



ΠΑΝΕΠΙΣΤΗΜΙΟ  
ΑΙΓΑΙΟΥ

ΠΟΛΥΤΕΧΝΙΚΗ ΣΧΟΛΗ  
ΤΜΗΜΑ ΜΗΧΑΝΙΚΩΝ ΣΧΕΔΙΑΣΗΣ  
ΠΡΟΪΟΝΤΩΝ ΚΑΙ ΣΥΣΤΗΜΑΤΩΝ



Σχεδίαση και Ανάπτυξη Καινοτόμων Ψηφιακών Τεχνολογικών Υποδομών και Υπηρεσιών για την Υποστήριξη και Οριζόντια Παρακολούθηση Αγροδιατροφικών Πρακτικών



ΕΥΡΩΠΑΪΚΗ ΕΝΩΣΗ  
ΕΥΡΩΠΑΪΚΟ ΤΑΜΕΙΟ  
ΠΕΡΙΦΕΡΕΙΑΚΗΣ ΑΝΑΠΤΥΞΗΣ



ΠΕΡΙΦΕΡΕΙΑ ΝΟΤΙΟΥ ΑΙΓΑΙΟΥ



ανάπτυξη - εργασία - αλληλεγγύη

Με τη συγχρηματοδότηση της Ελλάδας και της Ευρωπαϊκής Ένωσης



Seventy-second session  
Agenda item 19

### Resolution adopted by the General Assembly on 20 December 2017

[on the report of the Second Committee (A/72/420)]

#### 72/211. World Bee Day

*The General Assembly,*

*Reaffirming* its resolution 70/1 of 25 September 2015, entitled “Transforming our world: the 2030 Agenda for Sustainable Development”, in which it adopted a comprehensive, far-reaching and people-centred set of universal and transformative Sustainable Development Goals and targets, its commitment to working tirelessly for the full implementation of this Agenda by 2030, its recognition that eradicating poverty in all its forms and dimensions, including extreme poverty, is the greatest global challenge and an indispensable requirement for sustainable development, its commitment to achieving sustainable development in its three dimensions — economic, social and environmental — in a balanced and integrated manner, and to building upon the achievements of the Millennium Development Goals and seeking to address their unfinished business,

*Reaffirming also* its resolutions 53/199 of 15 December 1998 and 61/185 of 20 December 2006 on the proclamation of international years, and Economic and Social Council resolution 1980/67 of 25 July 1980 on international years and anniversaries, particularly paragraphs 1 to 10 of the annex thereto on the agreed criteria for the proclamation of international years, as well as paragraphs 13 and 14, in which it is stated that an international day or year should not be proclaimed before the basic arrangements for its organization and financing have been made,

*Recognizing* the importance of promoting sustainable development in its three dimensions in an innovative, coordinated, environmentally sound, open and shared manner, and the urgent need to protect bees and other pollinators in a sustainable manner.

Imagine a world without bees



THE **PROBLEM** IS **BIG**





**WITH BEES**



**WITHOUT BEES**

# Beekeeping @ Cyclades

The challenge



# Beekeeping and Cultural Heritage



Unique identity



**Συνέντευξη με μελισσοκόμο στην Ερμούπολη**

November 11, 2021 · Cultural Heritage · News



**Επίσκεψη στο μελισσοκομείο στην Αγία Βαρβάρα**

November 4, 2021 · Cultural Heritage · News



**Επίσκεψη στο μελισσοκομείο στην Χαλανδριανή**

November 3, 2021 · Cultural Heritage · News











I HIVE

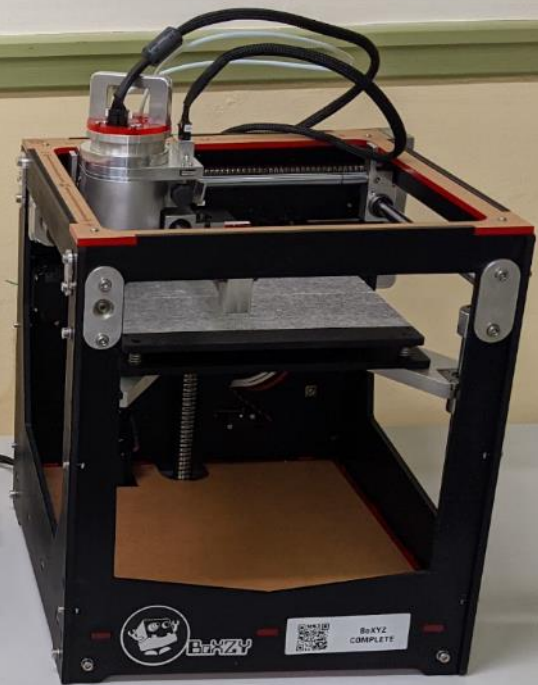
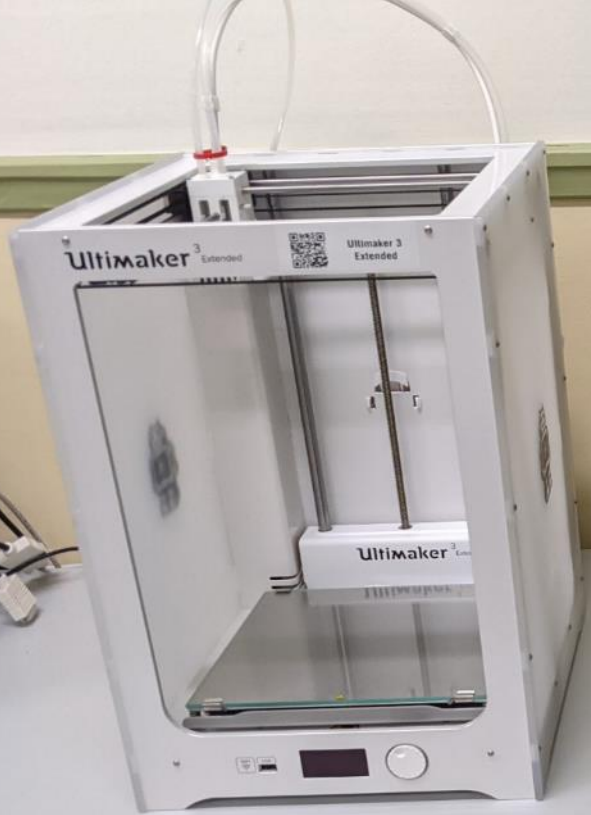


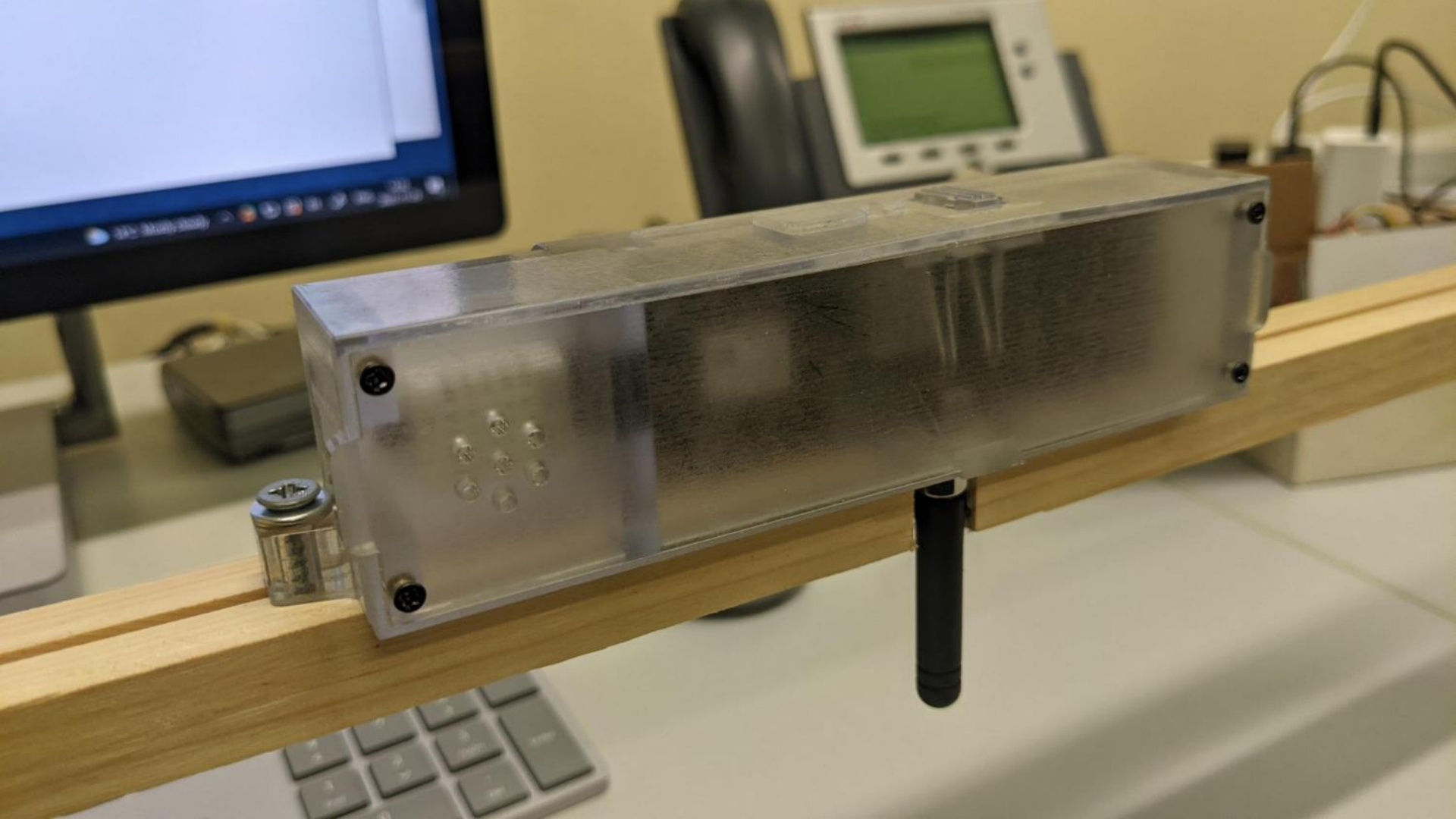
EL  
A372

IOHIVE



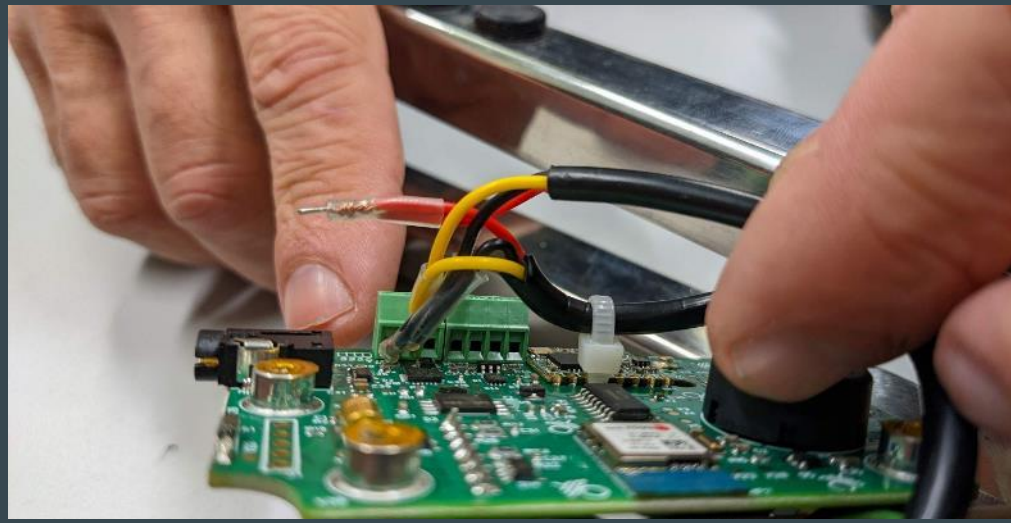
“Internet of Hives”







# Beekeeping scale as Swiss army knife



 aegean-beepbase-004

 **BEEP**  
base v3.3

CE

 Bluetooth ON: 1 sec

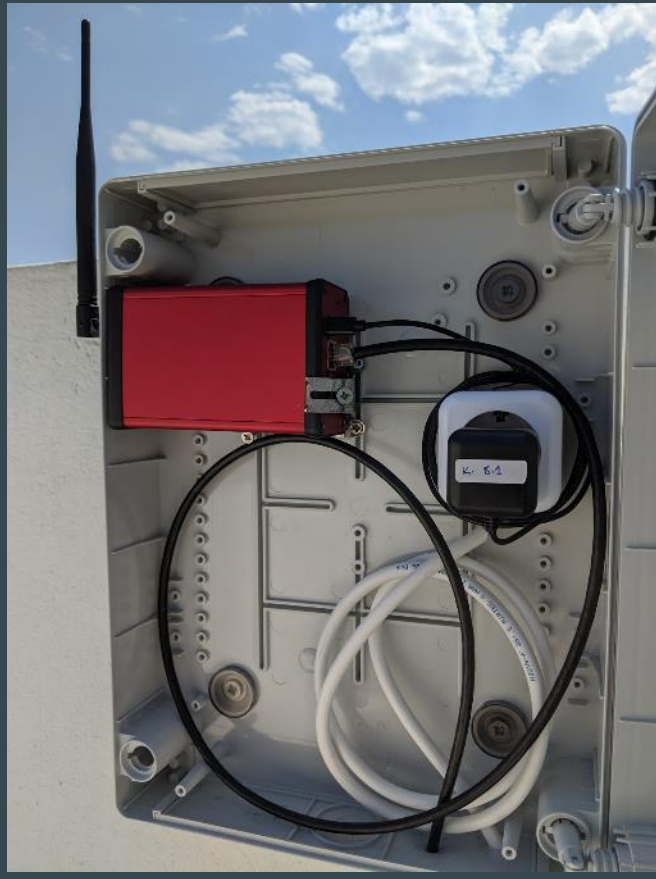
ON: 3 sec 

OFF: 10 sec 

MIC IN 





# Network Installation Gateways at Syros and Paros island









1145/18

# Hive management

## IOHIVE (4 members) ⚙️

**iohive-athens-goras-01** (IOHIVE: Ath... ⋮)

📶 Nov 14, 2022 2:03 PM

🔍 11 days ago

**iohive-paros-pitsikalis-01** (IOHIVE: ... ⋮)

📶 2 minutes ago

🔍 8 months ago

☰ Hive action

**iohive-syros-erikos-01 B-GOOD** (I... ⋮)

🔔 check battery

📶 13 minutes ago

📅 😞 19 days ago

**iohive-syros-isdLab-01** (IOHIVE: ISD-L... ⋮)

🔔 check battery

📶 4 minutes ago

🔍 5 months ago

☰ Device added: aegean-beepbase-005

**iohive-paros-pitsikalis-02** (IOHIVE: ... ⋮)

🔍 8 months ago

☰ Hive action

**iohive-syros-dalezios-01** (IOHIVE: Syro... ⋮)

📶 Aug 6, 2022 12:18 PM

🔍 8 months ago

☰ Device added: kudzu-iohive-002

**iohive-syros-erikos-02 B-GOOD** (I... ⋮)

🔔 check battery

📶 15 minutes ago

😊 19 days ago

**iohive-syros-isdLab-02** (IOHIVE: IS... ⋮)

🔍 8 months ago

☰ Hive action

**iohive-syros-erikos-03 B-GOOD** (I... ⋮)

🔔 check battery

📶 17 minutes ago

😊 19 days ago

**iohive-syros-dalezios-02** (IOHIVE: Syro... ⋮)

📶 Aug 6, 2022 12:19 PM

🔍 8 months ago

☰ Device removed: kudzu-iohive-001

**iohive-syros-modestos-01** (IOHIV... ⋮)

📶 12 minutes ago

😊 6 months ago

**iohive-syros-modestos-02** (IOHIV... ⋮)

📶 9 minutes ago

😊 6 months ago

## IOHIVE-AUA (2 members) ⚙️

[HOOR](#)
[DAY](#)
[WEEK](#)
[MONTH](#)
[YEAR](#)
[SELECTION](#)
 Relative

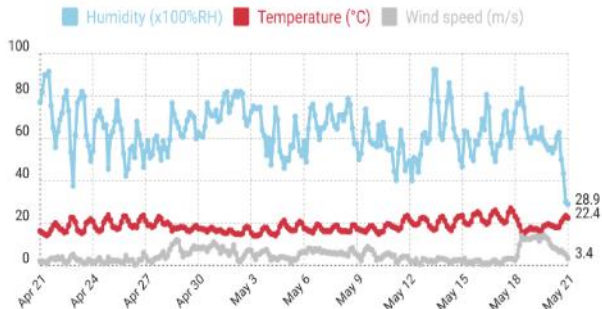
[< THU 21 APR 2022 - SAT 21 MAY 2022 /](#)

iohive-syros-erikos-01 B-GOOD - aegean-bgood-01

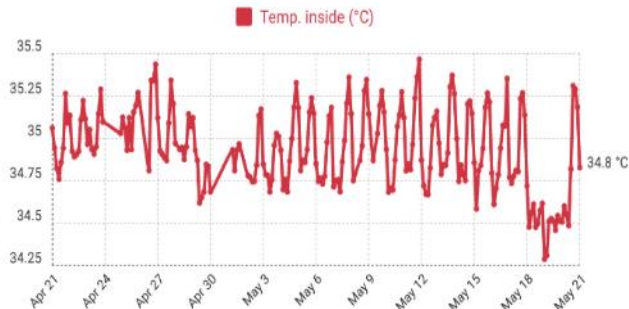
## Measurements: iohive-syros-erikos-01 B-GOOD - aegean-bgood-01



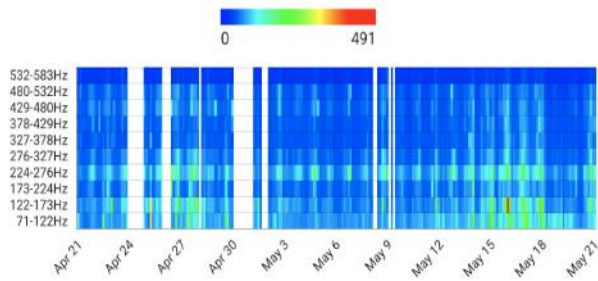
WEATHER @ IOHIVE: SYROS-GALISSAS-01 (FROM WEATHER SERVICE)



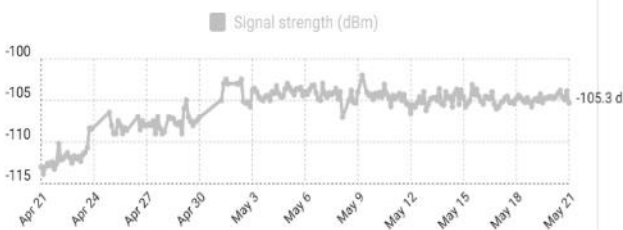
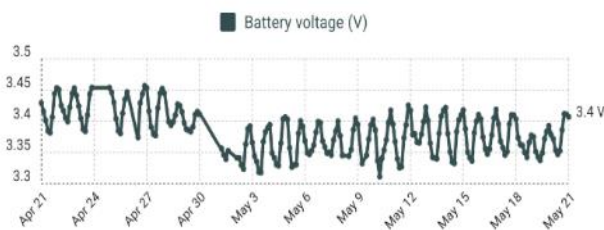
MEASUREMENTS (INTERVAL: 3H)



SOUND MEASUREMENTS



DEVICE INFO



# Alerting mechanism



Hives



Inspections





Data





Alerts


ALERT RULES


 First: Sun, Nov 20, 2022 6:19 AM  
Last: Sun, Nov 20, 2022 10:04 AM  
During 4 hours


 iohive-syros-e...  
aegean-bgood02  
IOHIVE: Syros-Galissas-01


 check battery


 waarde Batterijvoltage = 2.7V  
( $\leq$  3V)


 First: Sun, Nov 20, 2022 6:32 AM  
Last: Sun, Nov 20, 2022 10:02 AM  
During 4 hours


 iohive-syros-e...  
aegean-bgood03  
IOHIVE: Syros-Galissas-01


 check battery


 waarde Batterijvoltage = 2.7V  
( $\leq$  3V)


 First: Mon, Nov 14, 2022 11:01 AM  
Last: Sun, Nov 20, 2022 10:00 AM  
During 6 days


 iohive-syros-i...  
aegean-beepbase-001  
IOHIVE: iSD-Lab


 check battery


 waarde Batterijvoltage = 2.8V  
( $\leq$  3V)


 First: Sat, Nov 19, 2022 2:06 PM  
Last: Sun, Nov 20, 2022 9:51 AM  
During 20 hours


 iohive-syros-e...  
aegean-bgood-01  
IOHIVE: Syros-Galissas-01


 check battery

 waarde Batterijvoltage = 2.8V  
( $\leq$  3V)

 Sun, Nov 20, 2022 7:50 AM  
2 hours ago

 iohive-syros-e...  
aegean-beepbase-003  
IOHIVE: Syros-Leia-01

 check battery

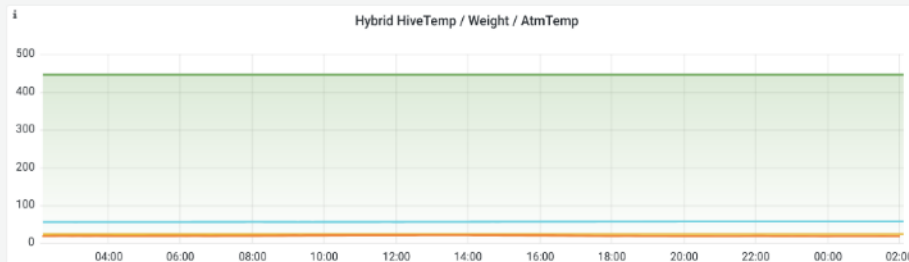
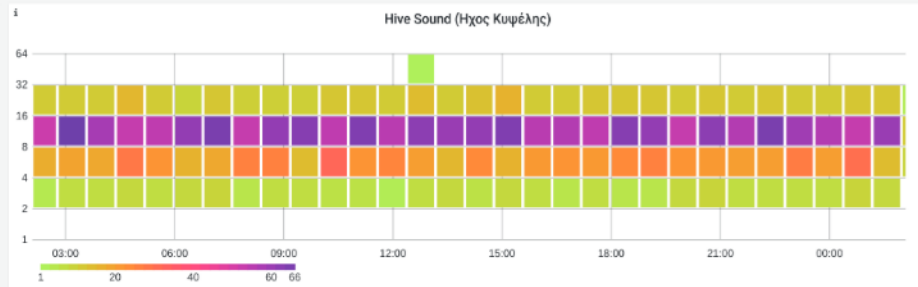
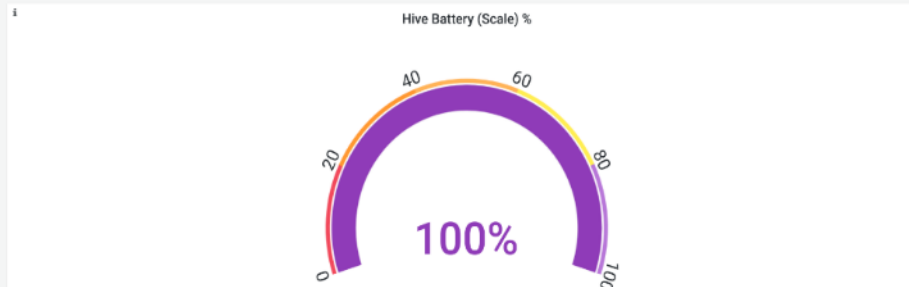
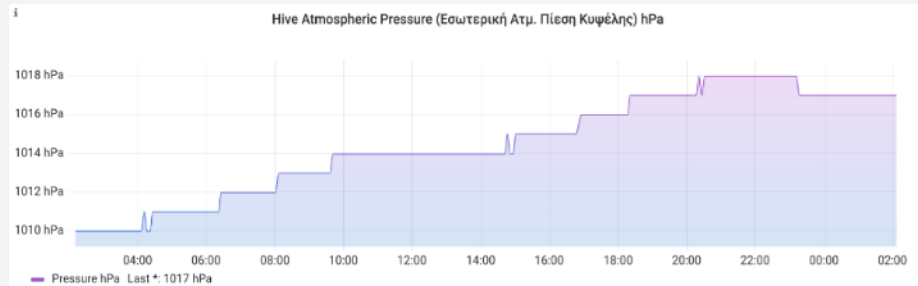
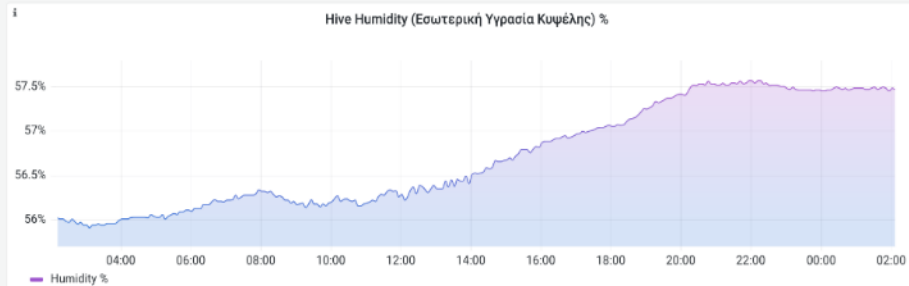
 waarde Batterijvoltage = 2.9V  
( $\leq$  3V)



# Extra data visualization

BeepBase / aegean-beepbase-001

Last 24 hours



### Hybrid Hive/Weather Table Template

Time	Temperature °	Humidity %	Pressure hPa	Rain mm	Irradiation W/i	DewPoint °C	Battery V
2022-11-19 02:...	18.8	92.8	1001	0	0	291	4.15
2022-11-19 02:...	18.9	92.4	1001	0	0	291	4.15
2022-11-19 02:...	19	92	1001	0	0	291	4.15
2022-11-19 02:...	19.1	92	1001	0	0	291	4.15
2022-11-19 02:...	19.1	92.2	1001	0	0	291	4.15

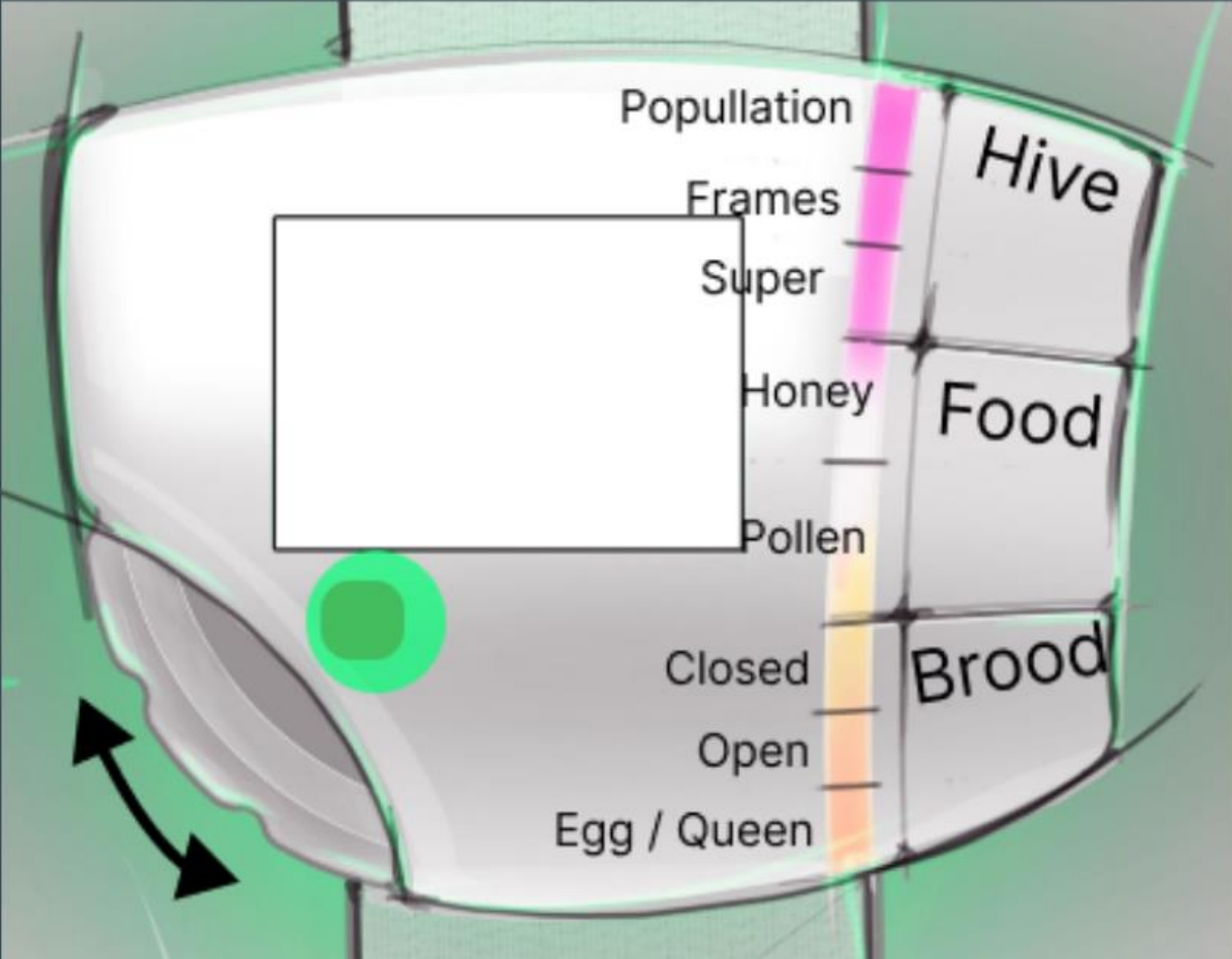
# Inspections





## ← Inspections iohive-syros-modestos-02

Inspections	May 19, 2022 11:46 AM	May 7, 2022 9:00 AM	May 4, 2022 8:58 AM	Apr 24, 2022 12:30 PM
Total impression	😊	😊		😊
Needs attention	No	No		No
Notes			Device added: aegean-beepbase-007	Newly introduced
Remember				
Notification date				
<b>— Bee colony</b>				
Bee colony > Brood > Frames with brood	10	10		8
Bee colony > Brood > Presence	Yes	Yes		Yes
Bee colony > Queen > Presence	Yes	Yes		Yes
Bee colony > Size > Frames with bees	20	14		10
<b>— Food</b>				
Food > Stock > Honey	Yes	Yes		Yes
Food > Stock > Honey > Number of frames	5	4		2
Food > Stock > Pollen	Yes	Yes		Yes
Food > Stock > Pollen > Number of frames	2	1		0.5



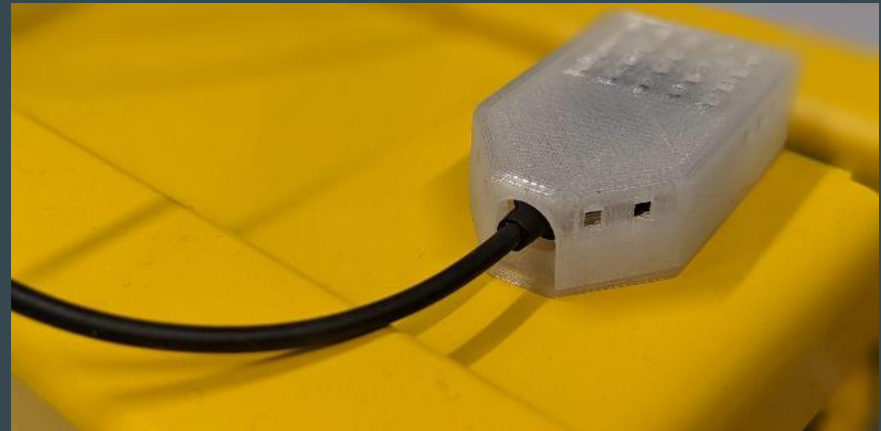
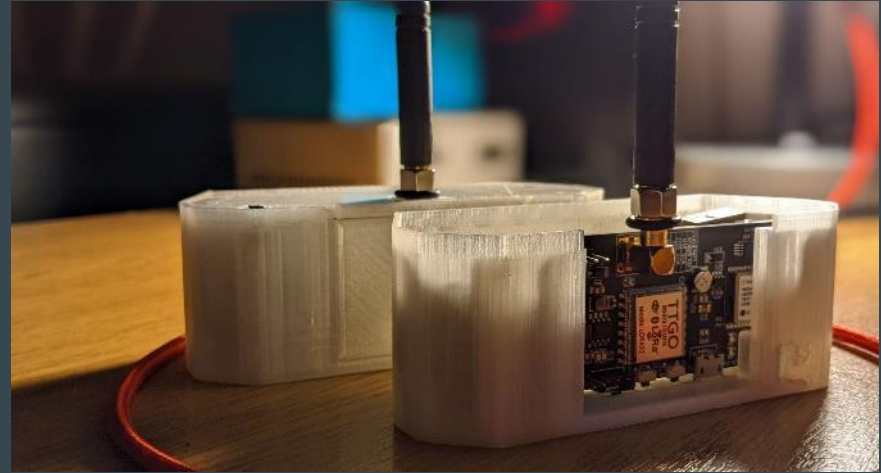
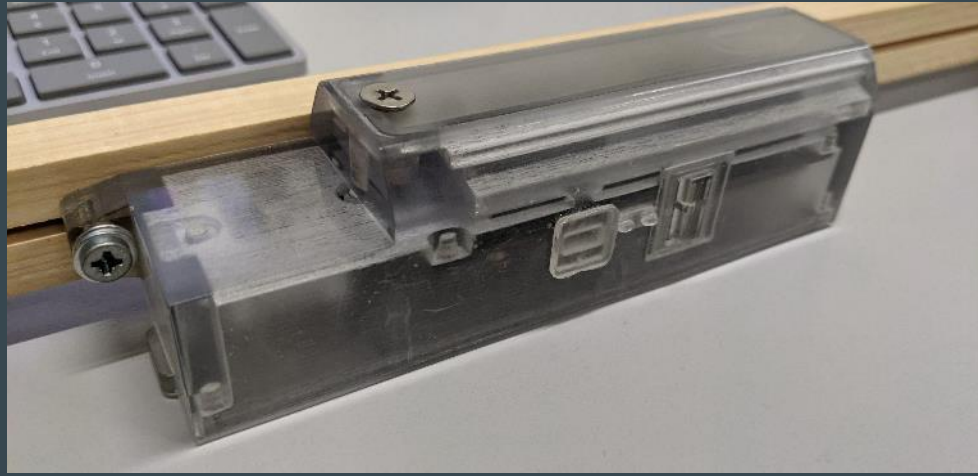
Concept development

# IOHIVE wearable: concept development





# Systems prototyping

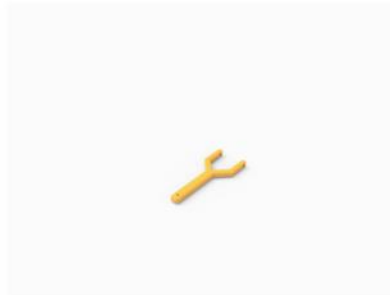


# Repository with 3D printable assets (~40 assets)



Home > Digital Repository > 3D assets

## 3D printable assets





# Bee Queen Cage IOHIVE



## Designed by:

Nikolaos Politopoulos  
npol@aegean.gr

## Summary

Bee Queen Cage.

## Parts

1. Inner - [Download](#)
2. Outer - [Download](#)

## Print Settings

Printer: Flashforge Guider 2S

Material: PLA

Rafts: On

Supports: Auto

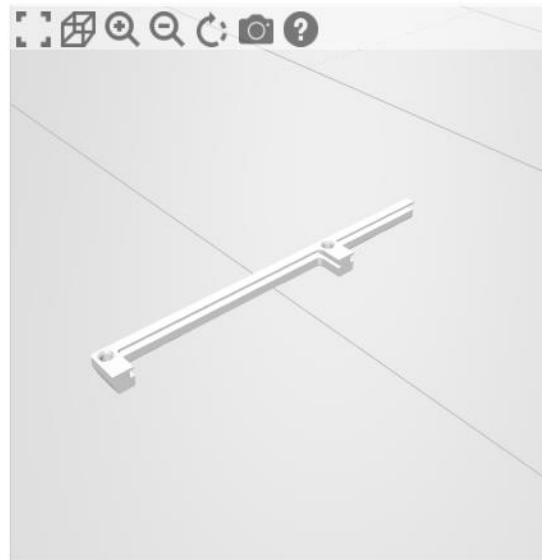
Resolution: Standard

Infill: 15%

## Post-Printing

Insert the inner part into the

# Hive Modular Door IOHIVE



## Designed by:

Nikolaos Politopoulos  
npol@aegean.gr

## Summary

Hive Modular Door.

## Parts

1. Feeder Cap - [Download](#)
2. Gate - [Download](#)
3. Seal+Airflow Cap - [Download](#)
4. Hive Modular Door L - [Download](#)
5. Hive Modular Door R - [Download](#)

## Print Settings

Printer: Flashforge Guider 2S

Material: PLA

Rafts: On

Supports: Auto

Resolution: Standard

Infill: 15%

## Post-Printing

Print and assemble the door according to model.

# Other activities

**BEEP**

Κυψέλες    Επιθεωρήσεις    Δεδομένα

Αναζήτηση...

**IOHIVE: Paros-Kostos-01**

- iohive-paros-pitsikalis-01: 13 λεπτά πριν, 4 μήνες πριν, Hive action
- iohive-paros-pitsikalis-02: 4 μήνες πριν, Hive action

**IOHIVE: Syros-Galissas-01**

- iohive-syros-erikos-01 B-GO...: 7 λεπτά πριν, 23 μέρες πριν
- iohive-syros-erikos-02 B-GO...: check battery, 8 λεπτά πριν, 23 μέρες πριν
- iohive-syros-erikos-03 B-GO...: check battery, 13 λεπτά πριν, 23 μέρες πριν

Language menu:

- Nederlands
- Deutsch
- English
- Français
- Ελληνικά
- Italiano
- Norsk bokmål
- Português
- Română
- Spanish
- Suomi
- Svenska

Αναζήτηση...

- Αποικία μελισσών - μελίσι
  - Πληθυσμός
  - Χώρος
  - Κηφήνες
  - Διαίρεση αποικίας κόψιμο μελισσών
  - Ενωμένα μελίσι
  - Προστέθηκαν μέλισσες
  - Απώλεια
  - Αφαίρεση
  - Δραστηριότητα
  - Χαρακτηριστικά
  - Πρόληψη σμηνουργίας
  - αντικατάσταση κηρήθρας
  - γόνος
  - Βασίλισσα
  - Μέγεθος
- Τροφή
- Διαταραχή
- Καιρός
- Παραγωγή

## WORKER BEE

### ΕΡΓΑΤΡΙΑ ΜΕΛΙΣΣΑ


**Worker bees** are female bees that cannot be fertilized. They are responsible for all the work of the hive (honey production, feeding of the queen, larvae and drones, cleaning, etc.).

Οι **εργάτριες μέλισσες** είναι θηλυκές μέλισσες που δεν μπορούν να γονιμοποιηθούν. Είναι υπεύθυνες για όλες τις εργασίες της κυψέλης (την παραγωγή μελιού, την εκτροφή της βασίλισσας, των προνύμφων και των κηφήνων, την καθαριότητα κλπ.).

[iohive.aegean.gr/glossary/](http://iohive.aegean.gr/glossary/)

IOHIVE

f t y



By a multidisciplinary approach, let's  
discover the most important “worker” of  
nature, the bee!

