

Xert Maximal Power Available & Fatigue Modeling

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Real-time Fatigue Modeling



Can I go harder?

Real-time “battery gauge”

- “How long can I sustain an effort?”
- “What do I have left in the tank?”

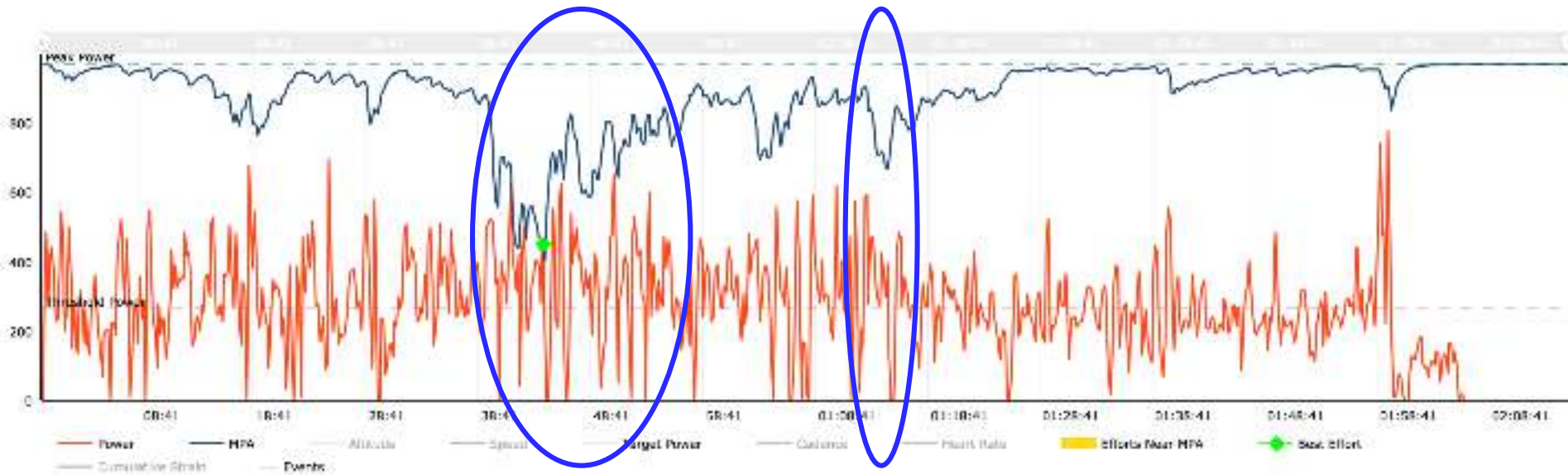
**Maximal Power
Available (MPA)**

**Time to
Fatigue/Exhaustion**

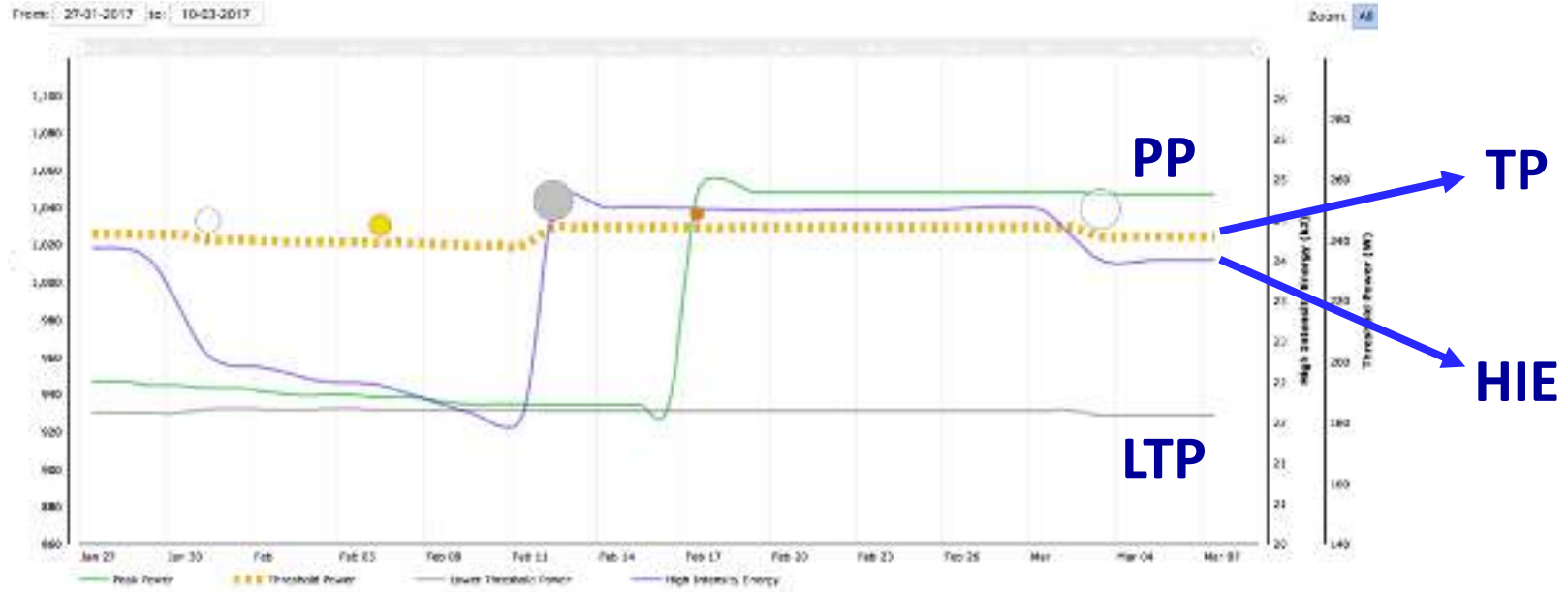
Race Profile

Hard racing

Dropped



Fitness Signature

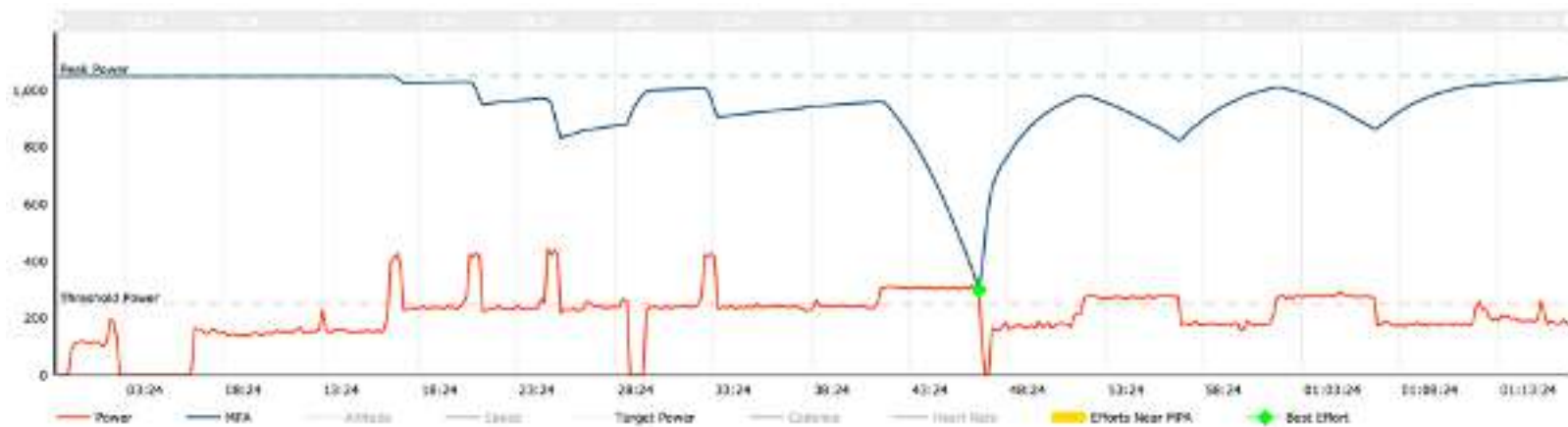


- Peak Power (PP): Maximal power
- High Intensity Energy (HIE): ~anaerobic work capacity
- Threshold Power (TP): Max sustained ~60 min power
- Lower Threshold Power (LTP): full HIE/TP depletion

Fitness “Breakthroughs” and Re-assessment



1047 PP
23.5 HIE
241 TP
175 XSS

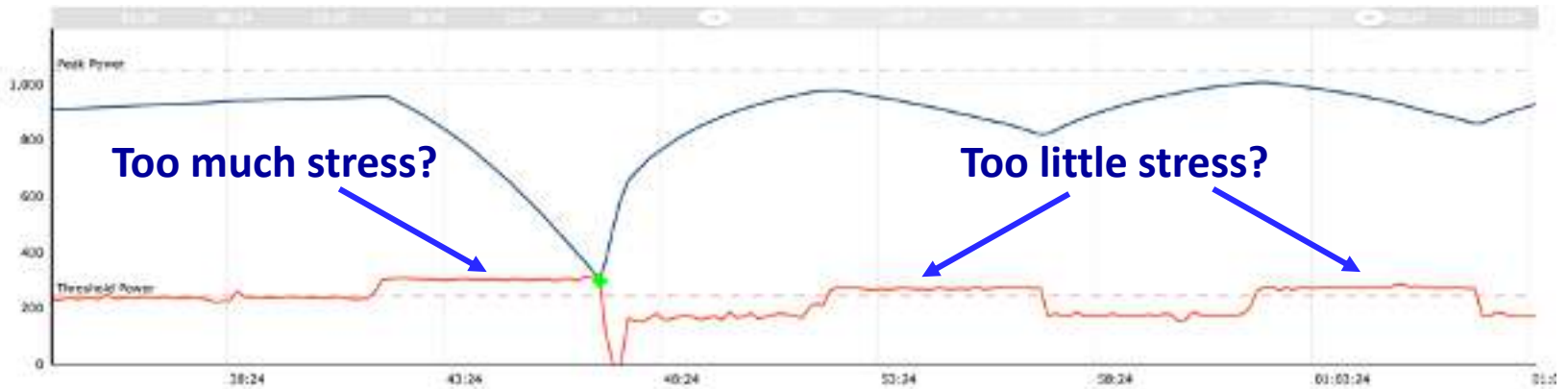


1047 PP
25.4 HIE
246 TP
151 XSS

“Traditional” Workout Design



Manual workout adjustment & estimation to 260W



“Smart” Strain-based Workouts?

Fatigue/MPA targets for intervals AND recovery

Workout Designer

Title* SMART - Raining Blood

Focus Breakaway Specialist

Specificity Mixed

Rating Difficult

Description This is likely the easiest hard workout you'll ever do. With continuous large doses of strain that ease off as you tire, this workout demonstrates the benefit and advantages

Fitness Signature

Peak Power 1047
In Watts.

High Intensity Energy 23.5
In kJ.

Threshold Power 241
In Watts.



	Strain (kJ)	Work (kJ)
Total	215	623
Low Intensity	188.8	563.5
High Intensity	21.5	48.4
Peak Intensity	4.9	11.0

215 W

Equivalent Power

108

Strain Score

Title* SMART - Let the Sparks Fly

Focus Rouleur

Specificity Mixed

Rating Difficult

Description Short, sharp micro-intervals can be done with both descending and ascending fatigue to generate a unique workout experience. Quick cadence and power

Fitness Signature

Peak Power 1047 W Watts

High Intensity Energy 23.5 kJ

Threshold Power 241 W Watts



	Strain (kJ)	Work (kJ)
Total	207	702
Low Intensity	180.1	632.8
High Intensity	22.6	58.9
Peak Intensity	4.0	10.5

206 W
Equivalent Power
103
Strain Score

Add
Copy
Delete

Select	Name	Power	Duration	Rest-in-between Power	Rest-in-between Duration	Interval Count	Order
<input type="checkbox"/>	Warmup	70% LTP	01:00 minutes	110% LTP	01:00 minutes	5	+
<input type="checkbox"/>	High Intensity Warmup	3 min MMP	00:30 minutes	60% LTP	00:30 minutes	2	+
<input type="checkbox"/>	Zap on	250 XSS per hour	00:20 minutes	50 XSS per hour	00:20 minutes	8	+
<input type="checkbox"/>	Zap off	130 XSS per hour	00:30 minutes	50 XSS per hour	00:30 minutes	8	+
<input type="checkbox"/>	Rest	75 XSS per hour	99% Reserve MPA	0 W	00:00 minutes	1	+
<input type="checkbox"/>	Zap on	300 XSS per hour	00:20 minutes	50 XSS per hour	00:20 minutes	8	+
<input type="checkbox"/>	Zap off	120 XSS per hour	00:30 minutes	50 XSS per hour	00:30 minutes	8	+
<input type="checkbox"/>	Rest	75 XSS per hour	99% Reserve MPA	0 W	00:00 minutes	1	+
<input type="checkbox"/>	Zap on	250 XSS per hour	00:20 minutes	50 XSS per hour	00:20 minutes	8	+
<input type="checkbox"/>	Zap off	110 XSS per hour	00:30 minutes	50 XSS per hour	00:30 minutes	8	+
<input type="checkbox"/>	Cooldown	60% LTP	05:00 minutes	0 W	00:00 minutes	1	+

Different Athlete Types



Different physiologies

Same workout \neq same strain

↑ customization of workouts & training

“Smart” Strain-based Workouts?

Workout Designer

Title: MMAF - Raining Blood

Focus: Breakaway Specialist

Specificity: Mixed

Racing: Difficult

Description: This is likely the hardest hard workout you'll ever do. With continuous large doses of strain that ease off as you tire, this workout demonstrates the benefit and advantage

Fitness Signature

Peak Power: 1247 W

High Intensity Energy: 22.5 MJ

Threshold Power: 271 W



57:49

Workout Designer

Title: MMAF - Raining Blood

Focus: Breakaway Specialist

Specificity: Mixed

Racing: Difficult

Description: This is likely the hardest hard workout you'll ever do. With continuous large doses of strain that ease off as you tire, this

Fitness Signature

Peak Power: 1230 W

High Intensity Energy: 28.3 MJ

Threshold Power: 290 W



59:01

Racing with Power & MPA



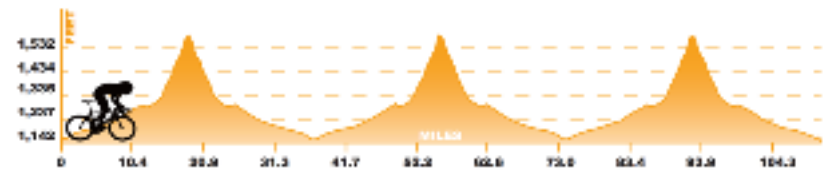
Real-time TT Pacing Feedback



- How to pace headwind section?
- How to pace a hill?
 - “Hammer” through it?
 - Reduce pace/gearing @ set MPA?

BIKE PROFILE

Starting Elevation: 1,146 ft • Finishing Elevation: 1,146 ft • Total Elevation Gain: 2,577 ft



Team Time Trial (TTT) Modeling



Team maintains even speed/pace

- Riders ride to pre-planned MPA decrease
- Variable but optimized duration of pulls

Summary



Valuable field research tool

Advanced training tool

Athlete analysis

Individualization

Planning

Optimized workouts

Advanced racing tool

Real-time decision making

Pacing optimization

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