Newsletter January 2017

Dear readers,

Many months have passed since our last Newsletter from November 2015. We regret not having informed you earlier about the project's development, but we wanted to wait until bigger news arrive. Last year we were working in the background on technical issues together with those partners who already have an eHive installed. Beginning with this newsletter, we want to deliver several concrete results making 2017 a productive year.

Status of the eHives

Last year we attempted to maximize the number of working eHives. Unfortunately, that effort was not yet successful on all locations, though in most cases the present issues are easy to solve. At the moment, we are in contact with the persons in charge and try to fix the technical difficulties.

Our hardware engineer Jonas and our software developer David have analysed all occurring problems regarding the non-functioning eHives and have worked out an individual approach on the problem's solution.

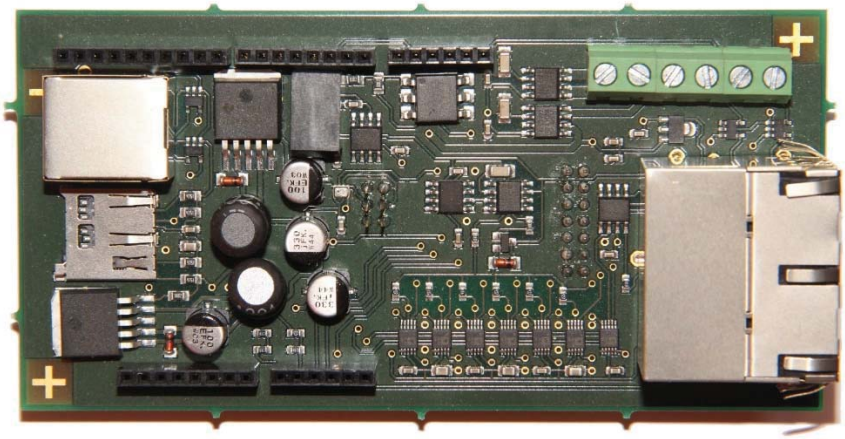
If you have any questions regarding this task or if the problem cannot be solved as easy as we hope, stay in contact with us so that we can work on a solution together. The operation reliability of every single eHive is our highest priority at the moment.

Teaching resources

Until the 28th of February 2017 materials for school lessons in many different subjects (computer science, chemistry, biology, data processing, math, ect.) and in different languages will be published on BeeBIT's website (beebit.de). These can be downloaded for free by everyone whereas the sample solutions can only be downloaded if you are a teacher and have a verified account (for which you must register). That restriction was set up to protect the solutions from inventive students.

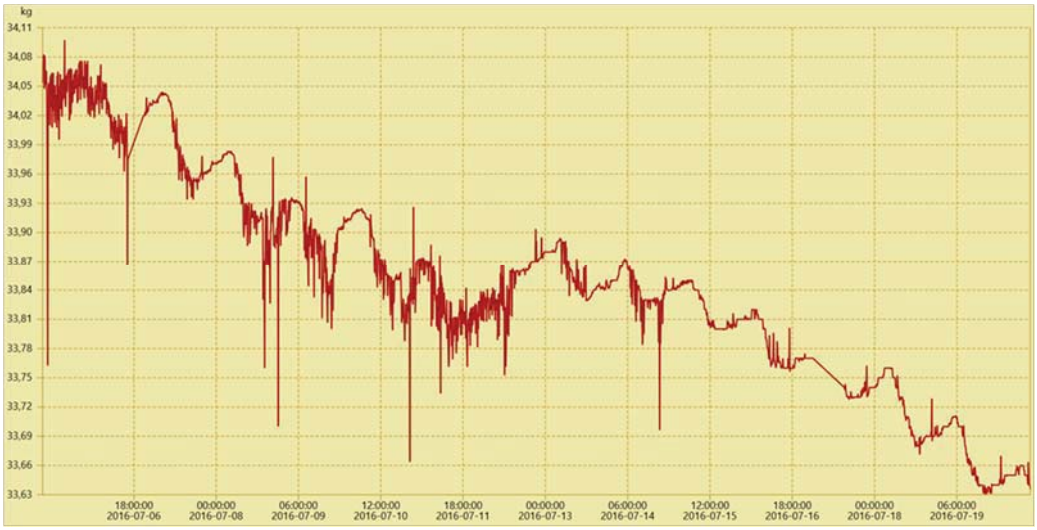
The site will also allow to filter the resources to match specified criteria, e.g. target group, available languages and subject.

Production of the circuit board



As mentioned in the last newsletter, at the beginning of 2016 our self-developed circuit board was kindly manufactured by Schneider Electric free of charge. The board mainly is used to provide 6 different voltage levels which are necessary for properly operating the sensors. Furthermore, it converts analog signals into digital ones. This must be done quite precisely because small differences result in huge aberrations. Regarding the scales for example, a voltage drift of 0.000002V is equivalent to a 10g difference in weight. Furthermore, several sensors for system surveillance are included, such as charging voltage, two current sensors and the barometer. 13 of the 24 produced circuit boards are in use now. 8 of the remaining ones are anticipated to be sold in the coming month and years.

A peek at some interesting data from the eHives



Weight readings, eHive DEU-FKG-1

Weight readings, eHive AUT-GSC-1

Both diagrams contain data from Summer (June/July), the main harvest season of the honey bee. First, a short description of the diagrams above:

In both charts the weight of the hive is plotted (vertical axis) and they both contain the data of two weeks (horizontal axis). The chart of the first hive (FKG) reveals a steady decrease of about half a kilogram in two weeks. During the same time interval, the weight of the second hive (GSC) rises by five kilograms. Interestingly, the weight always decreases during nighttime and the morning hours, while at the end of the day, the peak weight is higher than the day before.

A short explanation of these charts: Looking only at the GSC hive, the nightly weight decrease shows that the bees also need nourishment during this time. Therefore, they use some of the collected honey and the weight of the hive decreases. In the morning, many of the bees leave the hive for collecting nectar. This results in a steep decrease in weight and even allows an estimate of the number of field bees.

But this doesn't explain the decrease in weight of the FKG hive. In fact, the data results from an intense infestation of the colony with varroa mites. This has two severe consequences for the colony. Firstly: The total number of bees decreases, since varroa mites mostly affect the brood and infested bees prefer to die outside of the hive to prevent passing the mites on to other bees. Secondly, the varroa mite severely damages the wings of the bees, resulting in a lower number of field bees. Thus, only very few nectar is acquired.

Therefore, the continuous decrease in weight of the FKG hive strongly suggests an infestation with varroa mites.

These charts are highly interesting from a scientific point of view and they show as well the advantage of having comparable E-Hives.

Our data poses a lot of interesting scientific questions. We invite you to work with the data of the eHives to discuss questions like the ones above. If you have any questions regarding this, just contact us.

Renewable Energy Day

Our booth at Würzburg Market

In conversation with visitors

To present our project to the wider public, multiple members of BeeBIT e.V. attended the Renewable Energy Day on 30.04.2016 in Würzburg. At this science fair, multiple projects on nature, technology, and sustainability were presented. The BeeBIT booth attracted visitors with a honey tasting, a model of the eHive, multiple posters, a short feature film about the project, selected school papers by senior graders and, thanks to support by the Environmental Agency of Würzburg, a memory game for children on bees.

Despite the difficulty of presenting the project and its possibilities in education and research to the visitors, we had a lot of fascinating tanks.

A special Thank You to the senior graders from FKG and DHG high schools that contributed to the booth, and to the Environmental Agency.

Rental eHive

From Summer 2017 on, it will be possible to rent an eHive from BeeBIT for one bee season (approx. February to October). If you are interested in this offer, just contact us.

Buy an eHive

You want to be a part of the network? It is possible to buy an eHive for your organization. If you are interested, just contact us.