



Light Guide Concentrators

Status Report: Oct. 2022

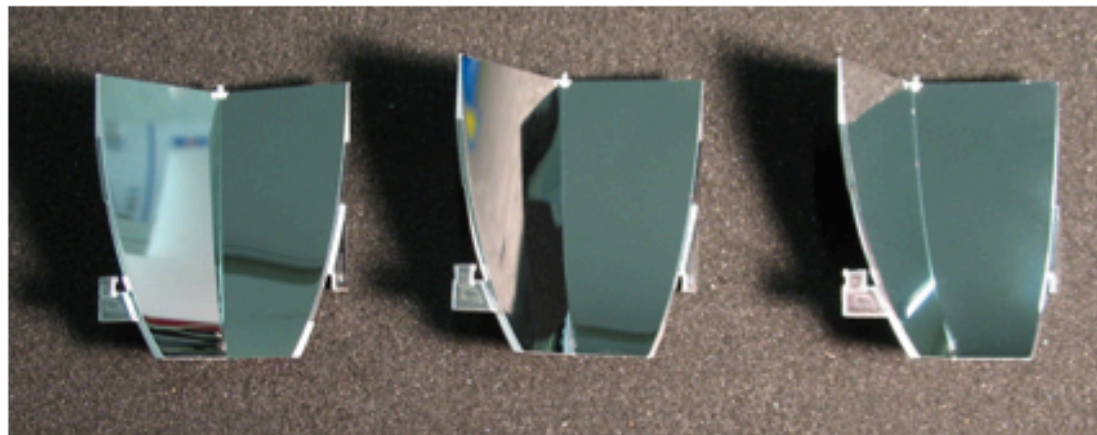
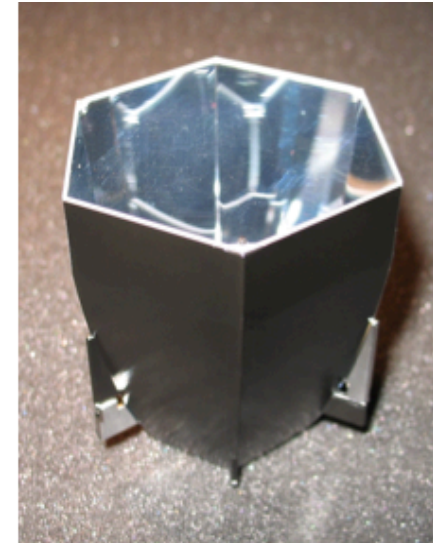
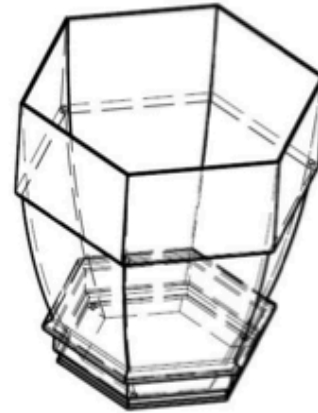
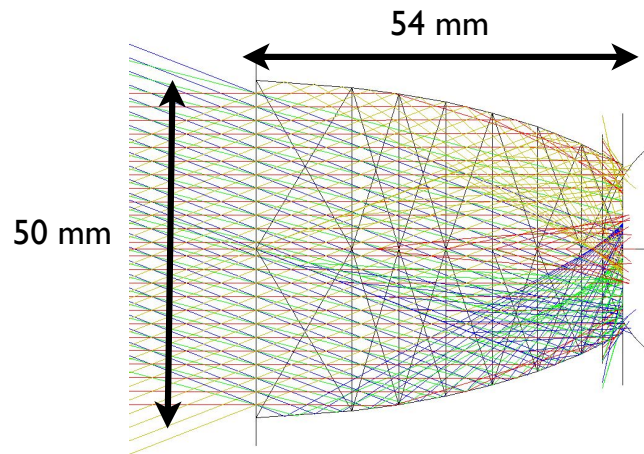
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IPAG, Grenoble, France



Winston Cone prototypes

Prototypes manufactured by **SAVIMEX** (Grasse, France)

- Cones in 3 parts for a better control of the coating process



Tender Process

- Launched the 24th of May 2017. Only one candidate: Savimex
- Officially selected the 28th of November 2017
- Kick-off meeting 18th of January 2018
- The contract was for 4 years (**until Jan. 2022**)
- Firm order: production of 500 cones. Then 4 optional orders


	Opt. Order 1	Opt. Order 2	Opt. Order 3	Opt. Order 4
WC unitary cost (H.T)	16,4	15,2	15,2	15,2
WC total cost (H.T)	24600	152000	152000	152000
Taux T.V.A	20%	20%	20%	20%
WC total cost (T.T.C)	29520	182400	182400	182400
Number of WC requested	1 500	10 000	10 000	10 000

- First cones produced on July 2018


Pre-production phase

First Camera

- 10% tested on the Savimex test bench. 1% on the IPAG test bench
- **All in the spec**
- 500 mounted on the camera 1:1 at IRFU
- 1500 cones produced in 2020, and delivered/mounted at IRFU to complete the camera



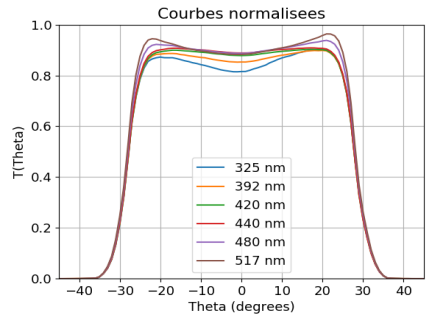
Winstone cones characterization Measurement log sheet



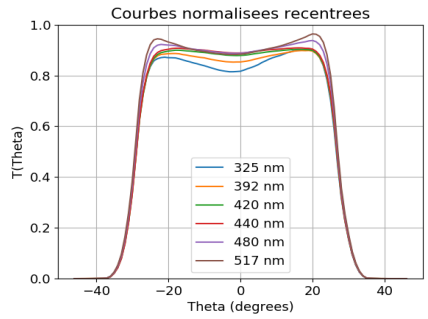
Date: 2020-08-04
Time: 11h 34min
Operator: Pop
Cone ID: 0110043-1
Directory: C:/CTA/Data/2020-08-04/
Angle Phi: [0] deg

Remarks:

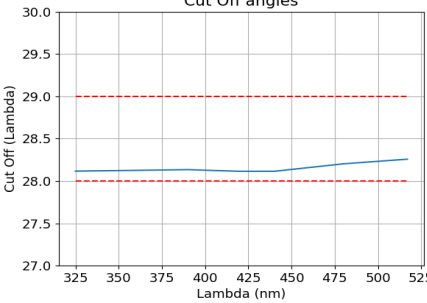
Courbes normalisees



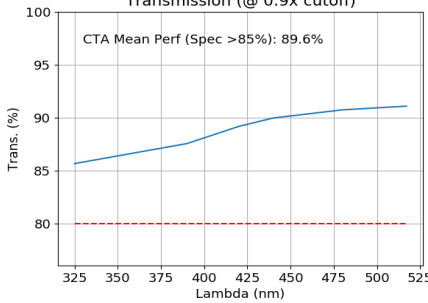
Courbes normalisees recentrees



Cut Off angles



Transmission (@ 0.9x cutoff)



Lambda(nm)	325.0	390.0	420.0	440.0	480.0	517.0
Cutoff(°)	28.12	28.13	28.11	28.11	28.2	28.26

Lambda(nm)	325.0	390.0	420.0	440.0	480.0	517.0
T. Savi (%)	81.7	85.3	87.9	88.8	88.7	88.3
T. CTA (%)	86.8	88.2	89.6	90.3	91.3	91.8
T. rej. (%)	5.1	4.9	4.8	4.8	5.0	5.2

Operateur signature

QA signature

Decision: ☐ ☐

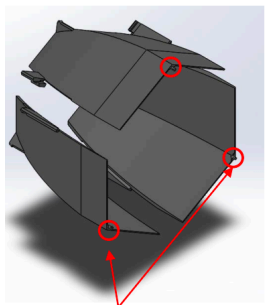
Fiche anomalie:

Start Production Phase for 8 cameras

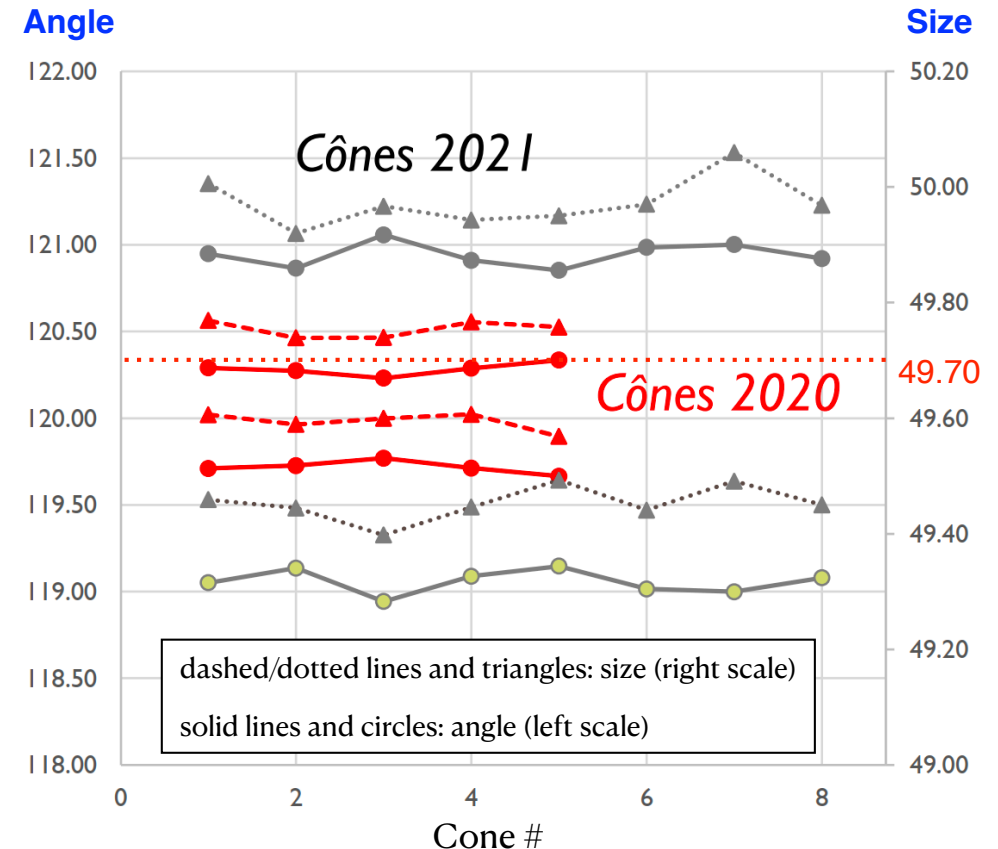
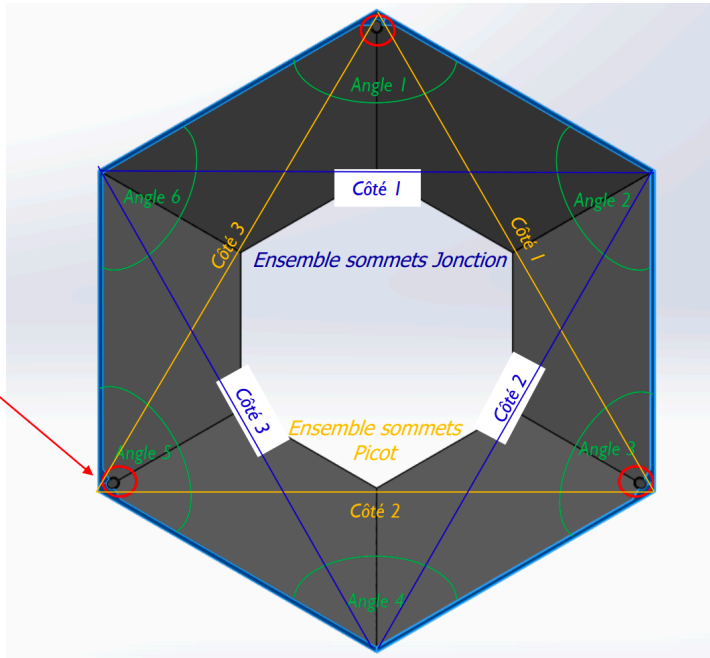
- Fall 2021, agreement with Savimex to **modify the contract and produce 16000 cones before end of contract** (17 Jan. 2022)
- Ask for TGIR funding: 166k€ -> **accepted**
- **Start production Nov. 2021**, the date for the total delivery was end Dec. 2021
- **Early Dec. 2021**: test of cones at IPAG. **Do not pass through the IPAG Go!**
- **Production stopped** but **7000 cones already produced by Savimex.**
 - ➔ Note that all the cones were **OK on the photometric bench**

Problem Origin

- Savimex was not able to reproduce the cones like during the pre-production phase



Picots sur sommet
obtenu par moulage



- Goal: face-to-face size 49.7 ± 0.1 mm. But the 2021 production **is too large by a few 0.1mm**

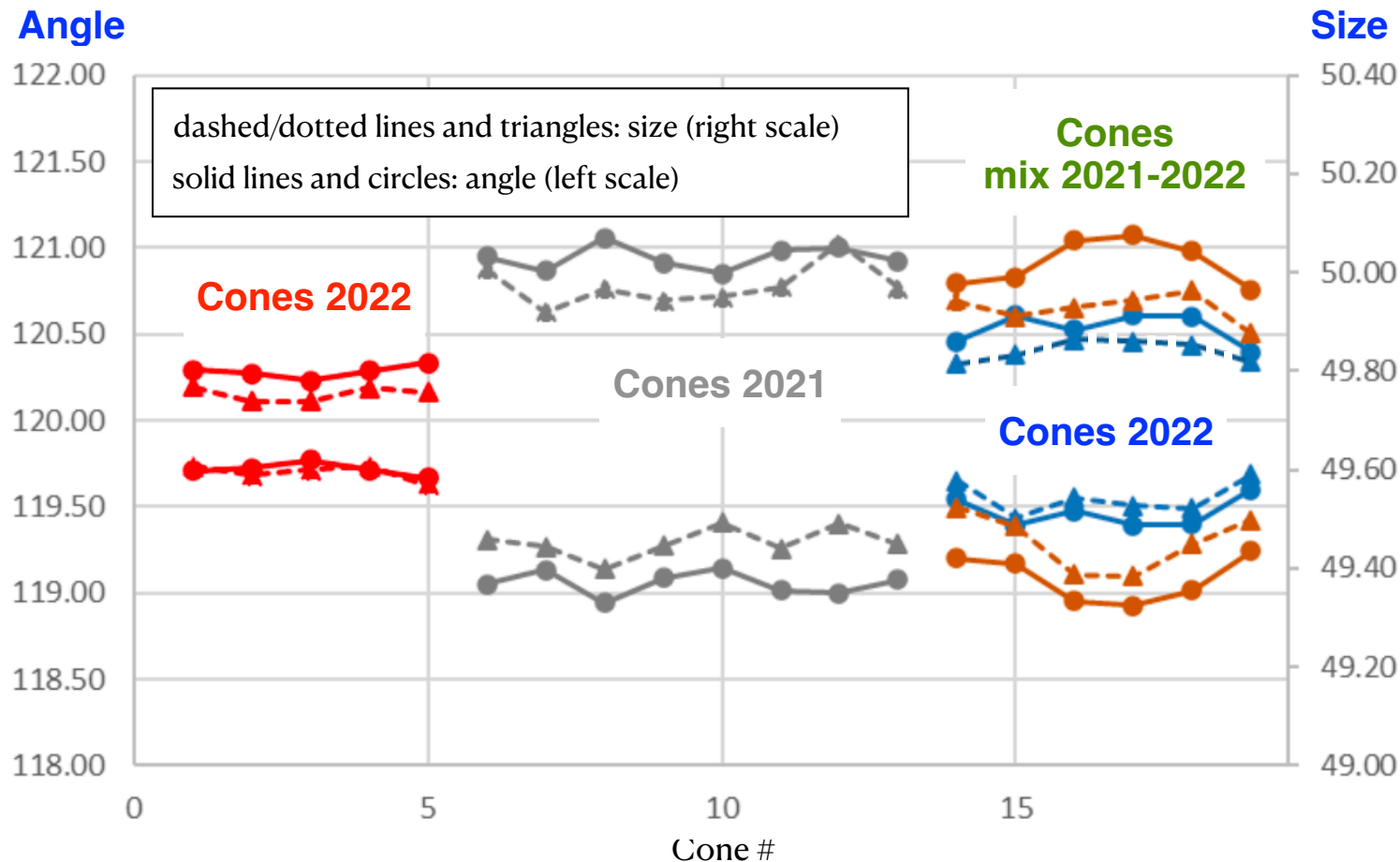
Look for Solutions

- **Contract prolonged by 6 months** until July 2022 to solve the problem
- We propose a better Go/No Go test
- **Savimex pro-active** to find a solution (now the pb was their responsibility...)
 - ➔ Test different temperature, pressure, etc...
 - ➔ Test different plastic recipes, coating procedures, etc...
- Still disagreements between Savimex/IPAG size measurements
 - ➔ **Visit (Laurent J. and me) to Savimex in May 2022**



Look for Solutions

- The results of 2020 never reached again...
- Improvement anyway between 2022 and 2021...
- Test of mixing cones (2 petals of 2022/21 + 1 petal 2021/22)

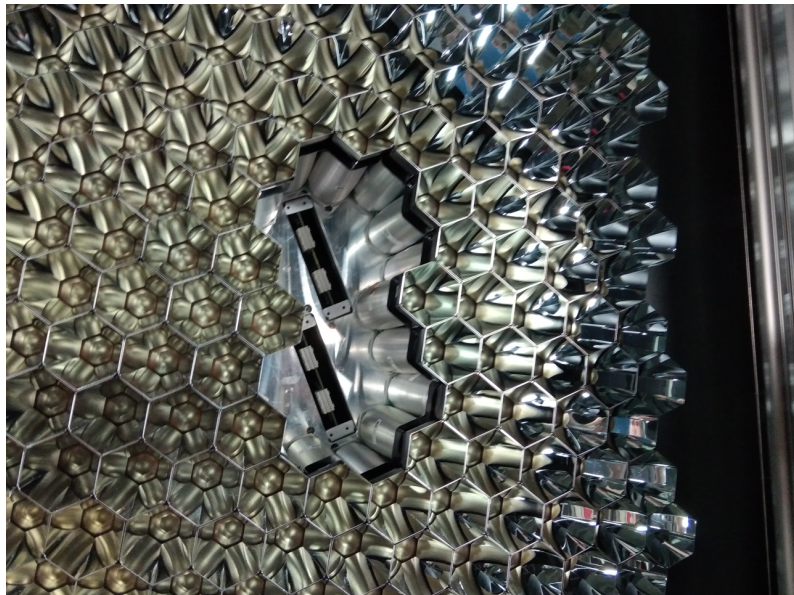


Validation of the new Production

- Mixing cones 2022 with 2021 give acceptable results and save part of the 2021 production
 - ➡ All the cones tested on the photometric bench at SAVIMEX (10% of the prod) **are also tested with their Go/NoGo**
 - ➡ **20%** of these 10% **are also tested with the Go/NoGo** at IPAG.
 - ➡ 10% are tested on the photometric bench (as before)

Delivery, « Live » tests and Future

- Delivery at IRFU in July 2022 (139 cardboard boxes)
- A few cones were mounted on the QM camera with success



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- **The cone production for the 8 NectarCam cameras is done!**
- Winston cones will be regularly tested on the IPAG test bench to check the evolution (if any) of the performances with time

Thanks