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Technical report on 2022 F1D World Championship

Overall, this event didn’t show any disrupting innovations or novice features. Our last WCh was in March’2018. Then, we were all ready for the next one in March’2020. Due to COVID that even got postponed twice and eventually cancelled. It seems that most people brought to 2022 WCh models that they built back in 2018-2020. Let’s review typical designs for each component. They will be given in order, starting with the most popular.

Motor sticks were practically all rolled of 0.33-0.40mm balsa sheets with boron filament reinforcement. Only one competitor used carbon tube for motor stick. Wing post were balsa-boron, some people used 1-1.3mm carbon tubes. Tail booms were all tapered tubes rolled from 0.25-0.27mm balsa with boron reinforcement.

Wings and stabs were classical construction with balsa boron spars. Some people are trying to use carbon fiber for spars and tips instead of boron. Composite carbon-balsa ribs were quite popular for both wings and stabs. Romanian team widely used Silica-Carbide filament for wing and stab tips. Most of the models had wrinkled OS film covering.

Largest variety could have been observed in propellers. It would be hard to name the most popular design here. Many people had classical propellers with a spar and balsa outline. Some had outlines made of Silica-Carbide filament. Others had sparless props with balsa-boron or carbon fiber outlines. The composite ribs were also quite popular for the props.

One noticeable thing was that how people focus these days on treating their rubber motors. Reminder, F1D flyers almost exclusively use TAN II rubber from May 99 batch. This batch is rare today and extremely expensive (circa 2500$ /pound). There was a lot of discussions about cutting rubber with minimum waste. Further, due to natural variations in the rubber, motors never come out the same. Today each motor is packed in an individual bag with specific weight recorded to 3 significant digits!

Models of our team. Vlad had classical models of Ivan Treger geometry, but with Silica-Carbine propeller outlines. I had both classical construction models of my own design, a couple of new wings with composite outlines, and both carbon sparless and Silica-Carbide propellers. Arend had the most advanced models of his own design with wide use of carbon composites. They perform very well in cruise, but needed more stiffness to withstand launch torque loads.