

Light Sport Balloons Weigh Off

By Jim Rogina

Henry Ford made his first car in 1896, but his first successful car, the Model T, wouldn't be made for another twelve years. Mr. Ford's Model T was different from all other cars being made because Mr. Ford found a way to make his car affordable, and suddenly, everything changed.

What's happening with hot-air ballooning in the 21st century — Composite Tanks, Light Fabric!

The new generation of Light Sport Balloon Pilots, like so many generations of pilots who have come before them, will challenge traditions and values in their time as a way of establishing their individuality. The Light Sport Rule and the ASTM Consensus Standards have been accepted by the FAA. This new generation



of pilots will do it their way — and that likely won't much resemble your fond memories of balloon club socials, gala balloon races, or scenes from *Ballooning Magazine*.

The new (non-commercial) LSALTA class is defined as a two-place recreational, sport, or training aircraft, registered in the US and issued a Special Airworthiness Certificate. While 14CFR Part 71 US Airspace operational privileges are upheld; a whole new deregulated set of FAA pilot and aircraft certification and maintenance rules apply. Light Sport balloons can be sold finished (SLSA) or in an up to 99% completed kit (ELSA). The new regulation addresses the general aviation product liability profile that lawyers have been so attracted to. The owner/operator who assembles an ELSA kit shares much of the product liability as the 'Builder' named on the Special Airworthiness Certificate, turning the product liability deep pocket inside-out. The price point

might shock the industry as these 2-place hot-air balloons will likely retail for less than half current competitive prices. These balloons might likely be manufactured domestically or overseas by large, well-capitalized companies that currently market and sell recreational vehicles like ATVs, or snowmobiles.

There are currently more than 10 domestic hot-air balloon 'type design' manufacturers and another 15 or so foreign manufacturers competing for a dwindling US market:

Adams Balloons (John A. Mc Neely, Sr.), Aeromagic Balloons [Brazil], Aerostar International, Avian Balloons, Balloons Chaize [France], Cameron Balloons Ltd. [England], Cameron Balloons US, Custom Nine Designs, Eagle Balloons, Fantasy Balloons, Head Balloons, Kavanagh Balloons [Australia], Kubicek Balloons [Czech Republic], Lindstrand Balloons Ltd. [England], Lindstrand Balloons US (Kempner), National Ballooning, Rubic Balloons [Brazil], Rusbal Balloons [Russia], Schon Balloons [Germany], Schroeder Fire Balloons [Germany], Sky Balloons [England], Snap Balloons [Brazil], The Balloon Works (Conn, Sidney), Thunder & Colt Balloons [England] and Ultramagic [Spain].

The FAA Aircraft Registration Database for 2004 shows that there were some 6,500 total entities that owned 9,500 US Registered hot-air balloons and there were only 100 new hot-air balloons registered in the US during 2004. In contrast, a million recreational vehicles are sold each year at an average of \$10,000 per unit. Over the last twenty years, the number of new general aviation pilots has decreased to alarmingly low levels. The Light Sport category, with its reduced liability profile, was crafted to address this national crisis. Recreational aviation in general, and specifically ballooning, has had such a ridiculous 'hassle factor' that only dwindling numbers of aging wealthy globe trotting competitive elite 'Old School' balloonists remain active.

Light Sport ballooning is designed to be "accessible". The new generation of balloonists just wants to fly and have fun, without all the expensive heavy baggage. They aren't trying to 'be seen' by anyone, promote anything, or set any records. Their lightweight equipment packs up and transports easily. The crew, if any, typically gets to fly as often as the owner/operator. The idea of trying to make a living flying hot-air balloons actually seems silly to them. They often fly out of or into the same rural areas where they operate their ATVs, or snowmobiles. Pilot ground instruction and flight training is enhanced with interactive flight simulation and DVD media. The ubiquitous cell phone GPS PDA, provide communications and pre-flight weather data. The simple joy in the spirit of flying is again available to all those who seek this once considered expensive, esoteric activity.

Twenty years ago the viability of 14CFR Part 103 Ultralight Ballooning was successfully killed with the perception of the 155lbs Dry Weight limitation. Sitting on or being strapped to a propane tank, solo, under a 38K envelope should have been a student's choice, not mandated by regulation, and this was just not an acceptable option for most. The necessity of a two-place trainer never materialized.

So what is the new Light Sport/Ultralight balloon equipment like? The two-place LSA LTA class is currently limited to 660 lbs gross weight, by definition. While some have suggested that this was an attempt to curtail the viability of the class, if this is true, in the case of Light Sport hot-air balloons, it has backfired. The present 660 lbs gross weight limitation has inspired an even more viable, less expensive, lightweight balloon design. The FAA's stated intent was to allow the class definition to reflect typical type design gross weight limitations for two-place hot-air balloons; (which is something more like 1200 lbs), and the appropriate changes will be made. While this increased gross weight will allow for the traditional, heavier system designs; in fact, this is not likely in the long run because they will be known as cumbersome, inefficient, and difficult to retrieve/transport.

Reconditioned traditional "bottom end" components might be a temporary inexpensive viable Light Sport "bottom end" alternative. However, I predict the heavier balloon designs will go the way of the Detroit automobile designs of the last century, and lighter-weight, fuel-efficient design and construction techniques will prevail over time.

Here are two examples of Light Sport Balloon configurations:

Light Sport Balloon (Ultralight configuration):56K Envelope – 90 lbs Basket/Burner/Hoses/Instruments – 100 lbs 2 Composite LPG Fuel Tanks – 48lbs empty (16 gal capacity) Inflation/Propulsion Fan(s) 16 lbs/each Total System Weight (Dry) – 238 lbs – 254 lbs (with fan) Restricted Useable Load [Wet] (660lbs GW Light Sport) 350 lbs Normal Usable Load [Wet] (1000lbs GW Light Sport) – 690 lbs

Light Sport Balloon (Average configuration):69K Envelope – 110 lbs Basket/Burner/Hoses/Instruments – 125 lbs 4 Composite



LPG Fuel Tanks – 95lbs empty (32 gal capacity) Inflation/Propulsion Fan(s) 16 lbs/each Total System Weight (Dry) - 330lbs – 346 lbs (with fan) Restricted Useable Load [Wet] (660lbs GW Light Sport) 200 lbs Normal Usable Load [Wet] (1200lbs GW Light Sport) – 740 lbs

Both of the Light Sport Balloons described above can be soloed as "Powered" Ultralights under Part 103 (254 lbs, Dry) and/or flown duo under the existing two-place training exemptions (496 lbs, Dry). The same aircraft are eligible for an ELSA Airworthiness Certificate. While 14CFR Parts 31, 23 and 21 are not required, some LSA LTA manufacturers will choose to design and manufacture in accordance with these regulations anyway, and FAA Aircraft Certification options will then be a choice for the consumer. These systems can be reconfigured, inspected, and with a paperwork upgrade, be issued a Standard Airworthiness Certificate. While the LSA LTA HAB Design and Performance Requirements emulate Part 31, some of the notable differences include deregulated burner endurance testing and basket-drop test certification requirements. There is a new category of LSA LTA HAB called "Vectored-Thrust" Balloons to give the powered "Fat Ultralight Balloons" a home.

ASTM LSA F37.60 LTA Hot Air Balloon Consensus Standards.

- 1) Design and Performance Requirements
- 2) Required Equipment
- 3) Manufacturer Quality Assurance Program
- 4) Production Acceptance Testing System
- 5) Aircraft Operating Instructions
- 6) Maintenance and Inspection Procedures [applicable for all Light Sport Aircraft]
- 7) Instructions for Continued Airworthiness
- 8) Manufacturers Assembly Instructions [kit builders only]

The FAA Light Sport Consensus Standards mandate is the harbinger of a "new era" for the FAA Aircraft Certification process. The dark years of product liability siege mentality; when design improvements were kept behind the curtain of indemnity, will not likely affect the advancement of LSA technology. The Light Sport Rule has been written with flexibility and safety in mind.

The FAA Light Sport Rule closes the gaps in existing regulations and accommodates new advances in technology. The rule allows operation of Light Sport Aircraft exceeding the limits of Ultralight aircraft operated under 14CFR Part 103, with a passenger, for flight training and for rental. The industry is changing. From Ultralight to Light Sport Ballooning to long awaited options for the modification and alteration of existing type designed hot-air balloons, tomorrow's LTA HAB consumer will have new choices.

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