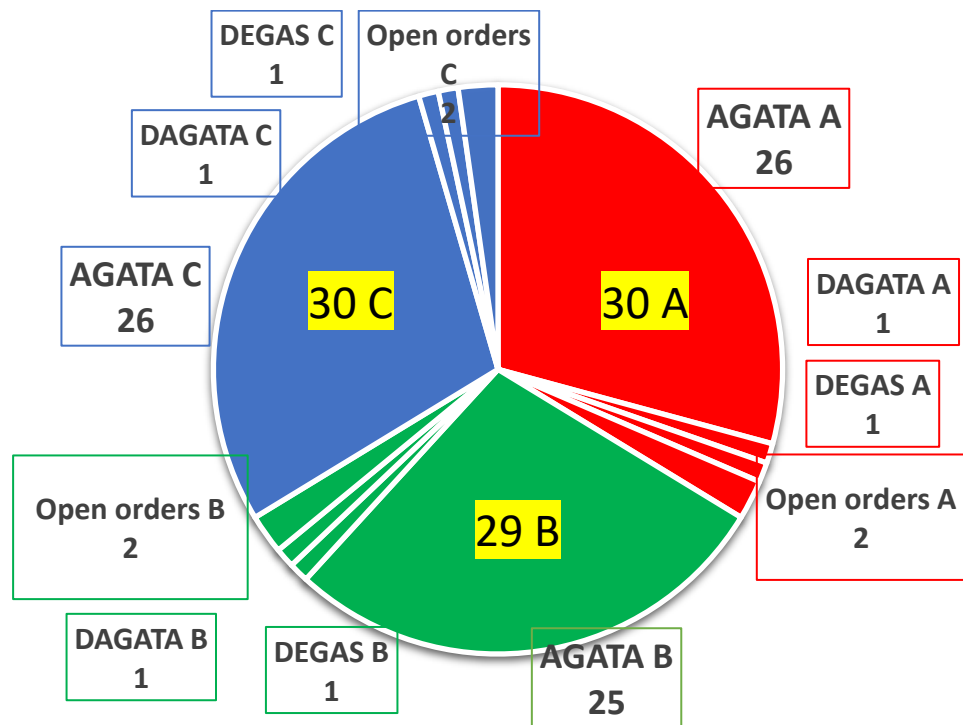
Open						
Cap Name	Mounted in	Localisation	On the Array	Encapsulation technologie		Operating Manuals
				Old	New	
C001	ATC14	Host_Lab	On the Array	O	N	C001.pdf
C002	TC	SACLAY		O		C002.pdf
C003		Mirion		O		C003.pdf
C004		IKP		O		C004.pdf
C005	ATC20	Host_Lab	On the Array	O		C005.pdf
C006	ATC09	Host_Lab	On the Array	O		C006.pdf
C007	ATC06	Host_Lab		O		C007.pdf
C008		IKP		O		C008.pdf
C009	ATC01	Host_Lab	On the Array	O		C009.pdf
C010	ATC03	Host_Lab		O		C010.pdf
C011		IKP		O		C011.pdf
C012	ATC10	Host_Lab		O		C012.pdf
C013	ATC17	Host_Lab		O	N	C013.pdf
C014	ATC22	Host_Lab	On the Array	O		C014.pdf
C015		Mirion			N	C015.pdf
C016	TC8	IPHC			N	C016.pdf
C017	ATC25	IKP			N	C017.pdf
C018	ATC18	Host_Lab	On the Array		N	C018.pdf
C019	ATC19	Host_Lab	On the Array		N	C019.pdf
C020	ATC02	Host_Lab	On the Array		N	C020.pdf
C021	ATC21	Host_Lab	On the Array		N	C021.pdf
C022	ATC23	Host_Lab	On the Array		N	C022.pdf
C023	ATC24	IKP			N	C023.pdf
C024		IKP			N	C024.pdf
C025		IKP			N	C025.pdf
C026		IPHC			N	C026.pdf
C027						
C028						
C029						
C030						
C101		IKP			N	C101.pdf

Automatically upgraded from
capsule tabs

Whether the capsule is
- integrated
- on the array

Capsule location

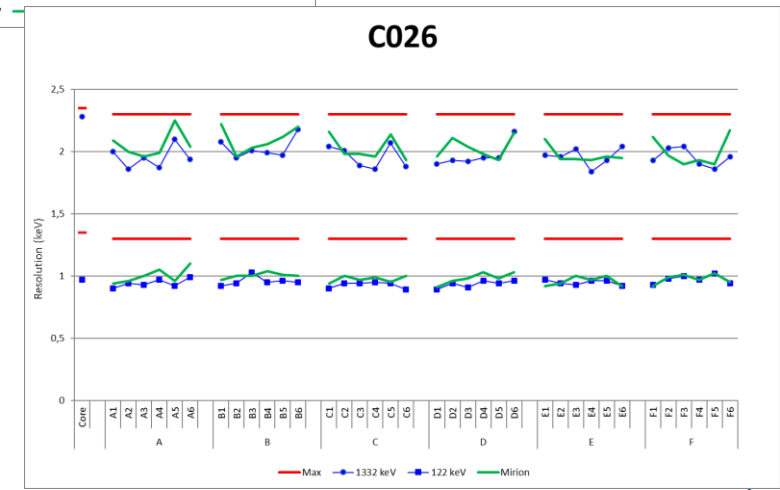
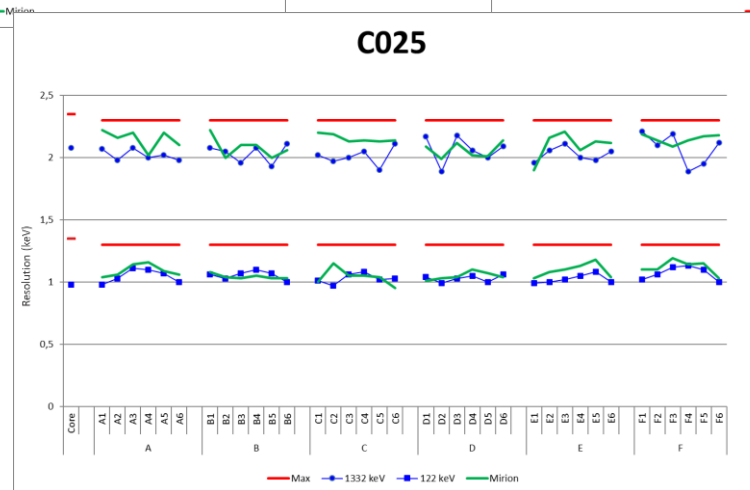
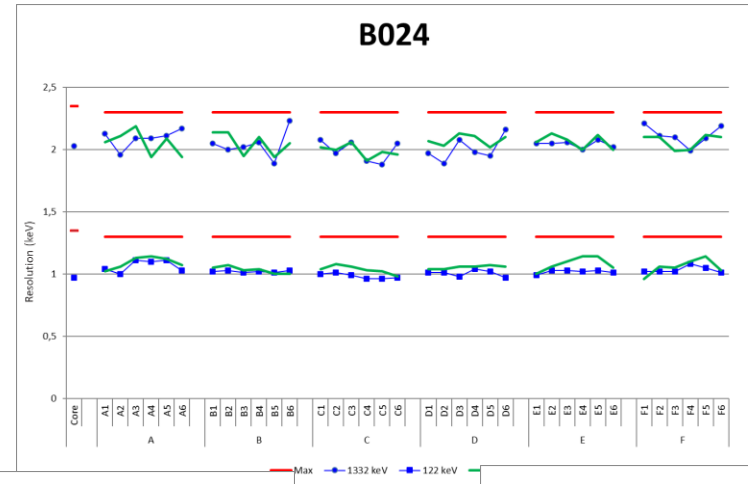
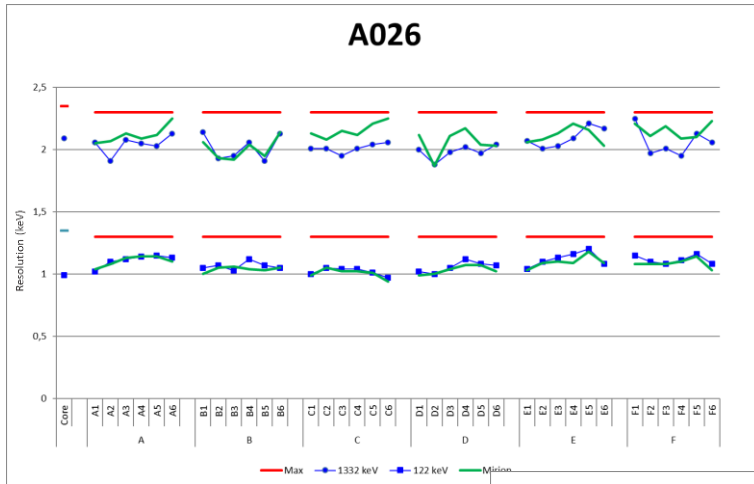
AGATA Capsule status



83 available Capsules: 77 AGATA + 3 DAGATA + 3 DEGAS capsules
+ 6 AGATA new orders (3 in production – 3 pending)

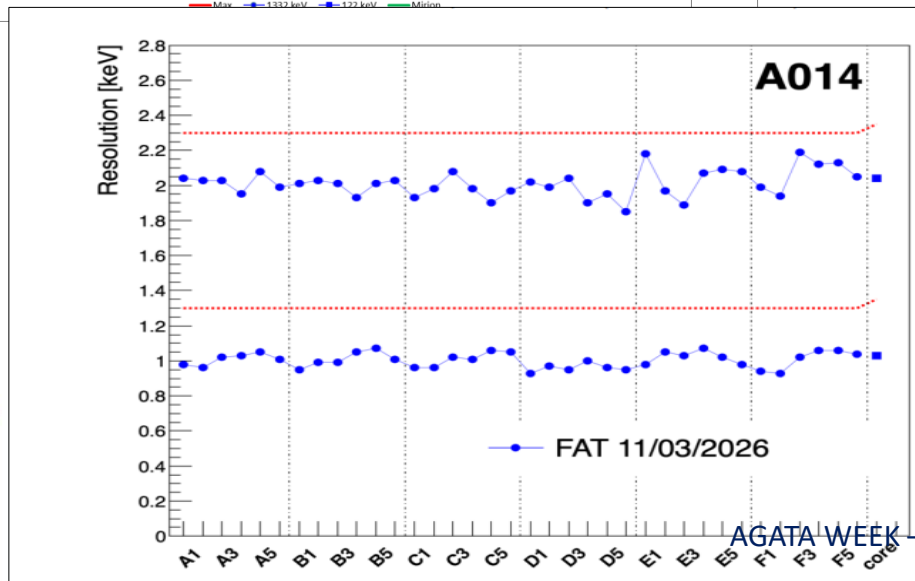
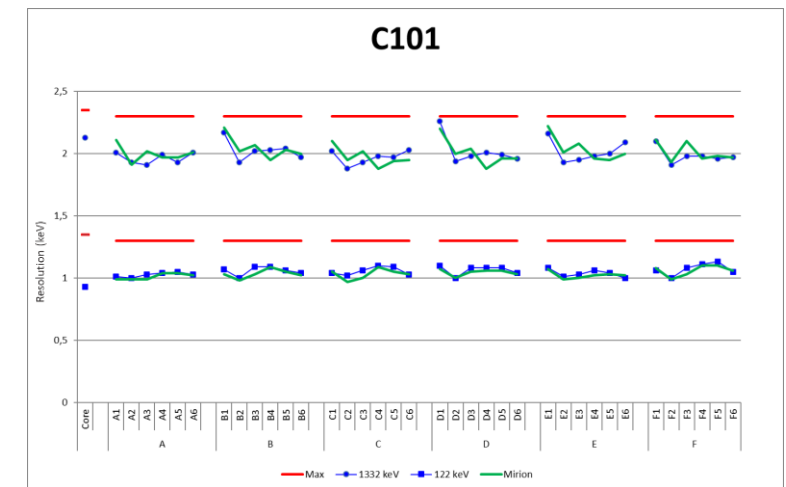
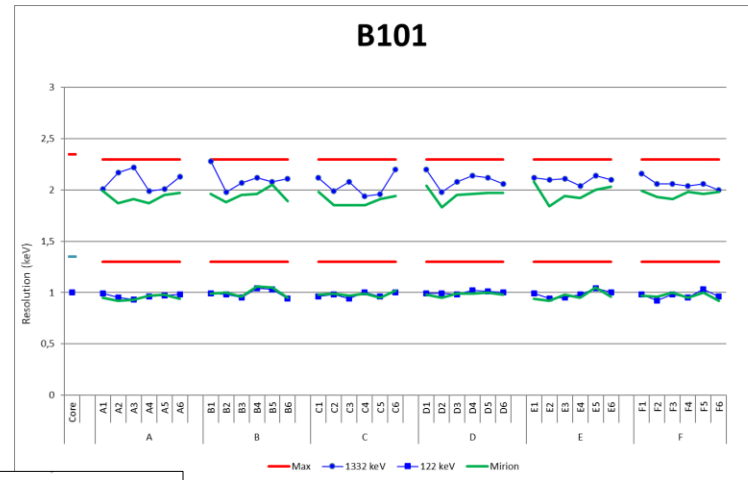
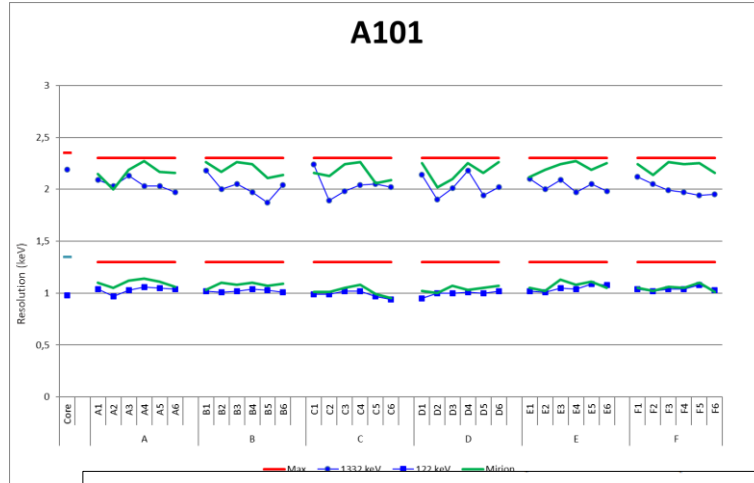
FAT updates since the last AGATA Week

4 new capsules (A026 – B024 – C025 – C026)



FAT news since the last AGATA Week

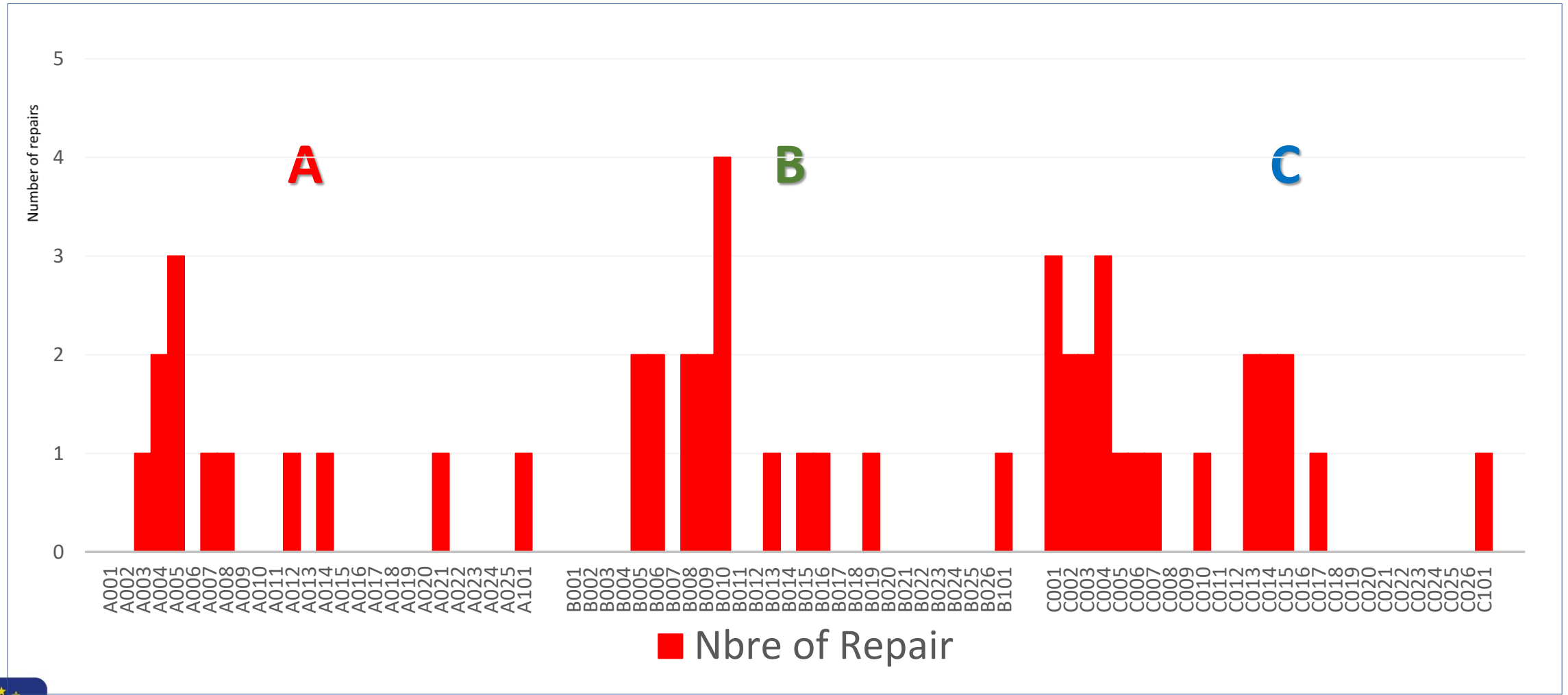
4 Repaired capsules (DAGATA A101 – B101 – C101 & A014)



2 repairs in progress at Mirion: C003 & C015

C003: FAT scheduled next week

48 repairs on 31 capsules



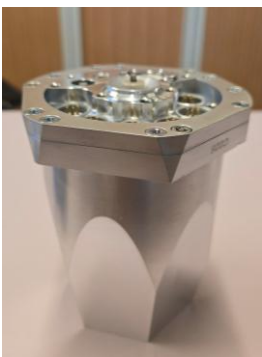
Encapsulation updates since the last AGATA Week



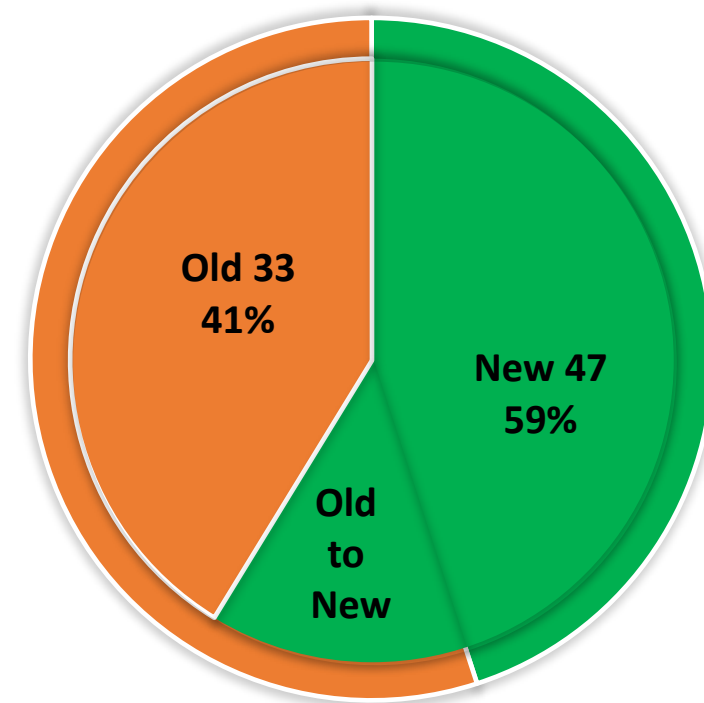
Before 2017, capsules had to be cut open and welded again
- 41 old encapsulation crystals delivered + 3 DAGATA

Since 2017, capsules can be opened and closed with screws

- All crystals are delivered with new encapsulation (36 to date)
- 11 reprocessed crystals are now equipped with new encapsulation



→ Currently 47 / 80 delivered capsules
have the new encapsulation



Annealing updates since the last AGATA Week

Last year decision 12 capsules / year

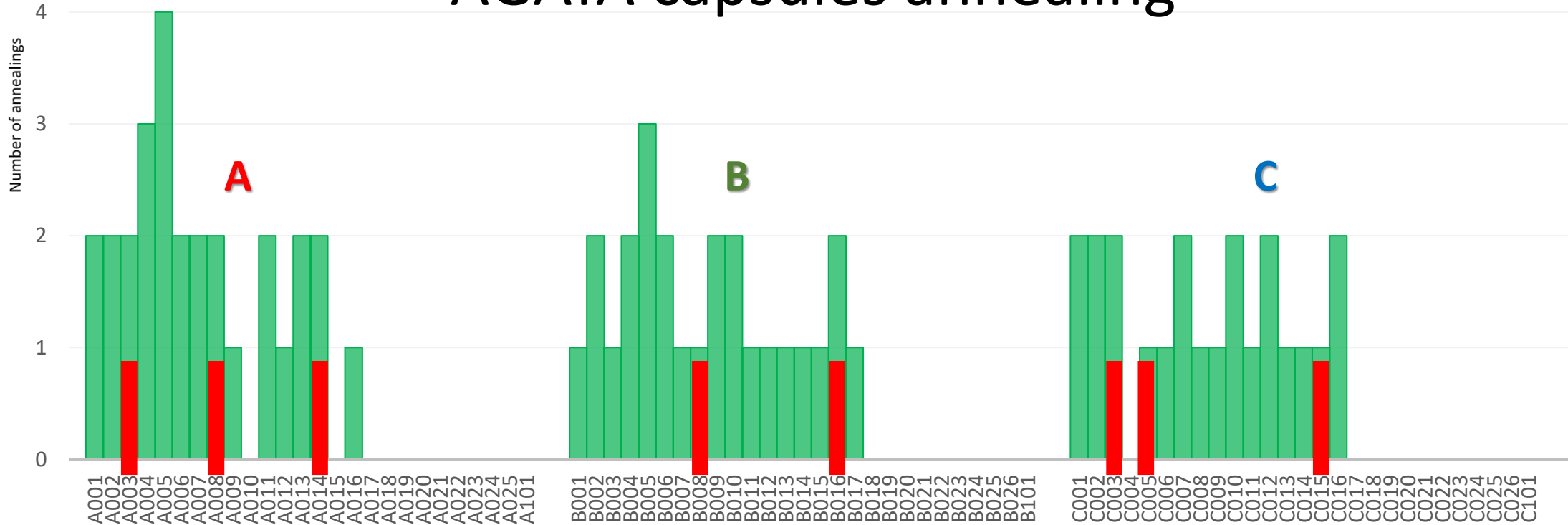
September – December 2025 : A002¹ - A007² - *A014⁴ - B007¹ - B010⁴ - B011 - B014² - C007¹ - *C003² - C016⁴

January - August 2026 : A003³ - A016⁵ - B016³ - B017⁵ - C013⁵ - *C015³

*A014⁴ – C003² – C015³ were tested with leakage current before annealing

dismounted from ¹ATC03 in 05/25, ²ATC07 in 08/25, ³ATC13 in 03/26, ⁴ATC14 08/25, ⁵ATC17 03/26

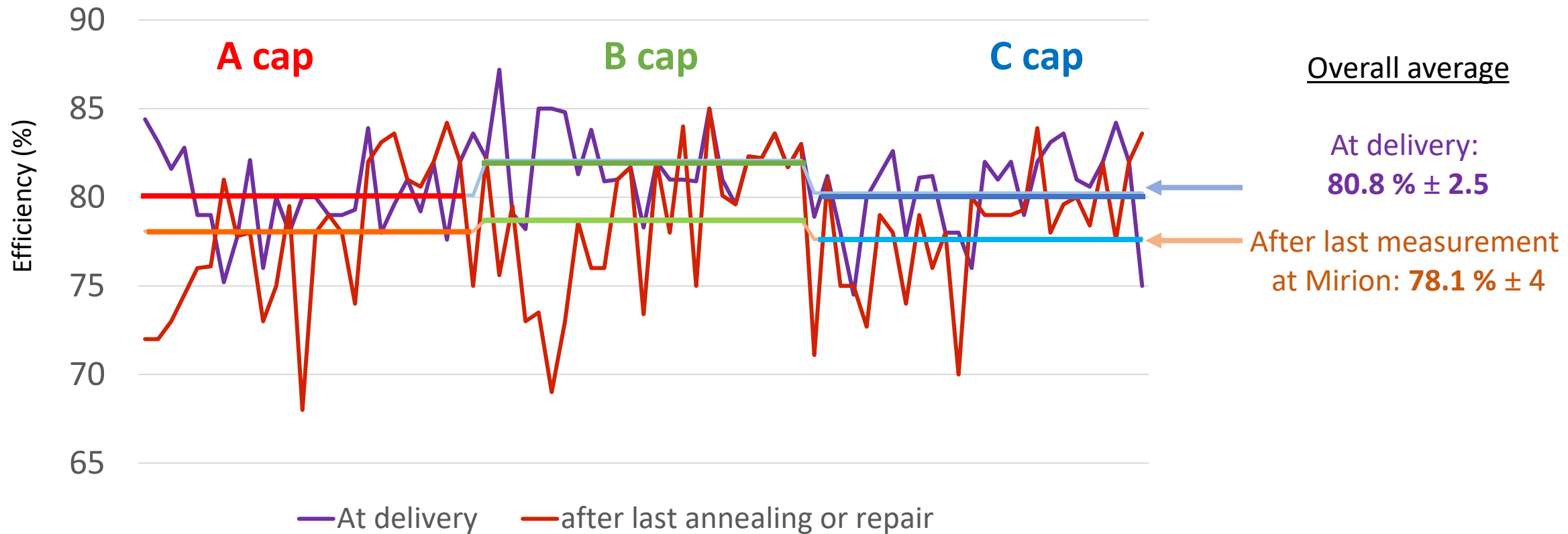
AGATA capsules annealing



Since 2020 the neutron damaged capsules are only annealed by Mirion

- 62 annealing - on 46 crystals - was performed since 2020 with a downtime at Mirion of about 4 months
- 8 crystals required repair after annealing following neutron damage with a downtime at Mirion of about 10 months

Crystal efficiency



Efficiency vs number of annealing and repair



Triple Cryostat status

	CRYOSTAT STATUS																
	ATC		End cap (1 or 2 parts)	Getter on cold finger	Core card (New/Old)	Installation ATC on array		Integrated Capsules			On the array	status in the lab	Annealed	On the structure		During or Since	
	Name	s/n number	Owner	Old/New	Yes/No	A/B/C	PatchBox n°	Ring n°	A	B	C				Since	To	years
ATC01	10034			O	Y	N / N / N	PB1	17	A010	B006	C009	On the Array			nov-25		0,8
ATC02	10052			O	Y		PB15	6	A019	B019	C020	On the Array			sept-23		3,0
ATC03	10046			O	N	N / N / N	PB26	7	A004	B009	C010		on test @LNL	2025			
ATC04													IKP				
ATC05													IKP				
ATC06	10050			N	N	N / N / N	PB23	1	A002	B007	C007	On the Array		2024	avr-26		0,4
ATC07	10055			N	N	O / O / N	PB17	5					empty @LNL	2025			
ATC08				N	N								CTT				
ATC09	10058			N	N	N / N / N	PB31	8	A001	B001	C006	On the Array			mai-22		4,3
ATC10				N	Y	N / N / N	PB32	15	A008	B004	C012		on test @LNL	2024			
ATC11				N	Y	N / O / N	PB30	11					empty @LNL	2024			
ATC12				N	N	O / O / O	PB21	19					IKP	2025			
ATC13	10063			N	Y	N / O / O	PB30	24					empty @LNL				
ATC14	10076	IPHC		O	Y	O / O / O	PB20	12	A006	B002	C001	On the Array		2025	sept-25		1,0
ATC15	10051			N	Y	N / N / N	PB27	18					empty @LNL	2025			
ATC16		old ADC											ration in process @IKP				
ATC17	10079			N	Y	N / N / N	PB24	13	A016	B016	C013		on test @LNL	2026			
ATC18	10080			N	Y	N / N / N	PB22	16	A017	B018	C018	On the Array			mars-22		4,5
ATC19				N	Y	N / N / N	PB28	9	A018	B012	C019	On the Array			sept-22		4,0
ATC20	10088			N	Y	N / N / N	PB14	14	A009	B020	C005	On the Array			janv-23		3,7
ATC21	10091			N	Y	N / N / N	PB19	10	A020	B021	C021	On the Array			févr-25		1,6
ATC22	10092			N	Y	N / N / N	PB26	28	A022	B022	C014	On the Array			mars-25		1,5
ATC23	10093			N	Y	N / N / N	PB3	23	A012	B008	C022	On the Array			oct-24		1,9
ATC24	10095	GSI							A023	B023	C023		ready @IKP				
ATC25	10094	GANIL							A021	B025	C017		ready @IKP				
ATC26		old ADC															
DATC																	
ATC27		INFN															
ATC28		INFN															
ATC29		Spain															
ATC DEGAS		Germany							A501	B501	C501		ready @IKP				

Triple Cryostat status

28 Triple Cryostats available: 26 ATC + 1 DEGAS TC + 1 DAGATA TC

- 17 ATCs functional

- 11 on the structure @ LNL: ATC 01, 02, 06, 09, 14 and 18 to 23
- 3 @ LNL lab, testing ongoing
- 3 @ IKP, awaiting transport to LNL: ATC 24, 25 and DEGAS TC

- 6 ATCs awaiting capsules

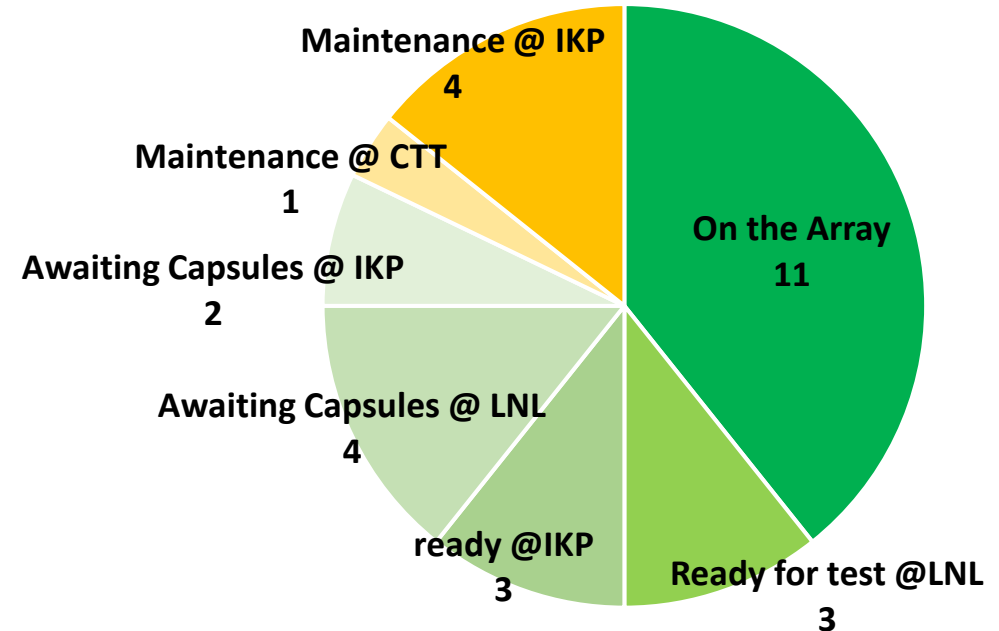
- 2 @ IKP: ATC 16, 26 (ADC → ATC)
- 4 @ LNL: ATC 07, 11, 13, 15

- 4 ATCs undergoing maintenance for various issues

- 4 @ IKP: ATC 04, 05, 08 and 12

- 1 DAGATA TC @ Mirion

- currently being assembled jointly by CTT and Mirion



Triple Cryostat status

28 Triple Cryostats available

- 17

**Dismantling
starting in the coming weeks**

→ Maintenance

- 6 ATCs

**→ Annealing of 12 capsules and
4 cryostats (ATC09, 18, 19, 20)**

▪ 2

▪ 4

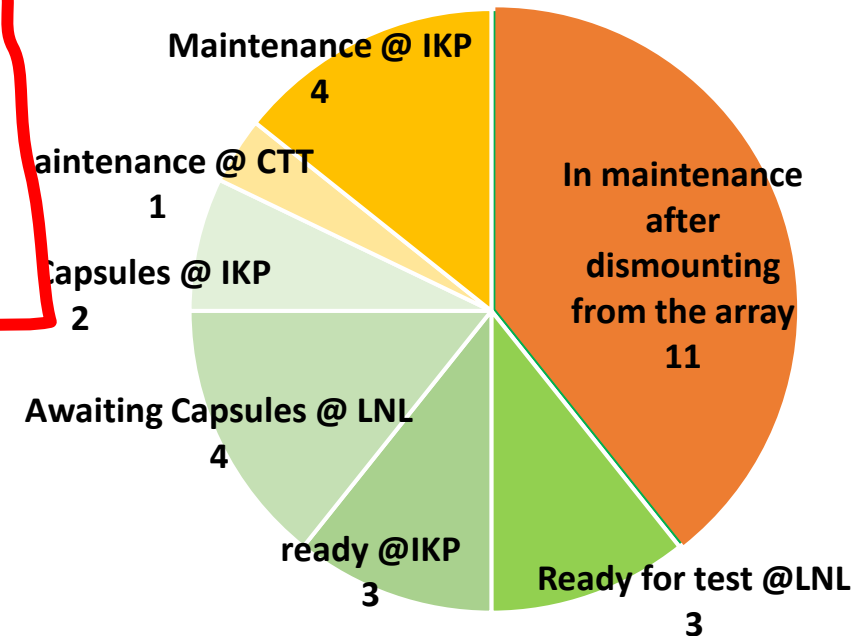
- 4 ATCs

for various issues

▪ 4 @ IKP: ATC 04, 05, 08 and 12

- 1 DAGATA TC @ Mirion

▪ currently being assembled jointly by CTT and Mirion



Conclusion

This capsule history file is updated and is becoming more and more useful.

Next steps:

- Make the file easily available online
- Complete the AGATA database with the Lyon team

Many thanks to everyone
who contributed to this work

Welcome to Léa !

Apprentice at the IPHC detector lab
and Bachelor's student
in Physical Measurements



Preparation of the detectors and integration into TC

Integration of A005 into TC7

+ B010 and C016 prepared



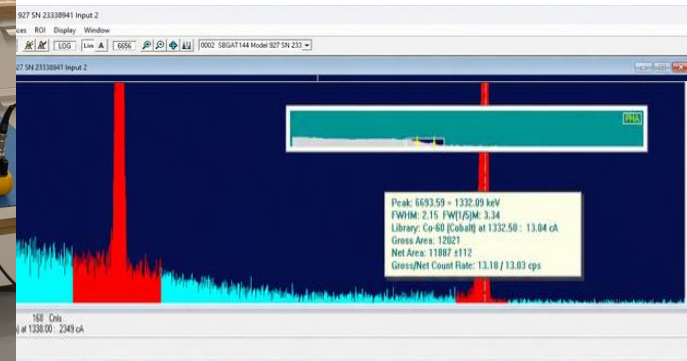
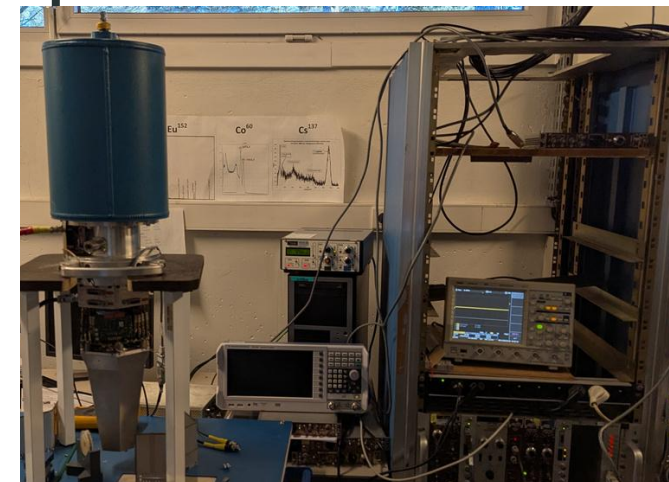
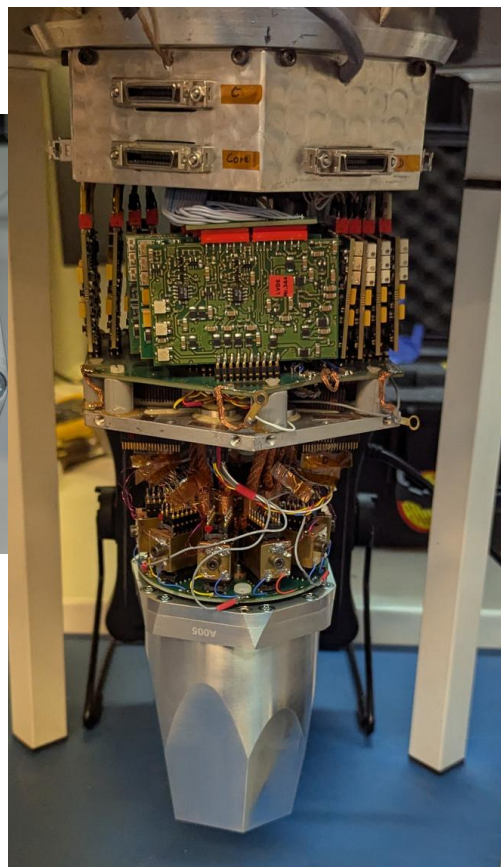
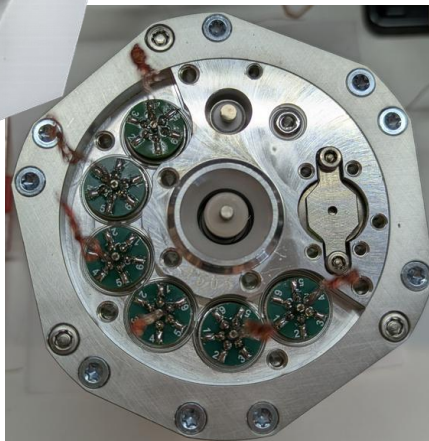
PCB Soldering

Integration into TC

Pumping and cooling

Voltage rising and testing

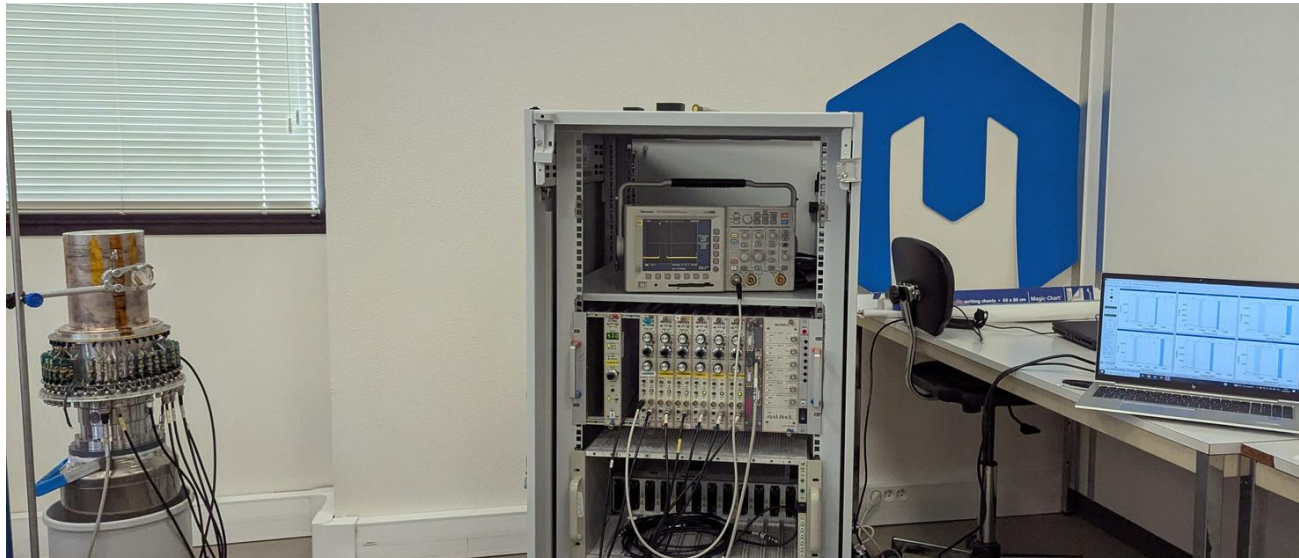
LÉA'S WORK



Testing and maintenance of CT5

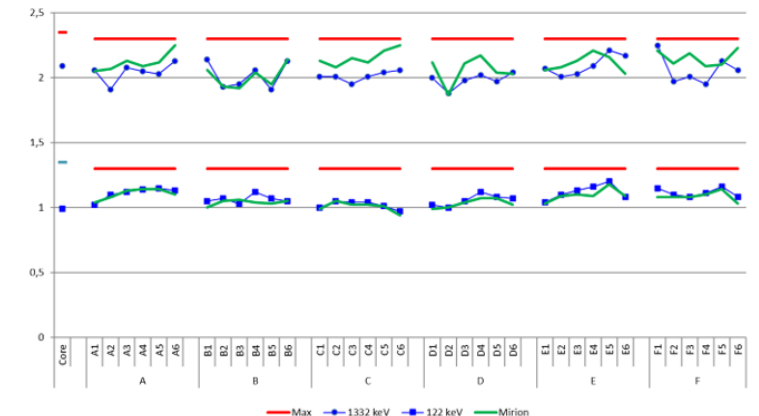


Factory Acceptance Test at Mirion Technologies



A026 and A101 done

A026



Conclusion

Goals:

- she will start working on ATC this year by joining us for the work at Legnaro
- We will get a CNRS position for her in September 2027
- She will pass the examination and continue working on AGATA from December 2027

Thank you for listening !