Safety Pays

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OSTIV SDP

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Summary

- OSTIV offers improvement of safety in gliding to IGC

- International gliding competitions are important market places

- Best pilots are models for most other gliding pilots and clubs

- Participation in international gliding is a privilege, pilots should actively contribute to safety

- IGC-sanctioned gliding competitions are an instrument to improve safety

- Three proposals are discussed
Is Gliding safe?

- Example: Germany (approx 1/3 of worldwide gliding activities)
  2006: 30.120 pilots (115.420 worldwide)

- 1990 – 2008: Fatality rate about 1:2500 per year
  no tendency to decrease

- Road traffic:
  1991: 1:7200 per year 2008: 1:18400 per year

That’s why

the safety of gliding must be improved
Safety of gliding must be improved

Two ways for improvement

1. *External* regulatory policies and measures
   - more restrictions, more complexity, more requirements, higher costs
   - Used by EASA, FAA, ICAO, CAAs, ATCs

*Most of us agree that we do not need/want more restrictions, more complexity or higher costs.*
Safety of gliding must be improved

Two ways for improvement

2. *Internal* safety policy
   - recognised and applied by all glider pilots
   - Involving all people in gliding operations

This paper intends to follow this latter approach.
IGC and improvement of safety

IGC is involved in organising international gliding competitions

Competitions contribute to international contacts, understanding, exchange of experience and knowledge

Competitions have a great impact on the market for new gliders, technology and tactics
Gliding competitions and safety

"Accidents happen to other pilots, not me!"
Gliding competitions and safety

International gliding competitions:
- “Here the Great Pilots fly”
- example for many other pilots and clubs
- role models, inspiring the less experienced pilots
- significant influence on gliding operations
- commercial impact ("Winners List" at manufacturer’s webpages)

Competitors should actively contribute to the safety of gliding
Gliding competitions and safety

One more reason for safety in gliding contests: increased accident risks

25 World Championships and 3 Gliding Grand Prix
5 pilots have been killed and 3 more bailed out successfully

One fatality per 8,000 flights

More than eight times higher than the average world wide in gliding
Proposal A

*Introduce a Safety Award during international gliding competitions*

Safety Award at IGC contests
- related to the whole competition event
- not restricted to a single class or competing pilots or other groups
- presented at the prize giving ceremony
- for the most outstanding contribution to safety
Proposal B

*Enhance emergency cockpit egress*

Training of rapid cockpit egress during competitions
- undertaken by all competitors
- measured and video registered on the ground
- analysis and evaluation during a safety briefing
- performances compared against the average
- winner in each 10 years age category will be awarded
Altitude to survive mid-air breakup using parachute systems.

Most mid-air collisions occur below 1000m!

Pilot actions after midair breakup:
- fright, recognition, decision: 3
- pull canopy jettison handles or actuate NOAH, GPRS or PRS: 1,5
- unlock safety belts manually: 1,5

Minimum time for parachute deployment after mid-air breakup:

<table>
<thead>
<tr>
<th>Condition</th>
<th>Minimum Time</th>
<th>Minimum Altitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autonomous bailout, 1,5G</td>
<td>&gt;13s</td>
<td>&gt;850 m</td>
</tr>
<tr>
<td>Autonomous bailout, 1G</td>
<td>&gt;10s</td>
<td>&gt;600 m</td>
</tr>
<tr>
<td>Bail out with NOAH</td>
<td>7s</td>
<td>400 m</td>
</tr>
<tr>
<td>Bail out with PRS</td>
<td>5s</td>
<td>250 m</td>
</tr>
<tr>
<td>Stay in cockpit with GPRS</td>
<td>4,5s</td>
<td>220 m</td>
</tr>
</tbody>
</table>

Minimum Altitude to survive:

- Autonomous bailout, 1,5G conditions: >850 m
- Autonomous bailout, 1G conditions: >600 m
- Bail out with NOAH: 400 m
- Bail out with PRS: 250 m
- Stay in cockpit with GPRS: 220 m

Mid-air damage: fuselage broken off behind wings.
Ref. Prof. Wolf Röger, FH Aachen
Proposal B

Altitude to Survive
(Professor Wolf Röger, Fachhochschule Aachen)
Proposal B

Emergency roll out from the cockpit

Roll manoeuvre depending on the type of panel

(Professor Wolf Röger, Fachhochschule Aachen)
Proposal B

Emergency roll out from the cockpit

Roll manoeuvre depending on the length of the canopy
(Professor Wolf Röger, Fachhochschule Aachen)
Proposal C

*Reward safety provisions installed in competing gliders*

Technical safety provisions
- can contribute to lower accident risks
- lessen injuries due to gliding accidents
- are hardly used by competition pilots

Problem: Fear of negative effect on performance or costs

*Enhancing the use of such on-board safety devices is proposed*
Relating safety with competition points is not new at all. In present competition rules safety *infringements* are often penalized with fines: in competition points! (negative)

So why not reward *contributions to improve* safety also with competition points? (positive)
Proposal C

“6% for Safety”

The aim of pilot’s: gain more competition points

Competition points should be used as a safety reward
- on every competition day
- 6% of the maximum score as a balanced value
- related to the points of the winner of the day
Proposal C

“6% for Safety”

To ease acceptance and allow manufacturers development:
Introduction in two steps

First phase:
Total reward for on board safety provisions is limited to 4%.

Second phase:
limit is lifted to the eventual 6%.
(e.g. when new safety provisions are available on the market)
Proposal C

The “Shopping list”

Free choice “shopping list”

- of rewardable safety devices,
- starting with a total of 4% for safety rewards
- no need to install all devices
- no big money is needed here
Proposal C

The “Shopping list”

Competition pilots are privileged

- to participate in international gliding competitions
- to contribute to improve their own safety
- and to the safety of gliding at large
Proposal C

The “Shopping list”

Choosing the rewards, the following aspects have been considered:

1. effectiveness in preventing accidents
2. effectiveness in preventing or reducing injuries from accidents
3. costs
4. possible negative effect on glider performance
5. availability on the market
6. stimulus needed to persuade the pilot to install the device
<table>
<thead>
<tr>
<th>Safety device</th>
<th>Reward</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy Absorbing Foam seat cushions for spine protection</td>
<td>0,4 %</td>
</tr>
<tr>
<td>Anti submarining safety harness</td>
<td>0,6 %</td>
</tr>
<tr>
<td>Spinal Protection device</td>
<td>0,5 %</td>
</tr>
<tr>
<td>Increased shock absorbing landing gear</td>
<td>1,2 %</td>
</tr>
<tr>
<td>Spoiler control restraining device (like Piggot hook)</td>
<td>0,2 %</td>
</tr>
<tr>
<td>Emergency egress help (like NOAH)</td>
<td>1,5 %</td>
</tr>
<tr>
<td>Demonstrated cockpit evacuation time (static on the ground)</td>
<td>0 – 1,0 %</td>
</tr>
<tr>
<td>Improved conspicuity by appropriate markings</td>
<td>0,4 %</td>
</tr>
<tr>
<td></td>
<td>Description</td>
</tr>
<tr>
<td>---</td>
<td>----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>I</td>
<td>Improved conspicuity by strobe light(s) on fuselage or wingtips</td>
</tr>
<tr>
<td>J</td>
<td>Collision warning system (compatible to FLARM)</td>
</tr>
<tr>
<td>K</td>
<td>Emergency locator beacon or similar system</td>
</tr>
<tr>
<td>L</td>
<td>Side String angle of attack indicator</td>
</tr>
<tr>
<td>M</td>
<td>Acoustical stall warning system (to be specified)</td>
</tr>
<tr>
<td>N</td>
<td>Glider Parachute Recovery System (GPRS)</td>
</tr>
</tbody>
</table>
Proposal C

Examples

Item D

Landing gear with improved shock absorption
Proposal C

Examples

Item F

NOAH
(Photo DG Flugzeugbau)
OSTIV SDP Safety Pays

Proposal C

Examples

Item F

NOAH
(Photo DG Flugzeugbau)
Proposal C

Examples

Item L

Side String
(Photo Prof. Ernst Schoeberl)
Proposal C

Examples

Item N

GPRS
(Photo Peter. F. Selinger)
Proposal C

Example for PRS
("Kiffmeyer-System")
(Courtesy Prof. Röger, Fachhochschule Aachen)
Proposal C

The “Shopping list”

Other safety devices, which are still in development (like PRS), may be added to the list as they come available on the market.
Advantages of the “6% for Safety” System

- "6% for Safety" proposal enhances use of existing safety provisions
- Each safety reward will retain its value for many years
- It does not jeopardize existing glider types
- It does not favour rich pilots
- It is adaptable for different competition classes
Advantages of the “6% for Safety” System

- No pressure on manufacturers and customers to develop new glider types
- Stimulation to introduce certain adaptations in existing gliders (e.g. NOAH, GPRS, ...).
- Open for future safety provisions when available
- All voluntary, no restrictions or sanctions on non-compliance
- Effective by offering persuasive incentive for ambitious competition pilots.
Challenges of the “6% for Safety“ System

- Announcement followed by an introduction in two steps

- Will possibly meet resistance and objections

- Need for a change in thinking about organising and flying gliding competitions

Yet, if improvement of safety in gliding is considered to be a serious issue it is well worth the effort
Recommendation

All three proposals are offered by OSTIV to IGC

IGC might want to implement proposals A and B and prepare an announcement of proposal C before the next WGC

First official application could be at the World Gliding Championships in 2012.
Recommendation

But keep in mind:

*Improving the Safety of Gliding cannot stand any delay!*
Questions?