

# Record Report

## Scope

This document reports the successful effort to improve the current „LAND - MENS 4000 METER STANDING START (Single Rider)“ record of Fred Markham from 28-Sept-1984 as listed under <http://www.whpva.org/land.html#250> with a new record **time of 3 min. 40,33 sec** . Being aware that the absolute record of Robert Lafleur was not reached, we however claim that the performance is significant since it was achieved on a velodrome (conforming to UCI standards) and not on an big circuit or a straight track.

While many of the HPV records were set in seclusion on very far off desert roads or expensive testing grounds, public velodromes offer a great chance to bring the HPV spirit to a race-responsive audience in the cities. This idea was already picked up by the WRRRA who ratifies only records established with non- or partially faired HPVs. Separate Records are kept for Straight line and Velodrome courses being aware that equal performance is harder to reach in the second. Just an example: Given this specific case in curves at a speed of 70 km/h HPV and rider were exposed to approx. 11.5m/s centrifugal acceleration resulting in a charge of 1.47 times their weight and requiring an extra effort of more than 15% of power for the record overall.

We therefore refer to point 3.2.2.17 *Special Record Events* of the competition rules stating that members are encouraged to submit applications for new record categories to the WHPVA and significant achievements may be recognised as new record classes. We suggest that the record shall be classified as follows: Land vehicle (3.0); Open: Any human powered land vehicle (3.1.7.1); Male Rider (3.2.1.4); 4 Kilometre Speed Trial with standing start (3.2.2.5) **in a velodrome**.

## Date, time, location of attempt

The attempt was accomplished on the **26<sup>th</sup> of august 2012** around **4:00 pm** on the „**Offene Rennbahn Oerlikon**“ (which means: unroofed Oerlikon velodrome ) in **Zürich, Switzerland** and was part of the 100 year anniversary celebration of the honourable site.

## Vehicle and rider

The record vehicle is called „**Peregrin on Birk**“ (or short PoB) which alludes to the *Birk Comet* production frame carrying the *Peregrin* fairing. The fairing was **constructed by Charles Henry** and built in 2008/9 in collaboration with *Birkenstock Bicycles* in Jona. The bike was **ridden by Charles Henry** (of Zürich, born 1960) who is equally applying for the record. He was assisted by Robert Stolz during the event.

More details and pictures of the vehicle can be found on <http://www.velomobil.ch/ch/de/node/22> .

## Course measurement and accuracy

The nominal length of a lap at Oerlikon as indicated by the outer perimeter of the black line (*Messlinie*) is 333,33 m. Because practicing runs had shown that riding a vehicle beyond 70 km/h at the *Messlinie* bears a risk we decided to use the track above the solid blue line (called *Stehelinie*) for all laps except the first. The length of this line was determined as follows:

- The distance between the *Messlinie* (black, 333.33 meter) and the *Stehelinie* was measured at 3 different places in the curves always yielding: 274 cm (+1/-0 cm)
- The banking of the curves is published with 44.5°
- The minimal horizontal distance of the lines is:  $\cos(44.5^\circ) * 274 \text{ cm} = 195.43 \text{ cm}$ .
- The additionally covered distance per lap when running above the *Stehelinie* is at least:  
 $2 * \text{Pi} * \text{radius} = 2 * 3.14159 * 1.9543 \text{ meter} = 12.280 \text{ meter}$



- Because 11 of 12 laps were driven above the *Steherlinie*, an extra distance of  $11 * 12.28$  Meter = 135.08 Meter results.

Comment: The „measuring method“ described may not be very accurate but it surely underestimates the length of the track what is not in favour of the applicant. If this point should turn out to be the only obstacle for registration we would try to get a land surveyor to do the tricky task.

### **Evidence of timer calibration and accuracy**

In Order to be able to use the official time keeping equipment start- and finish line could not be moved and I had to complete 12 laps for the measurement.

- The time consumed for the additional 135.08 meters (see above) was calculated pro rata using the time for the last 1000 meters:

$$t_{\text{additional}} = t_{\text{last km}} * (135.08/1000) = 54.336 * 135.08 / 1000 = 7.340 \text{ sec.}$$

- The record time is the recorded time (over 12 laps) minus the additional time:

$$t_{\text{record}} = t_{\text{measured}} - t_{\text{additional}} = 03:47.672 - 00:7.340 = 03:40.332$$

### **The attempt and environmental condition**

After being seated in the vehicle I locked the fairing and was pushed by my assistant Röbi Stolz to the starting line. Jürg Affolter (also a member of Future Bike) held the vehicle still until I started the run self-propelling by crossing the starting contact line on the concrete ground.

The first lap was driven above the black line (*Messlinie*: 333,33 m). For all the other laps (11) I used the track above the solid blue line (*Steherlinie*) without crossing it at any time. The track-surface was dry and ambient temperatures were around 25°. I used my normal silver coloured street helmet (Brand: MET, standard: EN1078) to protect me from injury.

### **Wind**

The wind speed could not be measured reliably with a single device due to very different levels around the track. The wind above the velodrome blew from north-west with speeds clearly above 6 km/h. Riding a fully faired, single track vehicle on a small round track at high speeds requires an even and direct drive. Unlike on ample straight courses leaving the race line can't just be compensated by taking a slightly different track. but rather results in extra tire friction in the next curve. During the run there were several gusts seizing the vehicle and displacing it away from the straight corse as can be seen on video

<https://www.youtube.com/watch?v=jizOIGUpUjY&feature=plcp>

We bring forward the argument that strong and particularly gusty wind did not act in favour to break this record. Higher speeds could have been achieved under calm conditions. (the vehicle only needs approx. 200 watts to maintain a constant speed at 74 km/h on flat ground as has been proved during the first two hours of the 6 hours run at the DEKRA-Rekordwochenende 2012).

### **WHPVA observers**

3 person were chosen as WHPVA observers. They all are members of the Verein *Future Bike* (FB) and have wide experience in HPV Racing:

- Christian Precht:
  - editor of *Info Bull*; co-organiser of race events (Interlaken), member of FB board
  - observing: the starting procedure, start of the south curve
- Rosmarie Bühler:
  - multiple former wr holder and wc winner, member of FB board
  - observing the whole north curve
- Francesco Russo:

- current wr holder over 1-hour
- observing the end of the south curve

### **Annex**

- Certificate of all observers stating that the attempt has complied with the WHPVA rules (Edition: October 2009) and that this report is correct.
- Copy of the original printout of the automatic time measuring equipment signed by the time keeper, showing the 2 km and 3km intermediary time and the overall time.
- A picture of the vehicle.
- A picture of the helmets certificate

applicant:

C. Hüny

place:

Zürich

date:

22.10.2012