# CASE STUDY

TOUR DE ROMANDIE 2017 – FINAL TIME TRIAL

THE COURSE

The last stage of the 2017 Tour de Romandie is a time trial in the city of Lausanne. Because of the location of Lausanne, this time trial may have significant uphill sections. Therefore, a normal road bike – maybe with additional extensions – may be superior to a classical time trial bike.

The course goes from the Olympic park at the lake of Geneva to the upper city and again down to the lake of Geneva; the distance is 18km.
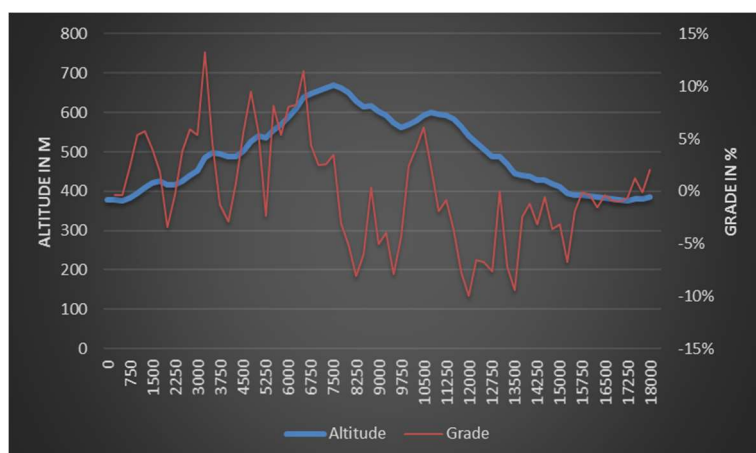
MODELLING

We have modelled a rider with a body height of 1.78 and 68kg being able to produce a power of 6 Watt per kg. 5 different bike set ups have been chosen, from a time trial bike (set 1) to a normal road bike (set 5):

	1 (Basis)	2	3	4	5
Drag coefficient CdA	0.2295	0.24	0.28	0.3	0.32
Rolling resistance coefficient	0.005	0.005	0.005	0.005	0.005
Drive and slip loss Cm (%)	3%	3%	3%	3%	3%
Weight bike (kg)	8.5	8	7.5	7	6.8
Weight rider (kg)	68	68	68	68	68
Constant power	400	400	400	400	400
Height above sea level (m)	300	300	300	300	300
Temperature	20	20	20	20	20
Wind (km/h)	0	0	0	0	0
Wind direction (degree)	250	250	250	250	250

RESULTS

Distance in m	18'006				
Total Time	0:26:25	0:26:37	0:27:31	0:27:55	0:28:19
"Best" Race Set	0:26:25				

The time trial bike is – despite the uphill sections – superior to all other setups, even if we take into account, that a perfect position cannot be hold in the uphill sections. The course does not have long enough sections with a grade of more than 10% where a road bike would be more efficient. This can be seen from the sector analysis: