CZECH REPUBLIC
change proposal to the Naviga M section
(Technical Committee WC 2017)

Dear Naviga M-section members,

I would like to introduce few change requests which will be presented on Technical Committee in Nagykanisza in summer 2017:

List of proposed changes:
1) Proposal nr. 1 – Using of limiters
1) default requirements for limiter
2) collect data during 2017
3) make conclusions on collected data
4) section leader prepares voting based on received data
5) national team leaders will vote by email
6) section leader will incorporates results of vote into the section rules
7) transitional period (1/1/2018-31/12/2018)
8) collect data during 2018
9) make conclusions on collected data
10) section leader prepares the voting based on received inputs
11) national team leaders will vote by email
12) section leader will incorporates results of vote into the section rules
13) from 1/1/2019 agreed solution will be used
2) Proposal nr. 2 – Random choice of racers for each qualification heat
3) Proposal nr. 3 – Error corrections in M section rulebook
4) Proposal nr. 4 – Shortening championship duration
1) cancel Mono 2, Hydro 2 classes (save 6,8 hours of racing)
2) cancel ECO teams (save 6,9 hours of racing)
3) adjust mini ECO teams (save 5,6 hours of racing but add cca 1,5 hour)
4) shorten FSRE up to 10 minutes (save 3,5 hours)
5) what to do with individual classes?
a) cancel combustion power classes
b) group classes as follows: F1E, F1V, F3E, F3V
c) shorten time for race and preparation time
5) Proposal nr. 5 – Become a member of Sport Accord organization

I hope we will reach consensus and will choose solution which will move our hobby further to the great future.

Zdenka Dostálová,
Czech Republic M section leader

Proposal nr. 1 - Using of limiters

What is it?
Limiter = device which limits amount of used energy nowadays 2 devices for boats are available on the market (MDLE, eLim) – you can find its manuals as attachment

Why?

- **safety reasons** – racers are used to solder connectors directly on the lipo cells and use almost no package (or remove it just after the race) to get desired weight
- **decrease costs** – short lifetime of used lipo cells (lipo cells freely available on market are not able to withstand the way how they are used during our races), if racers (majority) would like to succeed during international events they have to invest lot of money into cell packs (it is no exception 1 cell pack is used only for 1 heat, than its useless and have to be thrown away) of course there are exceptions few racers are able to tune the boat to be efficient enough to safe cell pack to last longer
- **race rather on the water** not in possibility of buying more/better/more expensive components
- **better solution has not been found** (for details see experiences section)

Experiences:

- the idea of limiters was introduced during technical committee 2015 in Poland (but no tests has been done in model boats yet) few alternative ideas has been mentioned to solve the battery problems (for example change the weight limit of cell packs which will not solve the problems with cost, change the weight or length of boat which will not solve problem either, or change the rest voltage of cell after the race which is not solution either – the voltage per cell will increase a bit after some time so when the boat stops on the lake and has to be rescued there is enough time for cells to reach the limit but their life is over anyway)
- airplane modelers (pylons, gliders) use limiters since 2012, they have a lot of great experiences with it and have no doubts it was good solution to apply them even after 5 years of usage (they applied limiters because of same reasons as are described in previous paragraph)
- in the spring 2016 started the tests with Unilog limiter in few countries (we found out the amount of consumed energy and also few issues for example the device is too complicated, expensive and among others has no tolerance of humidity)
- development of specific limiter device especially for model boats has been started in late spring 2016
- first bigger public test has been done during EC in Hungary 2016 during autumn another test has been done and device has been tuned based on exact requirements
- from January 2017 device is tested as alternative solution for battery weight limit in few countries and data are being collected for setting up correct values
- limiter accuracy have to be set up properly, the last test in Lesznowola (June 2017) showed devices are not yet accurate enough but producers claimed they can handle it (they focused on other functions by now)

Frequently asked questions:
Why use limiter as a limiting device and not energy counter only?

- this solution is time consuming and staff demanding – requires after race check by judge
- there is bigger space for cheating
- it is difficult for spectators to recognize the heat winner

How it does work in practice?

- limiter is connected in the boat before the heat (possibly checked by judge instead of weighting and measuring batteries), limiter starts to count consumed amount of

energy, when the limit is reached model boat slows down 12s (enough time for racer even on the oval track to realize limit has been reached to go away from the track to not hinder other boats – without limiter model boat stops suddenly which is possible risk of collision), after 120s power is restored and boat can go back to the platform (the value on the limiter show 0)

Can I restore the limit by unplugging kill switch?
- yes in case limiter is connected behind the kill switch (between kill switch and ESC) but you have to wait 120s until limit is restored
- no in case limiter is connected before the kill switch – this feature is here because of long races (FSRE or teams) when the boat could be rescued (when rescued kill switch has to be unplugged)

Which limiter can I use?
- the one which meets agreed requirements (how requirements will be set? – see point "proposed way how to implement limiters"

I am great programmer I suppose I can cheat it easily, right?
- yes probably you can but you may cheat it for one of your race mates (during international events limiters are drawn from the hat)
- the best way how to prevent cheating has been introduced during airplane model WC 2016 in Italy – every racer got the limiter from the organizer just before the heat (used connectors were mentioned in the WC invitation), organizer got better price from producer (after the WC limiters were sold to the racers for the better price (note: they crash the planes often to the ground – electronics do not survive usually) – in our case limiter can be kept by Naviga for further events but the start fee has to be bit higher to cover the cost of limiters during the first championship), in case racer destroyed the limiter he paid for it; after the heat racers had chosen the ball (white or black) from the sack - if black than the model has to go through detail check by judge (in finals first 5 pilots has been checked automatically), judge checked correct connection in the boat, voltage and current (to verify resistive diodes are not used in the circuit), weight of batteries 200-400g, weight of airplane > 1kg)

What is the experience of airplane modelers?
- Before limiters they usually used 10 cell packs per year for one plane, after implementing limiter solution they are using 1 cell pack 2 years (and they are still able to win with it)

We have compared it for you:	
+ positive impact	- negative impact
more people can join our sport (less costs, better chance to win even without having good friends in battery factory)	another device in the boat is possible source of problems (yes we thought the same about transponders and still it is the best solution how to count laps)
overall costs per season decreased (racers needs less cell packs per season especially if they want to win races)	space for great programmer to cheat it (can be prevented by hat system)
safety reasons (almost no wrapping – hard to describe correct wrapping in the rules, people can do many things to keep superior energy density high but battery weight still in the limit)	correct connection has to be checked before/after the race by judge (now batteries has to be weighted and measured anyway)
race rather on the water not in possibility of buying more/expensive components	

Proposed way to implement limiters step by step:

1) default requirements for limiter: waterproof device, has limit function (not only counting device), as simple as it can be, default type of connectors used, …
2) collect data on national levels for setting up correct values and possibly adjust default requirements in 2017
3) make conclusions on collected data on the national levels and deliver those data (values, default requirements changes) to the section leader no later than 15/11/2017
4) section leader prepares the voting based on received data and will send it to all team leaders no later than 30/11/2017 (form to fill in responsible person with the contact is in attachment)
5) national team leaders will vote by email – as a reply to all (section leader + all national team leaders – to assure transparency) no later than 12/12/2017
6) section leader will announce results of voting and incorporates them into the section rules no later than 31/12/2017
7) from 1/1/2018 agreed values will be valid for transitional period (1/1/2018-31/12/2018)
8) during 2018 more tests, comparison and evaluation will be done on national levels and possibly during EC (if it is organized)
9) make conclusions on collected data on the national levels including recommendation to change/keep default requirements AND proposal to use:
   - only limiters from 1/1/2019 OR
   - both alternatives limiters and battery weight limit OR
   - roll back to the battery weight limit only
   and deliver it to the section leader no later than 15/11/2018
10) section leader prepares the voting based on received inputs and will send it to all team leaders no later than 30/11/2018
11) national team leaders will vote by email – as a reply to all (section leader + all national team leaders – to assure transparency) no later than 12/12/2018
12) section leader will announce results of voting and incorporates them into the section rules no later than 31/12/2018
13) from 1/1/2019 agreed solution will be used

Proposal nr. 2 – Random choice of racers for each qualification heat
What does it mean?
During the EC/WC competitors are randomly chosen by computer to start in qualification heat. Competitor starts in each qualification heat with different people.
Why?
- **fair play** – in case good racer is qualified into the heat with less experienced racer who can accidently cause frequent collision it could prevent great racer to reach the final (he could be involved in collision or it could take him more time to overtake slower/dangerous racer)
How to implement?
- usual measuring software (for example RC timing or SW used in Czech Republi) has the feature to do random qualification order

We have compared it for you:	
+ positive impact	- negative impact
fair play	complication for organizer if he do not have software with random function (if such software does exist)
more fun with racing (racer can measure his abilities with more people)	racers could be confused which start number to use when it is different in the each qualification heat (but they will get use to it – as we did in Czech Republic – this system is used for years already and only have positive response)

Proposed way to implement random choice of racers in qualification:
- add the rule into section rulebook: Racers in the qualification heats are chosen by computer randomly during EC/WC.

Proposal nr. 3 – Error corrections in M section rulebook
What?
We have found few mistakes in the M section rulebook:
-   part G, Regulation for the class ECO/mini ECO, Special construction specifications, regulations and checks in the class FSR-ECO **-** Not less than 450 gr and maximal length of 430mm for Mini Eco (incl. starting number plate). – difference between German and English version (it should be excluding starting number plate)
-   part A, section 1, attachment A1,2,3 does not exist (it should be attachment A1A)
-   part A, section 6: Juniors up to the age of 12 may only compete in the different Eco classes, Mono1 and Hydro 1. (this does not apply for the classes F1E, and F3). – it means juniors up to 12 years cannot attend miniMono, miniHydro, FSRE so those classes should be added into the list
Why?
-   You know why ☺
How to implement?
-   simply make a correction in the rulebook

Proposal nr. 4 – Shortening championship duration
Why?
EC/WC is longer than one working week. Which brings lot of compromises into the life of working modelers (instead of spending holiday with family they spent half of their yearly holiday time with racing). Moreover the costs of such holidays are not small especially in case of hotel/apartment accommodation. Problematic as well for organizers to assure place for such a long period and do the opening ceremony during the working days (not many people/spectators can see it).
How to implement?
- unfortunately there is no other solution than reduce some classes (or reduce number of racers – which I suppose is not the goal) and shorten some classes - possibility of splitting triangle and oval track does not seem to be a a good idea (usualy people who race on triangle track race as well on oval track – it will not shorten championship it will make it more complicated for organizer because of few people do twice registration, opening and closing ceremony) - see attachments: WC statistics.xls , duration.xls
We have compared it for you:

+ positive impact	- negative impact
shortening of championship	
some (hardly predict how many) people who used to race in cancelled classes can join other classes => more racers in the rest of classes => more fun and better possibility to measure racing qualities with more people => bigger value of medal (better be 1st from 40 people than to be 1st from 10 people)	some people (hardly predict how many) who used to race in cancelled class will be angry => they will quit racing

Proposed way to implement change:

1) cancel Mono 2, Hydro 2 classes (save 6,8 hours of racing)
   - most expensive classes from group race
2) cancel ECO teams (save 6,9 hours of racing)
   - high probability of collision, higher costs compared to mini ECO teams
   - on the other hand this is interesting class for spectators
3) adjust mini ECO teams (save 5,6 hours of racing but add cca 1,5 hour)
   - make it even more fun and more interesting for public
   - as a last race of EC/WC – racers can use boats from mini ECO group races
   - new rules: only 1 team per country is allowed, 2-5 racers + 1 helper, minimum of 2 models, duration: 30 mins, only one final round (no qualification) – on first glance visible who (which country) won the race – interesting for public
4) shorten FSRE up to 10 minutes (save 3,5 hours)
   ==
   total amount of saved time (group race) = 21,3 hours (3 days) saved
5) what to do with individual classes?
   - lets suppose there is special track for individual races but this is not enough (in total it consumes 54,5 hours – 6,8 days)
   - it has to be reduced as well:
   a) cross out combustion power (simplification in the rules, combustion engines are specific for FSR section, easier for organisers to arrange event)
   b) group classes: F1E, F1V (without ccm limit), F3E, F3V
   c) shorten time for race and preparation time

Proposal nr. 5 – Become a member of Sport Accord organization
What does it mean?
SportAccord (previously Global Association of International **Sports** Federations) is the umbrella organisation for all (Olympic and non-Olympic) international **sports** federations as well as organisers of multi-**sports** games and **sport**-related international associations. https://www.sportaccord.com, https://en.wikipedia.org/wiki/SportAccord Example of members: FIFA (football), FIA (formula 1), FAI (airplane modelers), UIM (kind of competitor for Naviga),
Why?
- **reach to the state contribution for the modelers who are members of oficialy recognized sports associations** (Naviga is not the case) – in more and more countries state contribution/donation is or will be conditioned by membership of the officially recognized sport organization which is member of Sport Accord - **gain an advantage before IMBRA** – IMBRA does not meet requirements to become a member of Sport Accord but Naviga does - **prevent members of Naviga to "escape" from Naviga to UIM** – because of money (state contribution could be a lot of money in some countries and may motivate racers to attend big events and invest money to their models)
How to implement?
- pay member fee (associate member is enough) and become a recognized member of Sport Accord organization – we would like to be recognized as official sport (note: nowadays process of becoming a member is being reworked by Sport Accord I cannot describe it in detail) - let me add the article 43 from Sport Accord statutes: **Article 43. Independence of Members** No discussion or voting by SportAccord shall infringe in any way on the freedom and independence of any Member, who shall, at all times, retain complete independence and control over all matters falling within its field of activity.

We have compared it for you:	
+ positive impact	- negative impact
possibility to draw state contributions	?
gain an advantage before IMBRA	
prevent Naviga members to escape from Naviga to UIM	