

Minimum Diameter and Maximum Altitude

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Summary:

The goal of this workshop is to introduce the Mid/High Power flyer to the exhilarating field of maximum altitude rocketry. Whether your record challenge is for the G impulse class or an M hybrid motor for the unrestricted hybrid class, the basic challenges of campaign organization, rocket design, simulations & predictions, logistics and launch are the same...only the stresses on the airframe and the rocketeer increase incrementally with rocket complexity and motor size. Working through the various issues, step-by-step, each attendee should have confidence to tackle any record within their certification level at the completion of this workshop.

Workshop Outline:

1. Overview –getting started in min. dia./max. alt. flying
 - 1.1. Altitude records – current NAR/TRA high power records (& rules)
 - 1.2. Organizing a records challenge – the most important checklist you'll make
 - 1.3. Getting the process started – “so you want your name in the record book?”
2. Rocket Design – Minimal Diameter = Maximum Altitude!
 - 2.1. Basic MD design issues, challenges & compromises
 - 2.2. Airframe – **Single Stage, Boosted Dart** or **2-Stage** Airframe
 - 2.3. Airframe organization – dual deployment sustainers
3. Design Revisited – Revision, Evolution and Optimization
 - 3.1. Calculations & Simulations – getting the most out of your software
 - 3.2. More predictions – using MS Excel spreadsheets for design optimization
 - 3.3. Finalizing your design – committing to the build
4. You Are What You Build – To the extent of your budget!
 - 4.1. Building techniques – basic skills you'll need to master
 - 4.2. Material Selections – lighter, stronger, & pricey, 2-out-of-3 ain't bad!
 - 4.3. Finishing – as crucial as the built itself
5. Hands-on Example – **Xenon: Xe54**, a 54mm Carbon/Kevlar MD
 - 5.1. Design goals of this system (plus the Boosted dart – Krypton, and 2-Stage – Radon)
 - 5.2. Materials, Build and Finishing – plus motor(s), chutes & electronics

- 5.3. Sims, Calcs, and expectations - <2kg to +10K (h) or +20K (ap)
- 6. Logistics – Getting your rocket up while keeping your bp down!
 - 6.1. Getting there – things to need to do before you leave the house
 - 6.2. At the launch – prepping the launch gear & waiting for your window
 - 6.3. Final prep – getting your record-breaker ready!
- 7. Sky is clear, Range is clear...5,4,3,2,1 Launch!!!
 - 7.1. Launch & Recovery – what'll you'll need to do when you get it back
 - 7.2. Success – dotting the "i's" and crossing the "t's"
 - 7.3. ...Or not – post-mortem's & Monday morning QB's
- 8. Q & A

Further Discussions & Contact Info:

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