The H-graph

The H-graph is based on information relating to velocity and frequency. Although it is usually sufficient to have one element of data for every 100 m, GPS data allows us to have one element of data for every 10 m.

The calculations allow us to obtain eight parameters, shown in *Table 02*.

Table 02 provides an example of the Racice K1 Men 1000 m FA GER 2017 race. For purposes of brevity, the only points shown are those at 200 m and 210 m. The percentage variations between minimum, maximum and the average figures calculated between 50 m to 1000 m are shown in blue.

Table 02

.	E/s	Force	Adv	n100	T100	Vel.	Pot	Spm
200 m	203;	73,2;	2,78;	36,0;	19,60;	5,10;	373;	110,1;
210 m	201;	72,4;	2.78;	35,9;	19,73;	5,07;	367;	109,3;
%	31	53	27	27	31	31	102	61
average	179	67	2,68	37,4	*20,83*	4,824	326	*108,6*

The T100 parameter is an immediate indicator of velocity: at any point in the graph, it shows the time that it would take to travel 100 m at that current velocity.

The n100 parameter shows the number of paddle strokes performed in 100 m at the current numerical value of advancement (Adv).

n100 = 100 / Adv

T100 = 100 / Velocity

E/s = energy / stroke, an example of which is provided for at 200 m:

E/s = Force * Adv = 73,2 * 2,78 = 203,4

Force = 5,393 * Vel^2,6

To avoid further calculations, I invite you to use my free software PaceZero, provided. The archive gives you free access to a large number of races – these are kayak races that have been transferred from the ICF GPS data archives and adapted to fit the software's format. The ICF GPS data has been taken in the years 2016 and 2017.You can also insert and compare your own data confidentially and off-line from your computer.

II Free Software PaceZero

shows the software's home screen.

You can download the software by clicking this Dropbox link:

https://www.dropbox.com/sh/vwry1k16qzor17t/AACj2TJx-RIyXP4G4aNYGS9La?dl=0

Click the "Step-1" icon to quickly perform the calculations for the video analyses shown in Chapter 5 of the book [1].

Click the "input from csv table…" icon to import the data from your GPS systems.

Click the "manual entry" icon to input the data item by item.

Click the "H-Graph" icon to manage your graphs.

Click the "1-Empty Graph" icon to display the image shown in Figure B
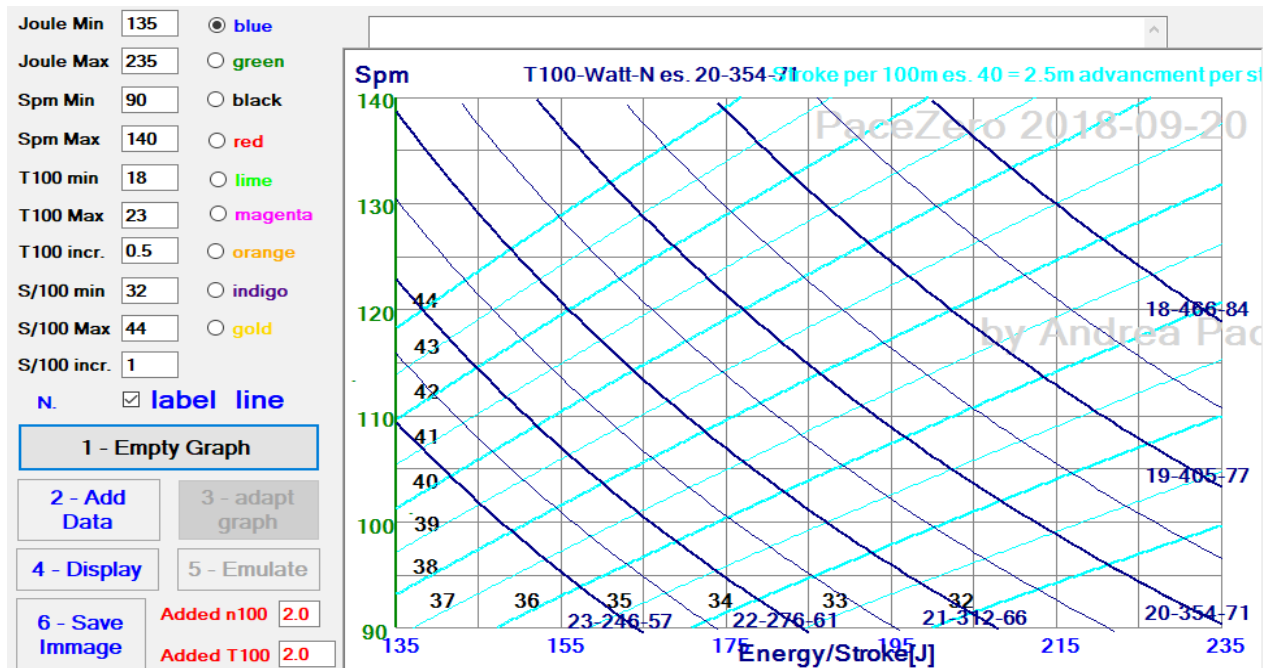

Fig. B

Click the "2-ADD Data" to select the race you wish to display on your screen.
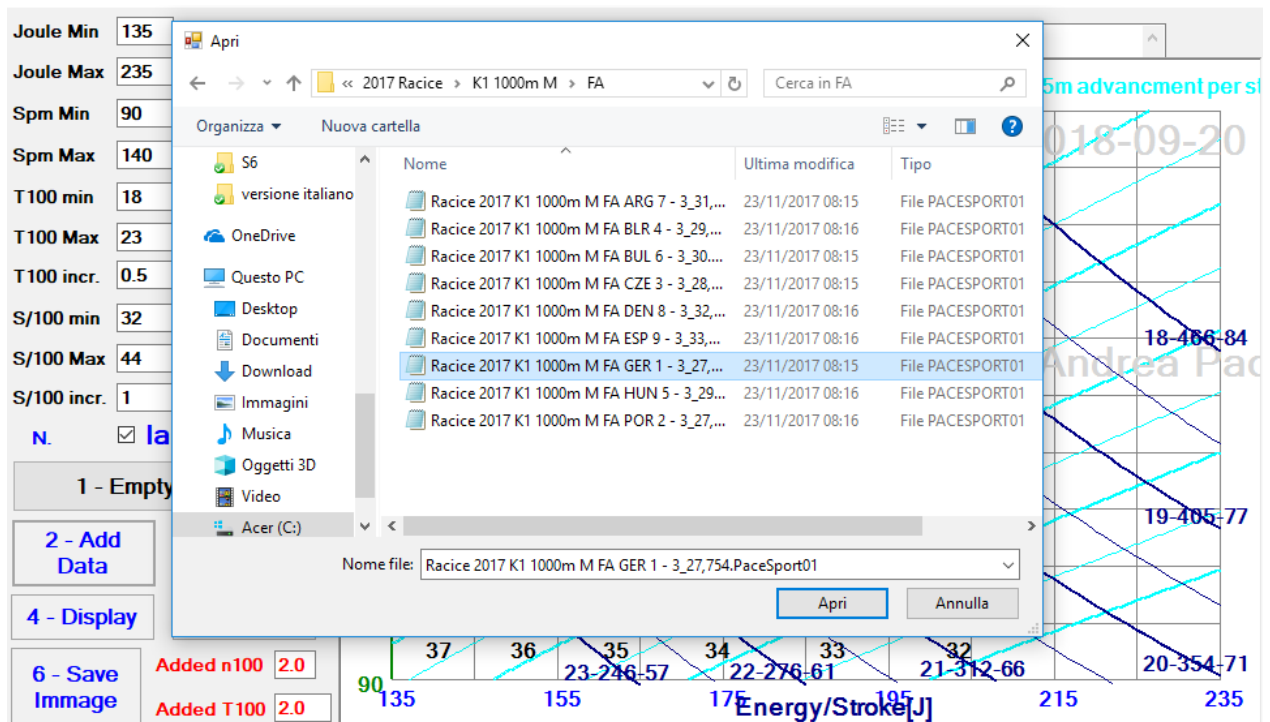

Fig. C

Click the "3-adapt Graph" to redraw the empty graph with the numerical ranges that fit the data of the race you wish to see (Figure D).
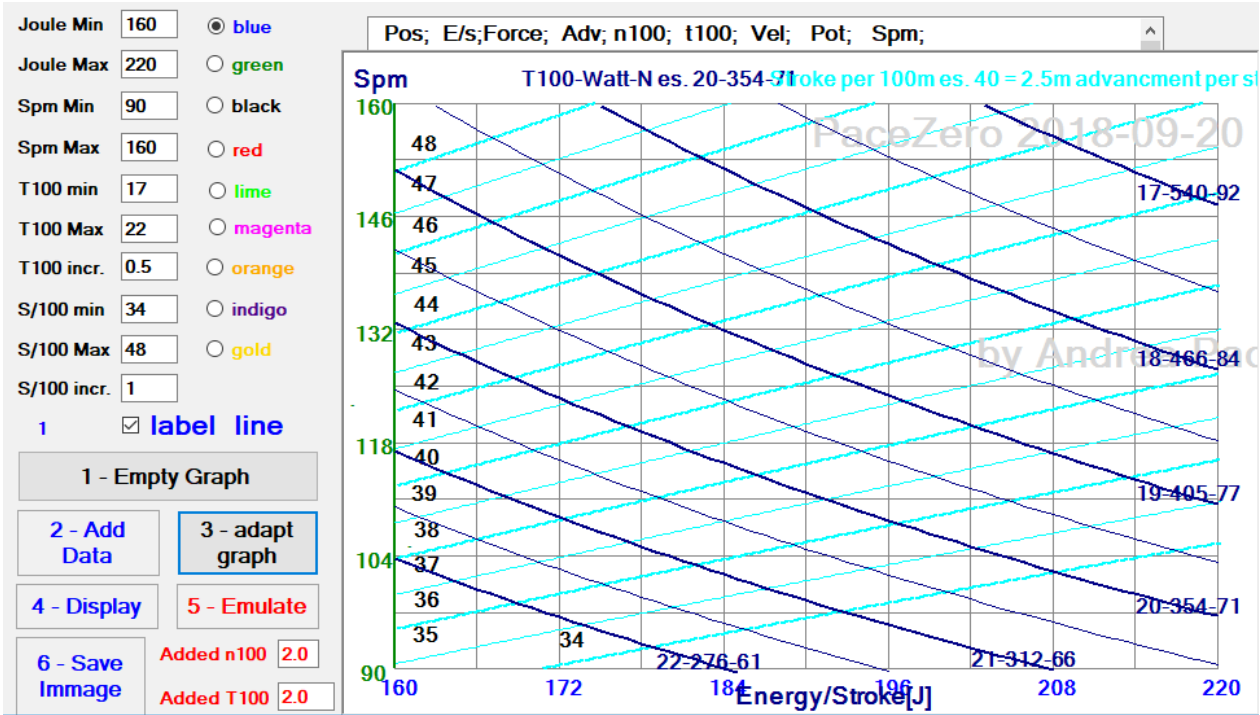

Fig. D

Clicking the "4-Display" icon shows the data in Figure E. You can repeat the process by selecting a colour of your choice. Click "label line" to join the points of the graph with numerical labels (some labels are displayed as "*").
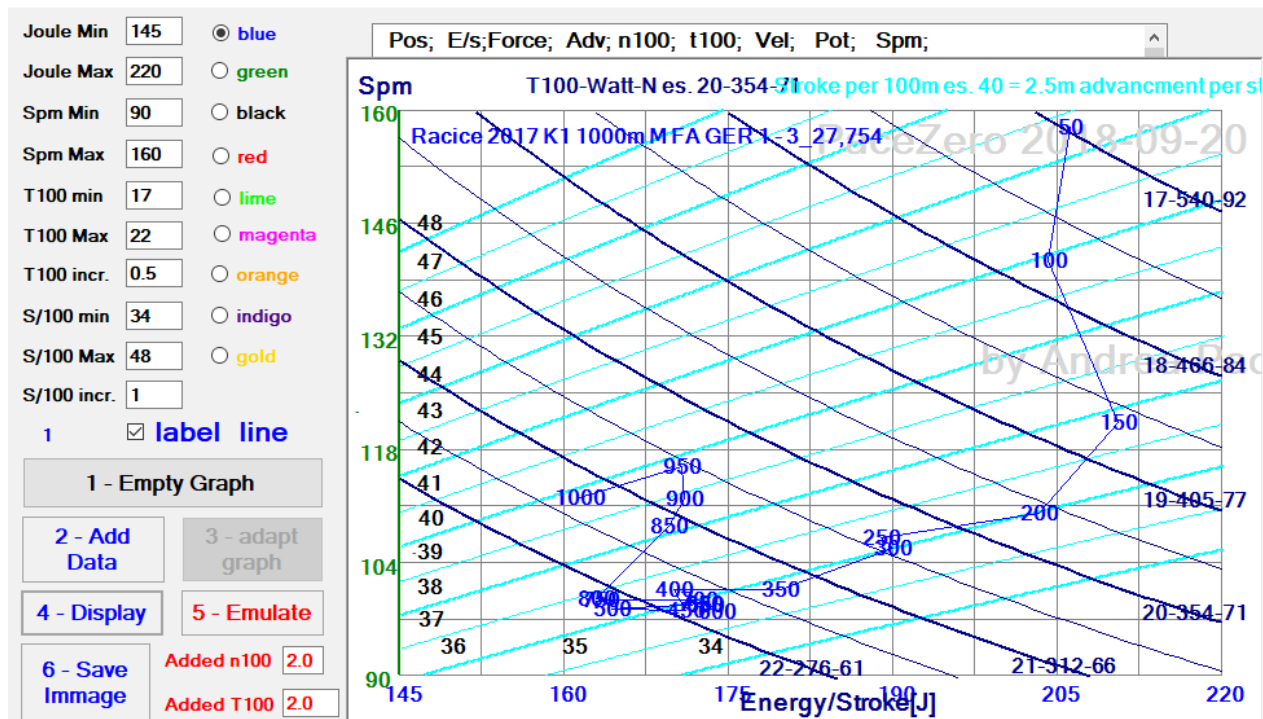
Fig. E

To obtain a projected H-graph you must insert two figures. In the example we used the following:

Added n100 = 5.0

Added T100 = 1.5

Clicking "5-Emulate" will display the image in Figure F. To do this, we increased the range of the horizontal axis by lowering the minimum value from 145 Joules to 115, and the minimum T100 from 22" to 24". We repeated the initial step to display the race graph and the projected race graph.
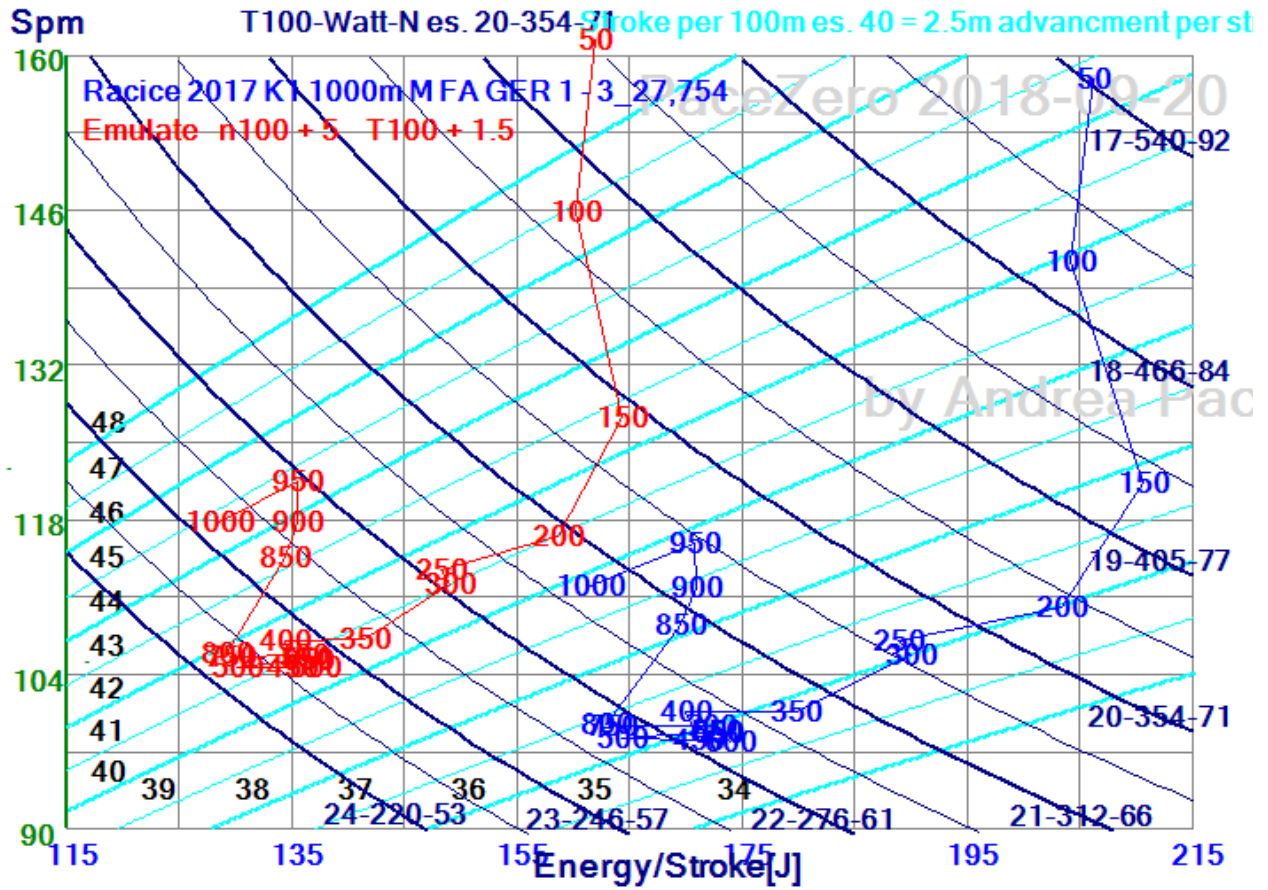
Fig. F