

## small canopies



[LINETWIST\\_TAESLER.avi \(3.7MB\)](#)

20. September 2005

Over the past 15+ years we have had a continuous program of data gathering using custom instrumentation to monitor new techniques and equipment in the sport. Our previous statement that "it is not possible to safely perform such radical maneuvers below 750 feet and activate CYPRES, as even if a jumper reaches 78 mph vertical speed for a brief amount of time, it will not activate" has been superceded by new techniques involving a small handful of the best of the best canopy pilots. For them it is now possible to sustain vertical speed in excess of 78 mph for an extended period of time, and land safely.

As the line between freefall speeds and vertical flight under canopy becomes less and less distinct, the statements and conclusions from the section below are still valid for the vast, vast majority of skydivers. However, additional fine-tuning of extreme vertical approach landing technique involving multiple 360's starting above 1500 feet by a handful of jumpers, has resulted in exceeding the activation design criteria of Expert CYPRES / CYPRES 2.

It is important to note that:

1) it is not simply a matter of wing loading

2) For the majority of skydivers, the risk of such an occurrence is infinitesimal as compared to the risks of jumping without CYPRES. Be aware that only a handful of world class CP professionals have developed the skills to exceed the activation speed.

3) In order to cope with these new advanced canopy piloting techniques, the development of a special model of CYPRES 2 has been underway for a number of months. It was the goal to exactly evaluate what is happening at the moment and the trial to foresee a possible development of this discipline in the future. Therefore we equipped professional CP pilots (also the PD Factory Team) with data instruments and made other basic research jumps to find the best suitable way to cover also potential possible speeds. The important parameters of this special model do not only consist of the definition of a vertical speed. This model is presently in the final test phase, and currently being test-jumped - release date will be available soon

4) for most skydivers, this special CYPRES 2 will actually increase some risk: because of its more stringent activation parameters, it will not activate as soon or at all in certain circumstances as compared to the Expert model

5) specific recommendations for those skydivers who are candidates for using this special CYPRES 2 will be available soon, but for now, suffice it to say that it is a very small community of canopy pilots who presently are capable of crossing the line of Expert CYPRES under canopy while still landing safely

more info soon...

The following text (placed on our website 2004) was totally valid for more than 14 years yet and in respect of the above is still valid for more than 99,9% of all skydivers.

Small canopies – is it possible to activate an Expert CYPRES under a small canopy ?

This subject has been one of continued concern and research of ours over the past 15 years. Several years ago, we stepped up research and data collection with the advent of small highly loaded, cross-braced canopies. The purpose of our advanced testing was to find out if an aggressive canopy pilot with a small cross-braced canopy could activate an Expert CYPRES during an aggressive landing.

We know that very small canopies can reach freefall speeds, but these speeds can only be approached and sustained at altitude, as a high speed landing needs a certain amount of setup in order to perform a successful controlled landing. As soon as the skydiver has stopped turning to take care about his setup for the final approach, he bleeds off the previous speed, then re-accelerates during the diving spiral turn on the final approach for landing. Our experience from instrumented test jumps is that the skydiver did not have enough altitude and time to build up the necessary speed over a sufficient period of time to make the Expert CYPRES activate, as it is necessary to level out at a sufficient altitude to make it a survivable landing.

Although it is possible to (safely) reach the necessary speed for an Expert CYPRES activation at higher altitudes, according to our current knowledge base it is very unlikely that a skydiver will reach the necessary speed for a CYPRES activation after the setup for a high performance landing. This does not mean that something like this may never happen in the future as canopy designs further evolve. The activation speed of Expert CYPRES is 78 mph. This activation speed allows an activation in the situation of a light weight skydiver with a big jump suit and a pilotchute in tow malfunction. In recent years there have been several fatalities where jumpers under highly loaded elliptical canopies with a spinning malfunction were not able to cutaway or to pull the reserve. In none of these cases did the Expert CYPRES fire, as even under the permanent spinning canopy, the necessary activation speed for an Expert CYPRES was not reached.

In the 12+ years of CYPRES being on the market, we never have had an activation with an Expert CYPRES prior to landing because of excessive vertical speed under an open canopy. In recent years, a lot of canopy pilots jumping Expert CYPRES and highly loaded cross-braced canopies have made a significant number of high performance landings - none of them have experienced a problem. This situation, although very satisfying, does not allow us to lean back and not monitor what is happening in the fast canopy scene. We continue to monitor new canopy developments, and have a permanent data gathering program utilizing our data logger technology.

It is possible that with line twists or an out of control landing approach, that an incautious skydiver may reach the necessary activation speed to make an Expert CYPRES fire and to activate the reserve canopy deployment sequence. But, an incident like this would be clearly an emergency situation.

In October 2000, we performed numerous tests with Luigi Cani under the experimental 46 ft<sup>2</sup> Icarus VX. The 46 ft<sup>2</sup> Icarus VX, with a wingload of 3.6 is the only canopy to date which, according to our data gathering instrumentation, during an aggressive landing approach reaches the necessary vertical speed to make an Expert CYPRES activate. Under the 60 ft<sup>2</sup> VX, Luigi Cani was not able to reach the necessary speed for an activation. Even when reaching 78 mph for a moment, the Expert CYPRES would not activate. The reason is that CYPRES does much more than trigger based on measured descent rate and altitude, as it analyses the situation the skydiver is in.