What's the ***Skinny*** on Racing Balloons?

By Paul Petrehn

What can a 'racer' do for me?

Imagine flying a balloon equal to or smaller in size than the one you currently fly that gets better fuel economy, is more responsive and has improved stability in ascents and descents, all the while having cooler operating temperatures (especially while maneuvering).

It sounds too good to be true, but this is what the current breed of racing balloons delivers. Having flown Racers from three different manufacturers I have experienced first hand these improved flying characteristics.

While each brand has its own unique shape and features, they all possess the one characteristic that makes them perform the way they do – less aerodynamic drag. By reducing the diameter at the equator and increasing height to retain volume, distortion is reduced, ascent and descent rates are improved and the temperatures needed to climb and descend are less because of improved aerodynamics. The pilot is able to maneuver with much less effort through the sky.

Takeoffs/Landings/Ground Handling

These balloons inflate and land just like standard shaped balloons. Low altitude maneuvers where wind sheers are common can be performed with better stability and quicker responsiveness when an adjustment up or down is needed.

While still on the ground the taller profile of these balloons is slightly less advantageous than a shorter, wider balloon. They will tend to sway back and forth in the wind a little more when compared to a standard shaped balloon. A little more patience on takeoff is needed to ensure a straight launch when windy conditions persist, but this is a small price to pay for improved overall performance.

The combination of a large mouth diameter and Nomex scoop make for easy inflations in calm or windy conditions and reduce the likelihood of mouth damage when launch conditions really get tough.

The parachute diameter is also similar to that of conventional shape balloons. With the narrower shape, the concentration of heat at the top of the balloon and a similar sized parachute top, last second adjustments and final deflations can be made quickly.

Climbs & Ascents

Yes, these balloons really will accelerate quicker and climb faster when you want them too. What's the difference between the two? While ultimate climb performance is improved, perhaps the more important feature is the time it takes to reach a given rate of climb. Better vertical

Paul Petrehn and Erica Hahn in ZL-60 at Albuquerque Fiesta 2004.

acceleration means reaching the right wind layer a few seconds earlier than a standard balloon. While you may only need to adjust your altitude by a hundred feet or so, getting there quicker can make the difference between a dead-center drop and a 15 meter result. At some events a 15-meter drop can be last place!

A rounder top allows the balloon to climb straighter

with much less mushroom-like distortion and improved directional stability. Climbs with a racing balloon should be initiated and maintained with short burns, letting the aerodynamics take over. Long burns make it possible to over accelerate the ascent causing the balloon to tilt and not climb straight as intended, taking you away from your desired target line. The pilot is still the one controlling the rate of climb -- not the balloon.

The ascent rates are performed using less fuel than conventional balloons. They are also able to pierce through the air with much less effort by the pilot. Comfortable ascent rates of 1,000-1,400 fpm are easily attained depending on variables such as ambient temperature, payload and other air traffic. These rates may be exceeded with practice and if the variables are in your favor.

The pilots making these kinds of maneuvers definitely make safety their number one concern. Radio communication with in-flight flying partners and multiple chase crews give the pilot clearance only if 100% sure on any possible traffic above. Also, clear view windows and live parachute cameras are other innovations for safety not only for competition but everyday flying as well.

Descents

Just like climb performance, these balloons will descend faster and accelerate more quickly when you want them to and accomplish this with less distortion.

A less distorted balloon on a descent is an easier balloon to control and also requires less fuel to round out the descent. It also requires less in-flight venting to initiate the descent. Improved aerodynamics allow the balloon to accelerate quickly to the chosen descent rate, with only small blasts of heat needed to control and maintain the desired descent.

The descent rates achieved with these balloons are very comfortable at 1,000-1,400 fpm. The ambient temperature, payload and other air traffic are also variables for the descent rates as well. When descending a racing balloon short burns are utilized to prevent the balloon from softening, which leads to distortion, while maintaining the desired speed during the descent. These descent rates may be exceeded with practice and if the variables are also in your favor. In unfavorable conditions, exceeding these rates may cause distortion resulting in the pilot being taken away from the desired target line.

Why Better Fuel Economy?

Competition flying is all about maneuverability. While it's possible to win a competition in any size balloon (just ask my brother Andy), the less maneuverable the balloon the harder it is to recover from mistakes. It also becomes impossible to make those fine-tuning adjustments on final approach to the target. Traditionally maneuverability comes at a price – fuel. With the racer's improved aerodynamics, far less venting is required to initiate a descent, or arrest an ascent. Less venting means better fuel economy, which can be vital when trying to make the last target of a 5-part task.

Maury Petrehn drops from his ZL-56 at Albuquerque 2004

Summary

The flight characteristics of these balloons make them a joy to fly. Aggressiveness isn't needed to get that same pleasure out of these balloons that I have. I enjoy flying them even when there isn't a target to find.

Many racer pilots agree that in most competitive flights this type of performance isn't needed. They all agree that through the course of a year that somewhere between 3-5% of the competitive tasks called it would be an advantage to have a racer. With the competition so close these days that 3-5% is the difference from possibly being in the top ten. You could also look at it from the standpoint of having 3-5% more available landing sites every time you fly. These balloons have that extra performance when needed. If you're focused on competition you should consider a racer.

Paul Petrehn flew a Cameron ZL-Racer as he won the National Balloon Championship for the second consecutive year in August 2005. He works for Cameron Balllons in Michigan.