

## Public Construction of an Amateur-Built Aircraft at the World Air Games 2009

This is the short story of a big adventure a group of young (and not so young) aircraft builders experienced in Italy in June 2009 and would remember their lifetime.

Agúst Gudmundsson, CIACA Alternate Delegate for Iceland and Co-leader of the project together with the Italian experienced aircraft homebuilder Mario Pozzini, tells the story of this project that raised much interest from the public during the World Air Games 2009.



### Young Volunteers Build an Aircraft for Charity Purpose

It all started in 2007 as the FAI Amateur-Built & Experimental Aircraft Commission (CIACA) discussed how to have home building presence at the World Air Games in Turin (ITA) two years later. The idea of building an aircraft at the World Air Games in front of the public soon emerged. It would be a one-week project, starting with boxes on the first day and ending with a test-flight on the last day. The aircraft would be built from a kit available on the market, and construction would be mostly achieved by a group of young volunteers from around the world.

With initiative and group effort of CIACA members, we got sponsorship for a Skyranger aircraft kit, a Rotax 582 engine with accessories, flight instruments and propeller. Even building tools were promised to be sponsored. The fully built aircraft would be donated to a charity organization, thus providing sponsors not only with publicity for their kit, but also with a charitable objective. The project looked very good and all preparation work was initiated.

But the world economic crisis broke out, sponsors started to withdraw, and the project encountered its first roadblocks. The drop out of the sponsor funding 50% of the Skyranger was dramatic, as this was the most expensive part of the whole project. It seemed to be the end of it, all preparation and work would be useless. I therefore decided to sponsor the project personally and CIACA agreed that I would sell the aircraft to recover my costs, the rest being donated to a charity organisation.

The project was on and the group of builders was selected from applicants around the world. We initially had a girl in the team, but she could not make it in the end because of exams. So the final team consisted of the great guys listed here (the girl part improved later).

Preparation work was underway, airline tickets purchased, accommodation booked and building place on the centrally-located San Carlo Square in Turin prepared. While Mario coordinated the project with organizers of the World Air Games, my duty would be to manage construction and make sure we could accomplish the ambitious task of building an aircraft from beginning to first flight in one week.

#### Young Builders

Lukas Kaupenjohann	(GER)
Jakob Platzek	(GER)
Pavel Pavlik	(CZE)
Lelio Loccia	(ITA)
Martin Anker	(AUT)
Markus Oettl	(AUT)
Atli Agustsson	(ISL)
Parajuli Bikash	(NEP)

#### Mentors (not so young)

Agust Gudmundsson	(ISL)
Mario Pozzini	(ITA)

But more sponsor problems soon emerged : The engine sponsor decided to provide a used working engine with used accessories instead of a rebuilt engine. This was not a happy situation, but it seemed to be workable. The value of the final built aircraft would be lower, with less value for charity. Then, just before leaving to Italy, I heard that the flight instruments sponsor had withdrawn support as well.

But the good news was that the building place and support team had been set up and the Skyranger aircraft kit delivered in Italy. Aware that even the smallest item could be problematic to reach in Turin, I continued my preparation by collecting all kinds of small items I envisioned we would need for construction : Small brackets, screws, locktite, ... and whatever I could think of, and a bit more, just in case. I also gathered small tools : 10, 12, 13 and 17 mm wrenches, cutters, drills, hand rivet tool and more that could fit one sports bag. The bag was in the end almost 20 kilos full of "stuff".

### Day 1 / Saturday 6 June 2009 : Opening Boxes and Assembling Main Structure

The whole group met for the first time at breakfast in our hotel in Turin on Saturday morning. We went to the main square where we would be working for the next 7 days, building an aircraft in front of the public. We had a tent to shelter us from the sun during our work and to be able to close the workplace during the night.

When we asked about the sponsored tools, we were informed that the sponsor had withdrawn his support : No tools were therefore available and we would have to work only with the few hand tools I had brought with me. Mario went to a shop and bought drills, screwdrivers, some pliers and a drilling machine. This battery-powered drilling machine would be the only electric tool we would have : This would be a very interesting build. We started by taking tubes from the boxes and organizing work.



Even though the group had never met before, the first day had been very productive : The main structure had been assembled, that is the cockpit frame including wheels, and rear fuselage frame.



Later this day, the Opening Ceremony of the World Air Games was held at our square, which was crowded with spectators. Athletes, FAI VIP's and organizers were in the front at the stage. We met with FAI President Pierre Portmann, FAI Secretary General Max Bishop, the President of the Aero Club of Italy Giuseppe Leoni and FAI Executive Board Members. After the Opening Ceremony, a VIP group of all the highest level persons paid a visit to our tent to look at our work.

### Day 2 / Sunday 7 June 2009 : Assembling Wings and Control Wires

We started work at 9 and continued from the day before.

Today we received the propeller, which looked an absolutely beautiful piece of workmanship, donated by the Austrian Homebuilders Association. The engine was not yet here and we were worried that it would delay our work as, according to our plans, we would need it the next day.



We installed all tail parts, including control surfaces, set the control wires and connected them.

Also we started the assembly of the wing frames. A very well done work in only two days with a new group of builders working on their own aircraft.

The public was very interested and some girls came to look at our work (I think). Also we saw some very interested people coming often during the day.



### Day 3 / Monday 8 June 2009 : Fit for Gliding, but still no Engine

Time flies when having fun ! This is certainly the case of our project. The fluid brakes were now in place, as well as all control surfaces. Control wires were connected to the rudder pedals and stick. The fuselage was finished, the wings built, covered with cloth and attached to the airframe.

The aircraft was now fit for gliding, but not for takeoff as the engine was still missing. Time was very short; the situation could be catastrophic : No engine meant no flight. All day we tried to find out where the engine and accessories were in the world. We finally reached the sponsor late in the day : The engine had not yet been shipped, but he promised the engine would arrive in Turin the next day no later than noon.



## Day 4 / Tuesday 9 June 2009 : Many highly interested Visitors and ... THE Engine !

As all the work that could be done before mounting the engine had been completed, we started today at 10 : But the engine was still missing. At around 11, a happy driver arrived from Spain with some boxes containing the Rotax 582 engine we were waiting for. We were happy to be able to continue our project as the engine was a key part.

Many home builders from around the world had visited us during the 4 days we had been working, and many spectators had been around again and again. We had a good group of assistants talking to the spectators and explaining what we were doing.



Today we mounted the engine, fitted the cowlings, added both 30-liter fuel tanks, and a bunch of small items were also fitted. The project was now looking very much as a fully working aircraft, but still many things had to be done before starting the engine.

We had been told that all required accessories would be delivered with the engine, but several vital parts were missing : Air intake filters, regulator, fuel pump, radiator and more. The engine was a used Rotax 582 with a brand new B gear. It had been a stressful time to solve the many small problems we had encountered. The big one, missing engine, had been solved as well, but it was not yet a fully working engine. We found a supplier who would provide the missing parts for the next day.

## Day 5 / Wednesday 10 June 2009 : Missing Parts to be funded

Missing engine parts were to be delivered today, but were not. It was very stressful and discouraging for the group, as the whole project again seemed to be in a dead-end. I decided once again to cover personally the costs and put again several thousands of Euros to make the project successful. We received the missing parts in the afternoon, smiles were again on faces and we continued our ambitious project.

## Day 6 / Thursday 11 June 2009 : Mounting Instruments and Planning Test Flights

We started building the instrument panel, drilling for switches and instruments. The instrument sponsor had withdrawn on short-notice and, once again, we had to buy some of the instruments.

As the saw/drills normally used for drilling instrument holes in the panel were not available, one of our team members built a tool with his brother, showing once again how skills available within our small group contributed to overcome roadblocks on our way.





We welded the exhaust, fitted it to the engine, and completed other engine-related work where another member of our group showed his strength.

Wiring the instrument panel fuel lines and more was done very well with good guys in our group. Also the firewall was taking almost all day to finish and install.

The airfield we had planned to use for test flights was 50km away from Turin. But a good friend of ours and CIACA member had landed on an airfield located only 5km away as he arrived from the Czech

Republic with his Europa homebuilt aircraft to attend the Games. He gave us all information on the airfield and we decided to use this airfield for our test flights.

One of the spectators who had been with us all the time for the last days had come from the southernmost part of Italy. He had never been so close to an aircraft construction and was very enthusiastic in following the project. We had learned to know numbers of spectators who came all the time and even helped out with some of the work. Our good assistance in the tent gave us a surprise celebration on our work and cooperation the whole week.

Construction work had been done very well even though the time available had been limited. All the builders were doing their part perfectly, resulting in a well built plane. We worked until late in the night.

## Day 7 / Friday 12 June 2009 : Last Construction Day – Aircraft Registration

On the last day of our build, we had to finish what was left to have the aircraft ready to fly on the next day. A truck had been ordered early on Saturday morning. We installed the radiator and all tubing for the cooling liquid. The pressure bottle didn't seem to be of the right type, but the supplier claimed it was. We fitted the windshield, the lexan covered doors, finished the wiring and many other small items.

Just imagine the tired hands riveting many hundreds of rivets, fastening windshield and doors with just one hand rivet tool. This was really an aircraft built by hand all the way.



For the first flight, the aircraft had to be registered and needed a valid insurance. A few mails and phone calls allowed me getting ultralight registration.

Many problems had to be solved during the last days, but all were done well and successfully. We had arranged for Rotax specialists to come to the airfield with additional spare-parts and new spark plugs, as some of the installed ones were broken or faulty. This meant more costs I again had to cover.

This was a very long day, we missed dinner and only came back to the hotel after midnight, tired but happy as the aircraft was ready to be shipped to the test flight airfield.

## Day 8 / Saturday 13 June 2009 : Maiden Flight

We started early to load the aircraft on the truck and ship it to the test flight airfield. The wings had been removed during the previous night.

The group of builders drove to the airfield about 5km away, followed by some assistants and many of the most interested spectators. We met the engine specialist at the airfield and started right away to attach the wings and prepare the engine.



We spent a long day checking everything and verifying the engine. Sadly, we realized that the pressure bottle of the cooling system was of the wrong type, as we had expected. We tried to purchase or borrow the correct one, but our efforts remained unsuccessful.

We tried out the engine and I taxied it around. The water heated too much and there was no way to fix this without getting the correct pressure bottle or modifying the current one; but we did not have the right tools to do it.

Finally we decided to do a short test flight : I would start at the beginning of the airstrip, take off, fly along the airstrip and land at its far end. I proceeded as planned and took off at the correct speed : **What a feeling to see this aircraft in the air !**

The aircraft flew straight forward, all controls worked perfectly for this short straight flight ending with a landing at the far end of the airstrip. The whole group and all friends around us were really happy : I could see happy tears in some eyes ...



As the engine was overheating at high power settings, we would unfortunately not achieve more flights. It was sad that, after all the work done during the last few days, the group of builders could not fly the aircraft. The group had become good friends, we worked together as a professional and trained team, accomplishing what seemed to be crazy and impossible : **But we did it, we built a plane from tubes in boxes to a flying aircraft in eight days.**

We ended the day by shipping the aircraft by truck to the Torino-Aeritalia airport, where we got a place in a hangar to assemble again the wings and make the aircraft ready for the Closing Ceremony of the World Air Games.

## Day 9 / Sunday 14 June 2009 : Display at the Closing Air Show

We started the day by going to the Torino-Aeritalia airport. I taxied the newly built aircraft across the airfield, but as the engine again overheated only during this short taxi roll, any idea of flying the aircraft during the airshow was out of question.

The aircraft was placed on static display where we had all sponsor information taped on the aircraft. It generated much interest from the public and athletes of other sports at the World Air Games, and I had the opportunity to roll the aircraft in front of the audience stands while the announcer provided information on this amazing construction project.



**I don't know how many showstoppers we had to overcome, but we always found a way to solve our problems. It was a great adventure for all involved and I deeply thank all of you for an unforgettable time during this project.**



After the World Air Games, I disassembled the wings and removed tail and control surfaces. The aircraft was packed into bubble plastic and shipped to Iceland. The amount of money I had personally invested in this project was very high. The aircraft has not yet been sold, but I am confident to sell it this summer (2010) and hope to recover my personal investment in this adventure.

### Final Words

This was a great adventure for all those who participated in this project. We all learned a lot about aircraft building, the friendship between all of us from different countries and different continents of the world, and the accomplishment was amazing.

This project has been a very good opportunity to generate publicity for amateur-built aircraft. It not only inspired the young members of the group, but also spectators and everyone who looked at the project :

**CIACA, the FAI Amateur Built & Experimental Aircraft Commission can be proud of this accomplishment !**

Agùst Gudmundsson  
11 March 2010