A heating case with HeatBox-electrics is a sustainable investment and practical protection of the environment:

Regarding, that right-tempered batteries have a much higher loading capacity than cold ones, they wear out more slowly – re-purchase is required after 2-3 times as much cycles as normal.

That means less costs for new batteries and a significant reduction of battery waste, which has to be collected and recycled costly or disposed of in an environmentally acceptable manner.

Currently there are approx. 400.000 model pilots, 150.000 of which are organized in clubs.

An average battery consumption rate of 5 pcs., 400 gr. each, results in a burden of waste of approx. 800 t p.a. – which ideally can be reduced to less than 250 t p.a.

These 800 t of battery waste matches about 40 rig transports of hazardous materials with a total length of 660 m – more than half a kilometre of battery waste at a height if 2,5 m and a width of 2,0 m. All this only calculated only of registered users, only in Germany and exclusive of professional use.

The development of the HeatBox

**(Bild: 01 Vfd Very First Development) (zeigt alle Stadien )**

Oben: First try, installed on a stripboard (rechts) with an Ardurio-Mini 328 next to an display

Unten: Also installed on a stripboard: improvement, based on the first try next to an external CPU-circuit board with an Atmel 328P installed (links). Next to this is the first Beta-prototype´s mainboard (only 15 pcs. were build)

**(Bild: 02 v09 HeatBox\_v0.9-beta (1))**

Development of the Beta-Version of the circuit board v0.9, which was delivered as Kit, customers had to solder on some parts themselves.

The display too had to be connected manually by the customer by soldering the broadband cable

**(Bild: 06 Größenvergleich 1) / (Bild: 07 Größenvergleich 2) / (Bild: 08 HeatBox\_v0.9-beta (2))**

Size comparison

**(Bild: 09 HeatBox\_v0.9beta)**

Built-in circuit board

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**(Bild: 10 Rote Platine HeatBox\_PCB-v1.0)**

First official Roll-out (v1.0) on red circuit-board.

Version 1.0 and 1.1 could be extended by an additive circuit-board for the “Extension Port” to realise a detection for external power supply system and corresponding measurement as well as controls for additional fan for better convective flow of heat.

**(Bild: 11 Mustereinbau\_ v1.0 (1)) / (Bild: 12 Mustereinbau\_ v1.0 (2))**

Prototype installation of HeatBox v1.0

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**(Bild: 13 v1.21)**

From Hardware-revision v1.21 the components of Extension Port were built-in the Mainboard and inherent part of basic function. Therefor the mainboard was enlarged a little to provide space for additional necessary parts and circuit points.

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The NG was a mere experimental board, that never went into production

**(Bild: 03 mit Display HeatBox-NG\_First\_Beta(2015))**

Heatbox\_NG First Beta (2015)

**(Bild: 04 Gruene Platine HeatBox-NG\_Second\_Beta(2015)(2) )**

HeatBox-NG Second Beta (2015)

**(Bild: 05 gruene Platine Display HeatBox-NG\_Second\_Beta(2015)(1))**

HeatBox-NG Second Beta (2015)

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**(Bild: 14 Heatbox v1.50 –compact)**

After v1.21 mainly the design was optimized, which led to v 1.50 “compact”. All versions older than 1.50 are now recorded as “Legacy”.

The compact series is distinguished mainly by its mainboard´s small size, which doesn´t overlap the display – not even the two-lined 2x16 character display.

\*Anmerkung für denjenigen, der die Seite baut: Bilder 15- inkl. 18 nebeneinander postieren, wenn möglich)

**(Bild: 15 hb-COMPACT\_Adapter für v 1.51 (3) / (Bild: 16 hb-COMPACT\_Adapter für v 1.51 (4)) /**

**(Bild: 17 hb-COMPACT\_Adapter für v 1.51 (5))**

For costumers, who prefer the four-lined 4x16 LCD, we´re offering the adapter board, which enables, likewise the 2x16 LCD, to realize the sandwich architecture, to economize wiring.

**(Bild: 18 HB\_COMPACT\_2x16\_v151\_c24\_)**

With v1.51 came an optional Version, the “c24”, for running the HeatBox with 11-24 V. All former Versions only were compatible with 11-14,9 V supply voltage.

**(Bild: 19 HeatBox\_v1.60\_12-24v)**

Since v1.60 the HeatBox was designed to deal with supply voltage from 10,8V to 29V.

**(Bild: 20 HB\_v170\_mit\_Verpolungsschutz)**

Along with v1.70 came for the first time, on a similar sized mainboard, reverse battery protection and even more efficient power amplifier, wherefore even voltage reversal could not harm the power supply.

To reduce the installing work for the customer to a minimum, in this stadium of development ready-made cable sets are provided, so even a lay person in terms of electronical knowledge can easily assemble a HeatBox to a complete heating case.

Since 2016 customers, who lack the time or the ability to assemble the case themselves, have the opportunity to purchase an assembled and fully working Case, which can be realized in cooperation with ELTZ.