

Czech Technical University in Prague

CANOPY PILOTING EDUCATION PROGRAM

**Implementation
of the most modern knowledge
about high performance canopies
into the present regulations**



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Introduction

- ✈ **High performance canopy piloting / Swooping**
= the most dangerous skydiving discipline
 - ✈ extremely manouvarable high performance wings
exceeding speeds over **100km/h**
 - ✈ main problems:
 - old regulations and rules
 - no education program for pilots
 - no system of licensing
- **SERIOUS INJURIES OR DEATH**

Scientific benefits and up



- ✈ search – there are no scientific publications dealing with this issue, only marginally
 - ✈ term „High performance canopy“ is mentioned in the czech regulation V PARA 1, eventhough there is no explanation or definition of this term, neither criteria for piloting this type of sport air vehicle
 - ✈ comparison of licensing airplane pilots ACR x high performance canopy pilots
- **Main goal: INCREASING SAFETY & ELIMINATION OF SERIOUS INJURIES AND FATAL INCIDENTS**

Facts



- ✈ statistics from IPC show us change track of skydiving incidents affected by start of using high performance parachutes
- ✈ piloting error caused **59% of all fatal skydiving incidents**
- ✈ problematic is not solved **worldwide** and the number of fatal incidents caused by inappropriate canopy control of a fully functional parachute is increasing
- ✈ system of licensing in the Czech republic:
skydiving **ratings based only on freefall skills**, not examining piloting skills

Goals



→ Main goal: **INCREASING SAFETY & ELIMINATION OF SERIOUS INJURIES AND FATAL INCIDENTS**

✈ Creating and publishing **METHODICS FOR SAFE CANOPY PILOTING**

✈ 2013 implementation into the skydiving regulations valid for the Czech republic

✈ future prospects: 2014+ proposal of **licensing system** for high performance canopy pilots and criteria for new special high performance rating

Research design



- ✈ experimental research – **testing** the smallest and fastest canopies and new **prototypes** all over the world
- ✈ analysis of current situation
- ✈ analysis of fatal skydiving incidents
- ✈ training under **supervision of experienced test pilots** (Duane Hall, Luigi Cani, Jim Slaton)
- ✈ educating and observing skydivers of different experience level (**200+ pilots** during 2010-2013)

Participating organisations



✈ cooperation with organisations:
IPC FAI, USPA, AECR, CAA, CTU, Extreme 66

✈ following the great experience of one of the biggest parachute canopy manufacturers:
NZ Aerosports, Icarus Canopies

Burgas 2013

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Experimental research



- ✈ flying one of the fastest high performance canopies in various conditions
- ✈ wearing an electronic altimeter and recording the altitude of deployment, maximum vertical speed, and speed distribution for the entire flight time
- ✈ working on different flying techniques in order to increase the highest vertical speed and learn how to control the wing properly
- ✈ ground launching, proximity terrain flying

Daedalus JVX 66 ft² (6,13 m²)



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My current results



✈ 2010-2013: 800 test flights

✈ wing loading: 1.9 lb. ft⁻²

✈ max. vertical speed:

Icarus Extreme FX 66 ft² (6,13 m²) : 143 km.h⁻¹

Daeadalus JVX 66 ft² (6,13 m²) : 158 km.h⁻¹

✈ average loss of altitude: 270° turn: 190-210 m

✈ more than 200 pilots trained and educated, 0 serious injuries

Conclusion



- ✈ today's high performance wings can create super **high speed and manouverability**
- ✈ currently the problem of **educating and licensing high performance pilots** is not solved and the number of fatal incidents is growing
- ✈ proposal of new system of educating and licensing is **necessary to ensure safety of performing Canopy piloting** in the Czech Republic and all over the world

Thank you for your attention!



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