



With the addition of Apis/Bee to the product line, Pipistrel is now the most complex small aircraft producer IN THE WORLD, the ONLY AIRCRAFT PRODUCER offering both single-seat and twoseater side-by-side selflaunching gliders, two-seat motorgliders, UL two-seat go-the-distance aircraft, trikes and propellers. We are excited about welcoming all existing and new Apis/Bee family owners and we are confident to provide them with the best possible service! From its beginnings, Apis/ Bee was developed as a sister-ship to the Pipistrel's two-seat Sinus. Now, the sisters are reunited! Apis/ Bee is a middle wing ultralight glider with a T-tail. All plastic parts are made in AFK, GFK and CFK technology while all main parts are LN certified. The plane itself is made of armored plastic in combination of epoxy resin enforced with honeycomb, glass, carbon and aramid fibers. Featuring the same wing- and tail section aerodynamics as the Sinus and Taurus, you can be positive in Apis/Bee stellar gliding performance. www.pipistrel.si/planes/721

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Electric Powered Taurus (Electro)

In 1995, Pipistrel d.o.o. Ajdovščina were the first in the World to present a two-seat ultralight aircraft with a wing-span of 15 meters, aimed also at glider pilots. The aircraft was the Sinus, still going strong in production. She flies on all the Continents of the world and is used by flight schools, national aviation associations and even militaries for training of their pilots. After such a success it was quite realistic to expect there is also a market niche for a real microlight two-seat glider, as well as it's version with an auxiliary, fully retractable engine. Hard-core glider pilots were not convinced by the glide ratio of 1:30 that Sinus has to offer. The 'real' quality gliding goes together with glide ratios of 1:40 and more. This time, the main idea of construction was completely different from the one with Sinus, but the aims remained sky-high. The world's first side-by-side microlight motorglider,

later named Taurus was to: offer the pilots a REAL glider or it's selflauchable version with an auxiliary, vet fully retractable engine and

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glide ratio of

make gliding

Slovenija (SI)



cheap; provide a fully equipped aircraft, including a total rescue ballistic parachute system which saves the aircraft and both pilots, all instruments, radio etc. at a reasonable price; provide the owner with complete freedom and independence - even the helper holding the wing tip during take-off is now not needed any more by providing two main wheels in parallel configuration; have the most comfortable cockpit on the market with a separate ventilation system for each pilot and side-by-side seating arrangement; be pilot-friendly oriented without simple & straight-forward systems

handling. The fuselage of Taurus uses a special lifting body shape concept and features enough room for an auxiliary, yet fully retractable engine and an incredibly spacious cockpit. It was not easy to decide how to





The CAFÉ Foundation's Inaugural NASA PAV Centennial Challenge concluded on August 11 in Santa Rosa, California, and brought forth remarkable performances by several Personal Air Vehicles (PAVs). This great event was made possible by support from NASA and Boeing Phantom Works. Winning teams shared cash prizes from NASA totaling \$250,000. Prizes were awarded for Shortest Runway, Lowest Noise, Highest Top Speed, Best Handling Qualities, and Most Efficient, with the grand Vantage Prize of \$100,000 going to the best combination of performance overall. The first of five annual competitions, this launched NASA's vision for a new age of environmentallyfriendly personal air travel. Vance Turner's Pipistrel Virus flown by Michael Coates of Australia won \$160,000 by demonstrating the best MPG (29.8), shortest takeoff distance (736 feet over a 50 foot obstacle), 2nd best top speed (162 mph - 140 knots) and most overall points. The impressive debut of Virus, a high-tech, carbon fiber Experimental aircraft will likely move it to the lead among the next generation of low cost aircraft. www.pipistrel.si/news/674







A close range of Pipistrel motorgliders during the Pipistrel European Meeting, Aero Club Pisa, Valdera, Italy, 2007. Matevz Lenarcic piloting his Sinus during his world tour, FAI record. The Pipistrel Demo Team taking off during an airshow. The Apis gliding over clouds. The Taurus in flight. The elegant design of the Sinus, the best motorglider Low pass for the fast and





Virus912SW 10,4 meters w

> The widest range in the ultralight/microlight aircraft production.

From Taurus and Apis gliders (bi and mono place), to the motorgliders Sinus (15 m, glide ratio 1:27) and Virus (12.5 m, glide ratio 1:24) to the fastest VirusSW (10 m).

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For the complete list see

Project Hydrogenius



Hydrogenius is a revolutionary project aimed to introduce nydrogen fuel cell technology into aviation. University of Stuttgart's IFB and Pipistrel are partnering to develop the future of flying! Pipistrel has been in talks with University of Stuttgart's Institut fur Flugzeugbau (IFB - Institute of Aircraft Design) for a long time. With the introduction of Taurus Electro, World's first electric powered self launching two seater aircraft the communication between team Pipistrel and team IFB intensified. On 27 February, 2008, when prof. Rudolf Voit-Nitschmann, who is the father of the solar powered aircraft Icare 2 and the unofficial World Record holder for distance flown in a solar powered aircraft, visited us. Along him also dipl. ing. Steffen Geinitz and dipl. ing. Len Schumann and all were very impressed by Pipistrel's philosophy of preserving the environment and the rational way energy is being used at the company headquarters in Ajdovscina. The basis for the partnership on the project was agreed during the visit. We are proud to announce that Pipistrel will be a major partner in the

Hydrogenious project with the target of constructing the composite structures of the aircraft. The base for the Hydrogenius aircraft will be Pipistrel's Taurus. The side-by-side cockpit and low-drag fuselage will allow modifications to mount all fuel cell systems and hydrogen reservoir. Once the structures are ready, IFB will

integrate the advance hydrogen fuel cell system into the aircraft and ready the Hydrogenius for flying. At this point we are anticipating the official contract for project

partnership to be signed with both parties. About the Hydrogenius The challenge of the Hydrogenius is to integrate the fuel-cell propulsion system in combination with an electric motor into a super-light-weight all composite airframe. The aircraft is to be built according to EASA CS-22 standards, hence the MTOM is limited to 850 kgs. Using state-of-the-art

composite technologies the target weight for the airframe is only 310 kgs. Developing the Hydrogenius will present major challenges and finding solutions to problems never encountered before. Despite all this, both teams are determined to

produce a completely safe, utmost efficient and successful aircraft. Both parties are satisfied with the way where the discussions are leading and look forward to a tighter and fruitful collaboration also on other projects between

the University of Stuttgart and Pipistrel's new Scientific Institute for Aircraft Design & Applicable Technologies. Stay tuned

www.pipistrel.si/news/784

shape the pilots workspace, but in the end the fact that World's population is growing in all measures prevailed. The pilots in the Taurus are placed sideby-side for comfort and ease of communication. Taurus is also intended for training, therefore all control levers must be within reach of both pilots. Both pilots have individual control sticks and rudder pedals. The landing gear operation lever, flaps, airbrakes, tow rope release and trim levers are there for common use to both pilots and therefore found in the middle, between both seats. For added comfort pilots enjoy adjustable headrests, in-flight adjustable rudder pedals, separate vent window and nozzle for each pilot and along with a central ventilation system for efficient de-fogging of glass surfaces. The version of Taurus with an auxiliary retractable engine comes with a ROTAX 503 which is modified and redesigned by Pipistrel. The engine is twin carbureted engine and drives a Pipistrel's own developed propeller. This power configuration provides the aircraft with short-field takeoff and very decent climb performance. The system for extending and retracting the engine and propeller is fully automated. The pilot takes advantage of a dedicated interface on the instrument column and all he/she has to do is to flick the switch to 'engine

IN' or 'engine OUT' position - everything else is

done completely automatically. When retracting,

in further-development of the Taurus is definitely the substitution of the internal combustion engine with its electric counterpart. Several teams and research laboratories around the World have been researching the possibility of producing and electricpowered aircraft. Using the latest findings in the fields of batteries and charge storage as well as the recent developments of synchronous electric motors with small mass and high specific torque, the flight of electric-powered aircraft can now become a reality. However, to achieve electric powered flight, and doing this for a two person crew for the first time ever, there are quite a few hurdles to overcome. To name just a few: the specific weight of the batteries is still high and the number of charge cycles (life span) relatively low (measured in thousands of cycles); specific capacity of the batter-



Taurus requires a more powerful electric motor. The motives to develop an electric-powered Taurus self-launching glider were the following: to offer the customers with a new, high-tech and innovative aircraft propulsion; to reduce the pollution to the atmosphere; to reduce noise when flying under engine power; to reduce the cost of flying because of ever higher oil prices; to become the first truly useful two-seat electric powered self-launching glider (aircraft). The requirements upon designing the Taurus ELECTRO were mainly to develop a system that will enable the aircraft to climb to altitudes in excess of 2000 meters on a single battery charge; keep the current market price of the aircraft, the current take-off distance, the empty weight of the aircraft within the values of the internal combustion engine powered Taurus 503 with fuel, the current climb profile of the aircraft. Because of the fact that all current systems/aircraft only managed to succeed in the first of the above points they are not interesting on the market and even less as subject of serial production. They remain on the level of expensive piloting projects. Pipistrel is aware that the development reaches its goal only when the customers' orders confirm the idea as the correct one. Market research has undoubtfully shown a vast sales potential for this kind of aircraft, but only if all the mentioned conditions were met entirely. We have

therefore decided to focus on the development and

Contraction of the

In the pictures Top left and right column: some images of the factory, work in progress, the layout

of the project of the energy Bottom left column: plants, inside and outside details of the new Taurus the building. Electro: the engine, ground Electro: the engine, ground view of the glider, and a low pass during take off

gine then gets retracted and the engine bay covers close. To restart the engine on ground or in-flight the pilot selects the 'engine OUT' option and the engine extends and is ready for start-up in only 12 seconds. The entire engine retraction system is incredibly light and reliable, all switches and sensor used to monitor the operations are electromagnetic-induction type and as such not sensitive to vibration, mechanical damage and/or dirt. This system has also been developed in-house by the Pipistrel team. The same goes for the undercarriage retracting system, which is fully mechanic but needs very light force on the cockpit lever during operation. There are two main wheels in parallel configuration which ensure for comfortable taxiing despite the

fact they are not suspended. The tail wheel is not retractable but fully stearable instead, which makes taxiing a walk in the park. The airbrakes, flaps and the elevator trim are all mechanical pushrod type.

Upon customers wishes a tow-rope release mechanism can be fitted as well. The next interesting step ies could be higher; low efficiency of the existing solar cells and their current price; aviation legislation, which is very slow to follow the advancements in this field; customers being skeptic to the new type of propulsion

The electric-motor propulsion has been tested successfully on four light aircraft until the Taurus Electro - as an auxiliary engine on self launching gliders Apis, Antares and Silent and on the MCR light aircraft where a full-cell based propulsion was used. Mentions of Sonax using an Electric engine as a means of propulsions also exist, but no proof of flying has yet been published. Recently a French-made single seat Electra also flew under electric power. Because of all of the above the direct substitution of the classic aircraft engine with internal combustion on powered aircraft is not yet possible. The most plausible application of electric-motor propulsion however

points to the powered-gliders. Pipistrel's Taurus is a two-seat glider with higher approved take-off mass than the single seat gliders where the electric-motor propulsion has been tested so far. Therefore the

strive to meet the other four requirements. The task is of course unbelievably difficult as we are the first to attempt anything like this. We are fully aware that only (almost) unrealistic goals lead the way in a course of development. To be able to make our vision a reality we need to modify the existing Taurus aircraft for the application of the electricbased propulsion, the existing system for extension/ retraction of the engine; develop a cheaper system to control the charge and discharging phase of the batteries, a purpose-built propeller to maximize the efficiency at given constant torque; organize an innovative way of serial production to reduce production costs; use high-performance Lithium-polymer batteries with specific capacity touching 200Wh/Kg; develop and use of a very light highly efficient electric motor with high specific torque and a a system to recuperate (charge) the batteries in flight. This kind of a project is highly complex and we have therefore decided to collaborate with third party manufacturers (in alphabetic order). www.pipistrel.si/news/739

Pipistrel's factory: New Building

In the future, we can expect a mind-boggling increase of prices and more limitations on energy consumption. Alongside individuals, businesses will also be forced to seek for optimal solutions on the field of establishing efficient and renewable energy sources for everyday activities. One of the first companies, already aware of the future challenges, is Pipistrel d.o.o. Ajdovscina. At this moment, construction is nearing completion for the own research centre, innovatively designed as environmentally friendly, emissions free and completely energetically self-sufficient using renewable energy sources. This was achieved through careful planning of the building as both an energetic and thermal unit. The building incorporates geothermal head exchangers in symbiosis with a large geothermal accumulation field. The heart of the building is Slovenia's largest solar power plant which, combined with a cogeneration module covers for all energetic needs of the building, electricity and thermal energy conditioning included. Air conditioning is established in an innovative and efficient manner using ground

Pipistrel and its manager, Mr Ivo Boscarol, received numerous awards and international trophies .The most prestigious are Entrepreneur of the year in 2003, Economist of the year in 2003, FAI's Paul Tissandier diploma in 2006 for outstanding contributions to the development of aviation, the World Champion title 2001/2002 and the absolute victory on NASA's CAFÉ PAV Challenge 2007 for the Personal Air Vehicle of the future.

The company's evolution, vision and strategy are all based around preserving the environment and this very driving force is evident also in the work environment, from tools, equipment, floor plans to products.

2 Energetically innovative research centre Staying on top is much harder than just reaching the top once, and Pipistrel is well aware of this. Therefore, all available funds are transferred directly into Research and Development. For this very purpose a new research centre for applicative technologies, featuring an aerodynamics laboratory, laboratory for development of composite materials, laboratory for development organic fotovoltaic solar cells application to uneven surfaces and the laboratory for aircraft testing has been built.

The new building's footprint measures 2400 m2 and had been designed as environmentally friendly

To minimize thermal losses, polyurethane roof and side walls "sandwich" panels with thermal coefficient of K=0.18 are used. All doors, windows are K=1.0. Heating and cooling of the building in realized in the most rational possible way, by low delta-temperature ground radiation. In the summer, the water pumped through the ground is at 13° C, in the winter at most 33°.

To produce and store the energy an innovative system of geothermal heat exchangers and thermal accumulation field. The rationality of the process is further improved by the cogenerator and the heat pump. Electric power from the solar power plant (107 kW, currently largest in Slovenia), is destined for the market use exclusively and is directly output to the electrical network.

Ventilation inside the building is carried-out using recuperators, which are able to intercept 90% of thermal energy returning to the rooms, gasses from the welding shop are recycled with ionisators and return to the rooms at the same temperature. The complete system of lighting is controlled intelligenty - the amount of artificial light is determined by taking into account the current natural light levels inside the building.

2.1 Geothermal heat exchangers Geothermal heat exchangers placed around the

Ecolight certification for Sinus

After months of hard work, both Sinus 912 TW and Sinus 912 NW are now Ecolight certificated in Switzerland Obtaining the certificates, Sinus became the first ever Motorglider to be Ecolight certificated! We would like to thank all involved in the process of certification: Mr Peter von Burg, Mr Bernhard Hinz, Mr Heinz Baerfuss from the Ecolight certification office, Mr Marc Herzig, our Swiss distributor, Mr Peter Goetzner, our German distributor who lent his Sinus for testflying at Mollis and finally Mr Donat Boesch for believing that we will succeed in obtaining the Ecolight Certificates so quickly. Thank you all very much! The first two Ecolight Sinus 912 NW (HB-5001 and HB-5002) will be delivered to Switzerland in February and April, 2008. Congratulations to both owners! But this is not all! Pipistrel is getting ready to obtain the Taurus and Apis/ Bee Ecolight certificates in 2008! Works are well underway and everything looks very promising for the future Swiss owners of our self launching gliders... Stay tuned! www.pipistrel.si/news/774



Pipistrel European Meeting Follow-up

On the weekend of 16-17 June, 1st Pipistrel European Meeting took place at Valdera airfield in Tuscany Italy. and foremost, we would like to thank everybody who attended the first Pipistrel European Meeting; every owner who flew in with thei Sinus, Virus and/or Taurus from near and far, everybody who drived a long way, everybody who contributed to flawless organisation of the event and everybody from team Pipistrel who participated the event. Our special thanks go to Aeroclub of Pisa, Max Pinucci, Fabrizio Cerboneschi and team Pipistrel Italia for hosting the vent. Your efforts truly made the weekend special and will never be forgotten! On Saturday and Sunday, despite the not-perfect weather conditions (low couds over mountain ranges, strong winds and turbulence) more than 30 Pipistrel aircraft attented the event. Team Pipistrel, wearing distinctive bright orange shirts prepared a mobile service centre and consulted every owner about the condition and maintenence of their aircraft. The team worked faster than robots on two aircraft simultaneusly! Also, Pipistrel Factory Pilots flew with owners who were interested in upset and unusual attitude recovery training on both days. As a special surprise, Pipistrel Demoteam flew two

heating and cooling. This allows for the minimum possible temperature difference between highest and lowest water temperature in the building and yields maximum efficiencies and spares costs. The central intelligent supervisory system controls the whole building, including the lighting with regard to the current insolation, energy recuperation and ventilation systems and all that with respect to cur rent input economic parameters.

1 Introduction - Pipistrel, World leader in innova-tive design and production of UL class aircraft. Pipistrel d.o.o. Ajdovscina was established in 1987 and is the World leader in development and production of UL class powered gliders. The philosophy of aircraft design has been based on aerodynamically clean lines and a perfect surface right from the start. This provides the aircraft with more lift, while at the same time minimizing drag, yielding much lower fuel consumption than comparable aircraft. CO2 emissions are thereby significantly lower, as is the noise caused by Pipistrel aircraft.

and emissions free. All energy consumed by the building and the activities inside it is produced in without putting stress on the environment and is also used very rationally and efficiently. This allows for the building to be completely energetically selfsufficient using renewable energy sources. Pipistrel as the investor set this goal and the building design team was confronted with numerous difficult challenges to realize them.

n the pictures.

Left & right columns

some images of both self launching hig-per-

The buildings location, orientation as well as the shape of the roof had to be realized so that the solar radiation could be taken advantage of as much as possible. A major difficulty is the local phenomenon called "Burja", the very strong an gusty winds, at times exceeding speeds of 200 km/h. Pipistrel's virtual wind tunnel produced an aerodynamic study about Burja's effect on the building and its projected shape. As a result of this analysis, the building is oriented at an azimuth of 170° and not exactly southwards. The roof is inclined at a 30% bank, providing optimal efficiency to the solar power plant.

building are the primary source of thermal energy. A total of 1,200 metres of vertical gothermal heat exchangers provide approximately 36 kW of thermal energy. The carrier medium for thermal energy, a glycol-based fluid, flows through the heat pump, where by the use of the steam generator, compressor and condenser, the energy is either derived or added. The energy is transferred to the secondary thermal medium. In the phase of heating, the geothermal heat exchangers derive the heat from the ground, in the phase of cooling the heat is transported into the ground thermal accumulation field.

formance gliders of single seat equipped with Pipistrel: the Taurus (first two place side by side, and Sinus. Both gliders

ultralight motorglider in have great performance the world) and the Apis, a with an 1:41 glide ratio

2.2 Geothermal accumulation field for energy storage

The Geothermal accumulation field is the energy source for air conditioning (cooling) of the building The capacity of the accumulation field measures 5000 m3 and is placed underneath the whole of the building in form of 4 collectors each 250 m2 in footprint. The ground collector functions as a storage for exchange and deriving of thermal energy at rate of 25 W/ m2.



Virus 912 is a fast, yet very economic cruise aircraft. Ideal for cross-country flying it is also suited for aero-clubs and training flights. She offers unprecedented handling and performance while remaining highly efficient and every task she is confronted with. Full composite construction, 12.4-meter wing span and a glide ratio of 1:24 put Virus alongside motorgliders, but she maintains supreme maneuverability throughout the envelope. Features such as 4-stage flaperons, airbrakes, variable pitch propeller with feathering capability and an overpowered engine make the Virus literally a dream aircraft for many pilots. Undercarriage can be tricycle (nose wheel) of tail-dragger type. The engine is the famous and reliable four-stroke Rotax 912. With the Virus 912 you enter a new world of super-fast economic cross-country flying. Speeding over the skies at over 225 km/h (120 kts) will take you to destinations over 1000 km away without refueling. The advantage of using automotive (mogas) fuel or avgas means you can go virtually everywhere - and you do not need much of it, a mere 10-12 liters per hour at cruise speed will suffice! Efficient? No... the Virus is super-efficient! Virus 912 comfortable cockpit resembles the Sinus' and has a side-by-side seat ing arrangement with all the controls reachable to both pilots. The pedals, seat and headrest can be adjusted to suit your body size in just seconds. The large, ergonomically shaped, instrument panel has enough room to fit all the bits and you would wish to have beside the multifunction digital flight display, which monitors all flight- and engine parameters and comes standard with the aircraft. Full dual controls and straight-forward handling make the Virus 912 a fascinating aircraft for both primary and advanced flight training. Glider pilots can make an easy transition into the world of powered flight and still enjoy gliding with the engine shut-down



when the weather permits. The whole of the cockpit is also completely encased with bulletproof Kevlar® & Lexan® materials. This, together with an 1:24 glide ratio and a dedicated parachute rescue system makes the Virus one of the safest aircraft on the market. More than 200 aircraft of the Sinus/Virus family are now flying on all six continents of the World, being subjected to the most extreme temperatures, altitude and humidity and they have performed with an impeccable safety record. Virus 912 is made using the highest technology composites and best quality aviation alloys, including Titanium and Magnesium. This ensures a very long life-span of the aircraft and virtually maintenance-free operation. And if you do not intend to fly for a while, you can disassemble the Virus 912 in only 15 minutes - all the controls are self-fitting, making this task as care-free as possible. Many pilots consider the Virus 912 as their dream aircraft. She indeed does combine very fast cruise flying on unprecedented low fuel consumption, supreme maneuverability, the ability to fly from short runways and being safe in case of engine trouble - but it is dream? No. It is the Virus from Pipistrel... get infected!



Sinus ultralight motorglider combines a true sense of a motorlider with unprecedented efficiency during powered and long-range cruise flight. With the Sinus you can take-off and land on very short runways, fly long distance crosscountry and have fun gliding... all in the same aircraft! Sinus' sleek lines and fully composite construction with a 15-meter wing span, which provide for a glide ratio touching 1:30 will convince also the more demanding pilot in you. Being equipped with high-tech features such as flaperons, airbrakes and variable-pitch propeller enables the Sinus to excel at everything you put her through. She is easy to handle both in the air and on the ground and can be had in both tricycle or tail dragger undercarriage configuration. Sinus comes in two variants, the 503 and 912 with corresponding Rotax two- and four- stroke engines. Fast cross country flights to destinations 1000 km and further away doing more than 200 km/h (110 kts) are a reality with Sinus, even while burning around 10 liters of automotive fuel (mogas) or avgas per hour. Unbeatable efficiency! When the glider pilot in you wakes up, you can simply switch off the engine, feather the propeller and fly like an eagle, playfully taking advantage of rising air columns and soar into the sky using nature's own powers... Sinus' comfortable cockpit has a side-by-side seating arrangement with all the controls reachable to both pilots. The pedals, seat and headrest can be adjusted to suit your body size in just seconds. The large, ergonomically shaped, instrument panel has enough room to fit all the bits and you would wish to have beside the multifunction digital flight display, which monitors all flight- and engine parameters and comes standard with the aircraft. Full dual controls and straight-forward handling make the Sinus a fantastic training aircraft as well also for glider pilots. Excellent power-off flight

characteristics together with a Kevlar® & Lexan® encased cockpit and a dedicated parachute rescue system make the Sinus ultralight motorglider one of the safest aircraft on the market. More than 200 aircraft of the Sinus/Virus family are now flying on all six continents of the World, being subjected to the most extreme temperatures, altitude and humidity and they have performed with an impeccable safety record. Also, did you know that the Sinus ultralight motorglider claimed the World Champion title at World Air Games 2001 in the category of two-seat ultralight aircraft? Our products are all known for being virtually maintenance free. Highest technologies, including honeycomb techniques, which we use to build composites and best quality metal alloys, including Titanium and Magnesium, which are used on parts of the aircraft, ensure that the aircraft with last a lifetime in a like-new condition. And if you do not intend to fly for a while, you can disassemble the Sinus in only 15 minutes - all the controls are self-fitting, making this task as carefree as possible. The Sinus ultralight motorglider truly is an excellent package, which will satisfy your every desire - making use of short runways easy, cross-country flights super-safe & efficient and of course there is gliding... everyone who has experienced gliding will agree it is the best and purest way of flight!

b rate at 140 km/h 6,3 m/sec

ea urance 5,8 hours je distance 1200 km i load factor (x1,8) +4 g - 2 g i load factor tested + 7,2 g - 7,2 g

sink speed sink

glide ratio speed glide* e off run (450 kg)

e off over 15 m ice ceiling (450 kg) - 45° roll time

consum @ cruis.

90 deg)

90 km/h 1,03 m/sec 95 km/h 1:27 88 m 148 m

8800 m 4,2 sec 9,2 l/hour



Model	VIRUS 912 (SW)		<u></u>	Model	SINUS 912	
ENGINE ROTAX max power	ROTAX 912 UL 80 hp at 5800 rpm	max. horizontal speed manoeuvring speed best climb speed	240 (249) km/h 141 km/h 130 (120) km/h	ENGINE ROTAX max power	ROTAX 912 UL 80 hp at 5800 rpm	ma ma bes
PROPELLER	Pipistrel VARIO	max climb rate (450kg) climb rate at 140 km/h min.sink speed	6,2 (6,1) m/sec 5,9 (5,5) m/sec 96 (108) km/h	PROPELLER SIZES	Pipistrel VARIO	max clin min
wing span length height	12,46 (10,40) m 6,5 m 1,85	min.sink* best glide ratio speed best glide*	1,8`(2,4) m/sec 110 (120) km/h 1:24 (1:17)	wing span length height	14,97 m 6,6 m 1,70	mir bes bes
wing area aspect ratio positive flaps negative flaps	11,0 (9,1) m² 13,1 (11,3) 9 deg, 18 deg 5 deg	take off run (450 kg) take off over 15 m service ceiling (450 kg) 45° - 45° roll time	90 (140) m 167 (225) m 8100 (6200) m 3.1 (1.6) sec	wing area aspect ratio positive flaps negative flaps	12,26 m ² 18,3 9 deg, 18 deg 5 deg	tak tak ser 45°
WEIGHTS max weight (MTOW)	450kg/472.5kg/544kg	fuel consum @ cruis. speed endurance	9,5 (12,5) l/hour 5,7 (4,3) hours	WEIGHTS max weight (MTOW)	450kg/472.5kg/544kg	fue spe enc
PERFORMANCE stall with flaps	64 (67) km/h	max load factor (x1,8) max load factor tested	+4 g - 2 g + 7,2 g - 7,2 g	PERFORMANCE stall with flaps	63 km/h	max max
cruising speed (75%)		"(prop. 90 deg)"		cruising speed (75%)	200 Km/ 11	^(pro



Apis/Bee is a single-seat middle wing ultralight self launching glider with T shaped tail. All plastic parts are made in AFK, GFK and CFK technology while all main parts are LN certified. The plane itself is made of armored plastic in combination of epoxy rosin enforced with honeycomb, glass, carbon and kevlar

fibers. Featuring the same wing- and tail section aerodynamics as the Sinus and Taurus, you can be positive in Apis/Bee stellar gliding performance. In fact, Apis/Bee holds several World Records! Wings are made in sandwich construction. Top and lower surfaces are made first then all additional elements (main spare, basic ribs, air-brake enclosure, ...) are glued into top half. Air-brakes expand from top half of the wing only. Rudder is built the same way from two halves wit built-in control connections and hinges. Fuselage is built in combined AFK and CFK manner as a combination of shell and sandwich construction. Two halves are are built so that most of the elements are glued into one of them and then both are put

together. Carbon and kevlar are used from nose to wing section, while the rest is made in sandwich construction. Cockpit is covered with single piece Plexyglass cover opening in forward direction. Pitot tube and air vent (for air ing cockpit) are built into nose. Static pressure is measured on the side of the fuselage. Radio antenna is built in to aft vertical stabilizer. Tow tie is mounted on the lower front part of the fuselage. Rudder pedals are adjustable. Tail section. Horizontal stabilizer and rudder is made the same way as wings: in sandwich construction. Controls. All controls hook up

automaticaly. Vertical rudders, air-brakes and ailerons use rigid connections (tubes and bear ings) while vertical rudder is connected with steel cable. Landing gear is a non-retractable wheel with disk brake under the cockpit and



a small one on the tail. The wheel brake is accessible by air-brake handle.

Apis/Bee is a top performer and holdsseveral World Records in its class:

- > Free out and return distance 310km,
- (Tanja Pristavec, DU feminine) > Free distance using up to 3 turn points -347.6km (Tanja Pristavec, DU feminine)
- > Free distance 154km
- (Tanja Pristavec, DU feminine)
- > Free distance using up to 3 turn points 808.9km (Boštjan Pristavec)
- Speed over a triangular course of 100 km: 76.9km/h - (Tanja Pristavec, DU feminine)
- > Out-and-return distance: 501km (Andrej Kolar, DU general)
- > Speed over an out-and-return course of 500km: 82.1km/h
- (Andrej Kolar, DU general) > Free Three Turn Points Distance: 619.7km
- (Andrej Kolar, DU general) > Free out-and-return distance: 511.6kmb
- (Andrej Kolar, DU general) > Speed record over a triangular course:

Taurus UL Self-launching 2-seat glider 503

Taurus is the World's first side-by-side ultralight powered glider! It offers complete freedom and independence thanks to the retractable engine. double retractable main landing gear, excellent gliding performance, inexpensive maintenance and a well ventilated spacious cockpit. The idea behind the Taurus is to offer an autonomous

and affordable gliding solution. The aircraft is completely self-launchable thanks to a powerful Rotax 503 engine, a purpose developed Pipistrel propeller system and twin parallel main landing gear. You do not even need a helping hand at the wingtip any more! 15-meter wings with winglets, 5-stage flaperons and very efficient airbrakes together with a lifting-body shaped fuselage make the Taurus fly like a dream. Taurus climbs really well too - fully loaded she can easily outclimb conventional glider tows... from take-off to 500 m (1650 ft) she only needs 3 minutes, 6 minutes to 1000 m (3300 ft) and 10 minutes to 1500 m (5000 ft). Reaching target altitude you shut down and retract the engine at a flick of a switch - literally. The intelligent engine control system will do everything by itself, making sure the propeller has positioned correctly and retracting the engine for you, while you concentrate on finding that perfect lift! Then, take advantage of the excellent 1:41 glide ratio coupled with 5 flaperon settings and head to your next waypoint... Landing can be performed engine-in or engineout and you can easily vacate the runway taking using the comfort of the steerable tail-wheel. The cockpit of the Taurus is very long and comfortable. Even the really tall pilots will have no problems fitting inside. Side-by-side seating arrangement makes communication between the pilots perfect, unlike conventional tandem two-seaters. Full dual controls are reachable to both pilots and the pedals, seats, headrest and ventilation can be adjusted to suit your body size and needs in just seconds, also during flight. A



special ergonomically shaped instrument panel houses all the instruments you will ever want without obstructing the excellent view in all directions. There are side pockets for each pilot and a roomy baggage compartment behind the seats with space for an oxygen system as well. The whole of the cockpit is completely encased with bulletproof Keylar[®] material and the canopy is a single piece Plexy-glass without the disturbing arches. In the Taurus there is no need for pilots to wear parachutes, because the aircraft has one instead - standard! You always have the safety of a parachute rescue system with you and it's is activated at a pull of a handle. With Pipistrel, safety is the name of the game... Taurus is made using the highest technology in the field of composite materials, including advanced honevcomb techniques. Metal parts are specially fabricated using the best quality aviation alloys, including Titanium and Magnesium. This ensures a very long life-span of the aircraft and virtually maintenance-free operation. The wings and T-tail can be disassembled in a matter of 15 minutes with only 2 people and a stand, just like a conventional glider. All the controls are selffitting, making the task simple and as care-free as possible. A dedicated trailer is available as well as a hangar hoist system to lift the whole of the aircraft under the ceiling. For a glider pilot, the Taurus definitely is the hottest aircraft on the market! She comes richly equipped as standard, with a large choice of optionals, including a parachute rescue system (total rescue system) and basically all glider avionics out there...

span	14
area	12
ct ratio	18
age lenght	6,2
all eight	_1,
y weight	21
e wing weight	40
takeoff weight	32
akeoff weigh	25
speed VNE	- 22
airspeed in rough air	14
airspeed in aero-tow	14
ouvering airspeed	22
speed with air-brakes	22
peed MTOW	60
il type and ratio	IM
glide ratio @ 94 km/h	39
inking rate @ 84 km/h	0,!
d limits	+ !

max min s airfo

best min s G loa

4,97 m 2,24 m² 3,33 26 m 3 m 5 kg 2,5 kg 0 kg 0 kg 0 km/h 4 km/h 4 km/h 0 km/h km/h km/h 0 029 17,01%

3 - 2.65

		-	
Model	TAURUS 912		
ENGINE ROTAX max power	503 UL DCDI 2V 53 hp at 6600 rpm	VNE manoeuvring speed	225 km/h 163 km/h 100 km/b
PROPELLER	Pipistrel 2 blades	climb rate at 140 km/h	2,9 m/sec
SIZES wing span length height wing area aspect ratio positive flaps negative flaps	14,97 m 7,27 m 1,41 12,33 m ² 18,6 5 deg, 9 deg, 18 deg 5 deg	best glide at 150 km/h best glide at 180 km/h max. sink (airbrakes) max towing speed 45°-45° roll time max. speed airbrakes min.sink speed min.sink best glide ratio speed	1: 33 1: 23 6.0 m/sec 150 km/h 3.9 sec 225 km/h 90 km/h 0,78 m/sec 115 km/h
WEIGHTS max weight (MTOW) fuel tanks capacity	450kg/472.5kg 30 l	best glide take off run (450 kg) service ceiling (450 kg) fuel consum. @ full	1:41 180 m 3900 m 18 l/hour
PERFORMANCE stall with flaps	63 km/h	power max load factor (x1,8) max load factor tested	+5.3g -2.65g + 7,2 g - 7,2 g

sorties with a 3-ship formation and solo display. Needless to say that everybody enjoyed the beauty of Tuscany both on the ground and in flight. On Saturday evening, a dinner party in the hangar of Pipistrel Italia was arrange Great food, live music and numerous awards made the evening really special. Atendees found out about the secret musical talents of Max Pinucci, Matevz Lenarcic's new project and more and more. The highlight of the evening was the fireworks display which concluded the official part of the dinner. www.pipistrel.si/news/666

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Pipistrel flyes over the sky of China

Pipistrel is now also present on the Chinese market! The first aircraft was assembled and flew over the skies of China in the very first days of 2008. The aircraft was imported with the ZedTech help, the owner of the first Pipistrel aircraft in China is the company Beijing International United Flight. inds, which were present throughout our stay, we were able to demonstrate the aircraft capabilities and envelope very very well. Flying over Beijing and its surroundings will amaze anyone. The sight goes over infinite newest residential areas as well as thousands of years old historic buildings. Topping the amazemet are surprises such as artificial ski

slopes. Surprises in China just keep arising. Our future owner and enthusiastic pilot med Slovenia even before seing Pipistrel aircraft. As a bassionate motorcycle rider he has his bike equipped with a Slovenian product - the Akrapovic exhaust. We were very honoured by the visit of Mr Janez Žakelj, Counsellor of the Embassy of the Republic of Slovenia in China. We would like to express our sincere thanks for his help upon our entering on the Chinese market. Thank you very much and see you soon in Slovenia! www.pipistrel.si/news/769

Pipistrel Dubai

United Arab Emirates and particulary Dubai are places of superlatives. Team Pipistrel enjoyed flying over the famous Palm Islands the prestigious and iconic Burj al Arab hotel, the construction site of the World's highest building, the Burj Dubai and more and more... All this in the Sinus! Valuable discussions about establising the distributorship for Pipistrel in United Arab Emirates were made with Mr Hussain Almoalla. Rotax distributor for Middle East. Sinus impressed everybody with its flight characteristics, low fuel consumption, comfort and performance in Dubai's hot climate.

2.3 Function of the Geothermal heat exchanger in symbiosis with the Geothermal

accumulation field. Geothermal heat exchangers are connected to the Geothermal accumulation field so that it is also possible to run the system without using the heat pump at days where pumping the heat transfer medium around the building suffices. As requirements for the higher or lower temperature of the medium arise, the heat pump is activated by the system automatically. Temperature levels of the thermal medium coming from both energy sources are taken into account prioritized according to the desired economic parameters. Spare heat is accumulated inside the Geothermal accumulation field.

2.4 Cogeneration

Covering own need for electrical power while at the same time covering for the technical heat necessary inside the building, a cogeneration unit of 43 kW heating power is projected. The cogeneration plant is powered by a gas motor to be later exchanged for a biomass-driven motor and produces both electricity and heat. Mechanical energy is used to run the generator, which produces electric power. By cooling-down the motor and exhaust gases, which are ran through a catalyser and a built-in heat exchanger, also the spare energy is transferred and used for heating up water further used for technological processes. This water reaches a temperature of 80° C. The heat produced by the cogenerator can be sent to the heating distributor (35° C point) in the new power station, as well as to the boiler station inside the existing production facility. The total energy efficiency of the cogeneration system reaches 85%, which yields considerable savings. All gases produced by the cogeneration are ran through a calatyser/filtration unit, hence the emissions to the environment are incredibly low.

2.5 Heat pump

The heat pump is used to either chill or heat the glycol-based fluid. The heat pump is a compact type with three built-in parallel hermetic compressors. Hence there is only the need for a single cooling

2.7 System control and optimization

The complete system is under control of a single central intelligent processor. The central processor controls the geothermal heat exchangers, the air conditioning, heating and cooling of the building. Alongside these tasks the central processor prioritizes the main system units (boiler, cogenerator, heat pump, direct heat exchange, by-pass of the heat pump, etc.) according to the chosen economy based input values. This is how the most efficient and cost effective operation of the complete building is ensured.

2.8 Solar Power Plant

The roof of the building is covered by a solar power plant, which is with 107 kW the largest in Slovenia. Panels used are SolarWorld mono-crystal silicon panels with 25 year of guarantee until 80% off peak value. The fotovoltaic panels are coupled with 13 network inverters SMA Sunny Mini Central with 98% efficiency. Network inverters converts DC power from the panels to AC network distribution power and send it via a counter directly into the distribution network. Sunny WebBox monitoring hardware and software provides data around the solar powerplant for public view on the internet. The solar power plant has potential to grow to 200 kW power by adding fotovoltaic panels to the existing Pipistrel building as well.

Summary

Pipistrel is continuing its philosophy already demonstrated in form or World-class award-winning aircraft and putting it right into its premises, reseach new energy sources and innovative propulsion systems. The future will bring higly important strategic decisions, which will have a great deal to do with preserving the environment, and the company is already well aware of this. Every single strategic document describing companies vision and future is already mentions energy preservation as the first priority.

Regardless of the higher costs of construction and planning of such buildings, Pipistrel believes that it will soon become evident that such energetically self-sufficient constructions are indeed more cost effective over longer periods of time. Furthermore, we are convinced that other businesses will need to follow this vision shortly due to the sheer need for energy preservation as well as for the upcoming environment fees which governments will impose sooner or later.

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Pipistrel on **Events**

See the complete list of Pipistrel Events on the www.pipistrel.si/events web page.

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I.C.A.O. Aircraft designations for Sinus, Virus and Taurus!

When filing a flight plan, ANYWHERE IN THE WORLD, you can now use dedicated ICAO aircraft code for all Pipistrel aircraft. They are as follows Sinus, all models: PIS Virus, all models: PIVI Taurus, all models: PITA All are type L1P aeroplanes with turbulence category L. Aboved codes are valid NOW! You can check it at: www.icao.int/anb/ais/8643/index.cfm

Pipistrel **Propellers**

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VARIO

is a variable pitch propeller for Ultralight and Experimental aircraft. The VARIO propeller may be used as both, push or pull-type propeller and therefore suits all aircraft construction types.

BAM

is a ground adjustable fixed pitch propeller for Ultralight and Experimental aircrafts. The BAM propeller may be used as both, push or pull-type propeller and therefore suits all aircraft construction types.

LN

The Pipistrel Low-noise propeller is an adjustable fixed pitch propeller for Ultralight and Experimental aircrafts. The LN propeller may be used as both, push or pull-type propeller and therefore suits all aircraft construction types.

----homologation In the pictures: Others: the elegant and smooth design of Sinus: a masterpiece in the field Center comumn: The Virus during the PAV tructural load factor test inus's wing for German Café challenge, US of light planes

circuit with a flat freonic steam generator (condenser), cooling controllers, electric harness and a flat condenser (steam generator). Derived heat from the geothermal heat exchangers heats the 30% glycol transfer medium on the primary side of the pump the lower temperature (35/25° C) transfer medium on the secondary side. The medium is then pumped throughout the circuit.

2.6 Ground radiation

All three floors of the building feature the Ground radiation (heating and cooling) system. For every floor there is an independent distribution unit. The ground radiation system consists of a mesh of pipes made of high-density polyethylene PE-Xc, tested to endure continuous temperature load of 95° C and peak temperatures of 110° C, all at a pressure rating of NP12 bar. The temperature system of heated water is 35/25°, the distance between pipes in the mesh is carefully chosen so that the ground is never heated to more than 29° C. Ground radiation covers for the complete thermal losses of the building.

Flying Pipistrel Sinus in South Africa

Earthrounders (link to www.earthrounders.com) is a group of pilots who have flown around the world in light aircrafts (les than 7000 kg MTOM). Meetings are organised every two years around the globe. First was in Oshkosh in 2000, the last one in Cape Town - South Africa in March 2008. SA Assemby was organised by Hettlich family after tragical accident of their husband, father Frank who was killed in 2007 after ditching his Piper Seneca into South Atlantic.

At Stellenbosh airport we met with Kobus Nel, dealer for Pipistrel aircrafts in South Africa. He kindly organise check ride for my South African licence in his Sinus. After the CT meeting my wife and I took the car to Kobus residency in Nieuwoudtville where

we met again and with his wife Heather. They were extremly hospitable and made our stay unforgettable experience.

Kobus showed me some secrets of sun-set soaring above the long ridges on common westerly wind. In the evenings we had long discussions about flying, aviation and aircraft improvements. Kobus has a broad knowledge about technics and aerodynamics and explained his planned fuel-injection modification of Rotax engine.

Beside ridge soaring I flew in Kobus' Sinus along the Atlantic coast above many diamond mines and rough sea. Together with my wife Katarina we flew two days trip north to Kalahari and along Orange river back to Kobus farm. Nice colourful flying over remute deserts and Bushman Land. Thanks to Kobus we were able to see a good part of South Africa in just a few days and are looking forward to next visit.

Matevž Lenarčič



Pipistrel Trikes are light, extremely strong and safe, weight shift UL aircraft. There are nearly 300 units flying all over Europe, north Africa, Philippines, etc. The characteristics like: auto stability on ground, strong composite landing gear, low resistance in the air, low noise and high push with special Pipistrel propellers, are the main reasons that the Italian army chose Pipistrel trikes for training special army troupes. For the same reason the Pipistrel Trikes were used by the Army of Croatia in the independence war. But the trikes are mostly built for sport and school purpose. They are so universal that nearly all types of wings from all world wing producers fit on them. In Germany for example Spider trike was homologated with Hazard, XP, Mild, Falcon and Fun wings.



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With the 4-stroke Rotax 912 UL powerful engine, strong and soft composite profiled landing gear and full version options, Twister is the best on trike market you may choose. With PIPISTREL VARIO propeller (variable pitch in the air) as an option, and with a fast wing it becomes a real Formula 1 trike.





In the pictures, left page.

Tests on the wing of Sinus and Taurus done in Germany for the certification of the planes: the ćrash test showed a great resistance, really close to 10 g.

Some images of the Sinus in flight or on the ground, showing the elegance of the design and the accurate aerodynamic of the feature.

The cockpit is ergonomic, roomy and confortabl It is suited to fit with all anthropometrical measures, included very tall peopla (Ivo Boscarol is more than 1.90 m).

In the pictures, this page

Pipistrel Trikes are light, extremely strong and safe, weight shift UL aircraft. There are nearly 300 units flying all over Europe, north Africa, Philippines, and other countries and other countries

The characteristics like: auto stability on ground, strong composite landing ear, low resistance in the air, low noise and nigh púsh with special Pipistrel propellers, are the main reasons that the Italian army chose Pipistrel trikes for training special army troupes, and some were used by the Army of Croatia in the independence war



All models have

> spring front fork suspension and glass-carbon back suspension, > engine support on double set of anti vibration shock absorbers, seat belts,

> auto stabile front fork with foothold and fast tire change system,
> 4 ply 4.00 x 100 back wheels, > big composite instrument panel for 8 instruments mounted on shock absorbers,

> complete Electro installation with 2 engine check switches, > 4 aux. switches with fuses, main key switch with fire on board

security, > complete fuel installation with fuel pump support on shock absorbers, > hand gas and bowden choke levers, > all engine cables in auto lubricated
 Teflon bowdens,
 > support for battery

> pocket for documents

Interview Top gliding champions: Klaus Ohlmann

Klaus Ohlmann, multiple gliding World Record holder, speaks about Taurus. "Taurus has some great advantages, which originate from the ultralight world:

- > the glider has enough space in the cockpit for two very large pilots;
- > side-by-side seating arrangement is a real rewad in comparison to the tandem-seating. Flying the Taurus is a lot more fun;
- > the ballistic total-rescue system is huge advantage when compared to conventional motorgliders;
- > taxi with the double wheel undercarriage is a luxury, especially for training flights;
- > the overall quality and finish is surprisingly good; > it has self fitting connections for all
- flight controls big plus; > although being an ultralight, the glider
- feels like a real glider; > Taurus will definitely convince some of the ultralight pilots to start gliding
- > I will be testing the performace really soon, guided flights provide an ideal comparison;
- > the price is about 50% of what you would pay for another self-launching

two seater glider; I am positive, that the Taurus will be a sucess story in the world of Gliding!

The cockpit of the Taurus is very long and comfortable. Even the really tall pilots will have no problems fitting inside. Side-by-side seating arrangement makes communication between the pilots perfect, unlike conventional tandem twoseaters. Full dual controls are reachable to both pilots and the pedals, seats, headrest and ventilation can be adjusted to suit your body size and needs in just seconds, also during flight. A special ergonomically shaped instrument panel houses all the instruments you will ever want without obstructing the excellent view in all directions. There are side pockets for each pilot and a roomy baggage compartment behind the seats with space for an oxygen system as well. The whole of the cockpit is completely encased with bulletproof Kevlar[®] material and the canopy is a single piece Plexy-glass without the disturbing arches. In the Taurus there is no need for pilots to wear parachutes, because the aircraft has one instead - standard! You always have the safety of a parachute rescue system with you and it's is activated at a pull of a handle. With Pipistrel, safety is the name of the game... Taurus is made using the highest technology in the field of composite materials, including advanced honeycomb techniques. Meta parts are specially fabricated using the best quality aviation alloys, including Titanium

and Magnesium. This ensures a very long lifespan of the aircraft and virtually maintenance-free operation. The wings and T-tail can be disassembled in a matter of 15 minutes with only 2 people and a stand, just like a conventional glider. All the controls are self-fitting, making the task simple and as care-free as possible. A dedicated trailer is available as well as a hangar hoist system to lift the whole of the aircraft under the ceiling. For a glider pilot, the Taurus definitely is the hottest aircraft on the market! She comes richly equipped as standard, with a large choice of optionals, including a parachute rescue system (total rescue system) and basically all glider avionics out there... www.pipistrel.si/planes/35

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Interview Luca Urban TAURUS: THE OPINION OF A HAPPY OWNER

In the mid-late '70-'80s I had the chance to fly quite often with the Calif A21S, a wonderful two-seater sailplane made by the famous historical Italian aviation factory Caproni. It was, and still is, the best metal glider ever made and for some time the best two-seater glider, later equalled, but not surpassed, by the compositebuilt Janus C (I flew quite a

Matevz Lenarcic's **World Aviation** Project 2010

Flying over critical switch and choke points within the earth system North Pole - South Pole -Mt. Everest to provide evidence of global warming around the world with a Pipistrel Sinus - motorglider

Flight Path: Italia, Austria, France, Germany, Sweden, Norway, Canada, USA, Mexico, Cuba, Puerto Rico, Martinique, Venezuela, Brazilia, Argentina, Chile, Antarctica, New Zealand, Australia, Melanesia, Indonesia, Thailand, India, Nepal, Tibet.

Hard steps:

McMurdo (Antarctica) - New Zealand: 3500 km, Svalbard (Longyearbyen) -Canada (Resolute) via Northpole: 3100 km, Ushuaia - Patriot Hills (Antarctica) 3000 km

Why? Intentions and goals:

The Three Pole project will document the climate change through aerial photography from the Arctic to Antarctica, from glaciers to the oceans. It is real and it is accelerating across the globe. As the effects of this change combine with overpopulation and weather crises, climate disruptions will affect more people than does war. On the bases of the aviation and photographic projects Worldtranssiberia 2002, Wingsforever 2004 and Africa - Valley Of Life 2005 we are starting new world aviation project Three Poles 2009. This is an ambitious project to fly the lightest motorglider Around The World on the hardest way with the smallest amount of unleaded fuel, to show fragility of our only world and to test new techonolo-

Lenarcic's shoots:

in a no-analogue state, well outside the range of natural variability exhibited over at least the last half million years. The nature of changes now occurring simultaneously in the Earth System, their magnitudes and rates of change are unprecedented. The flight will follow the route Around the World via three poles and over many important switch and choke points within the earth System: retreating of Arctic ice, reducing of mountain glaciers, collapse of Amazonian forests, instabillity of West Antarctic ice sheet, monsun modulation, bistability of Saharan vegetation, climate refuges, ENSO Triggering.

Story behind the scene

This will be a story about an very ordinary man (biologist, photographer, pilot) who wants to give a meaning to his flying and contribute his share to global environment protection with rising awareness about vulnerabilità of our only planet and about human aggression to all kinds of life on the Earth. He will fly alone without any flying support. Only small aircraft with pilot and his camera. Wouldn't be our fragile environment with project realization even more poluted? His ultralight aircraft has small engine and it will use for the whole trip less fuel than pilot's car in the same period of time for his everyday life and bussines purposes. And pilot will use less electricity, less water... During the project. With the project Three-Poles, with extreme flying, photographing and talking he will rise awareness about actual problems as results of global warming. Every individual on our planet can contribute on his own way something to preserve our fragile environment.

Pilot doesn't know how to remove CO2 from the atmosphere but he knows piloting, photographing, writing, he knows how to survive in extreme conditions. He has pictures and voice to share facts and knowledge about actual field situation. Pilot - Matevž Lenarčič

Matevž Lenarčič is experienced long

North Pole

He is author of 9 books. The latest is about flying around the world »Around The Only World«, is graduated biologist and professional photographer.

www.wingsforever.com, www.lenarcic.net www.wingsforever.com

North Pole:

17 hours flying non-stop in no wind conditions, could be much, much more in reality. Very cold climate over sea, unpredictible weather and unreliable weather forecasts will make this long journey very dangerous. There is no way out in case of emergency. Close to the Pole magnetic compass doesn't work right. In case of GPS failure the use of World war II Sun compass could save the pilot and plane.

South Pole - Antarctica:

Antarctica is the key stage. Enormous distances, tremendous weather, hurricane winds, complicated organization and logistics permit very narrow space for succes. Antarctica is nobody land so anybody can go there without asking for permission. But acording to Antarctic Treaty, document about living, working, travelling on frozen continent anybody operating there should be able to remove everything he bring with him. So there is a need for support what complicate the whole story.

Mount Everest

(Sagarmatha, Chomolungma) 8848 m: The highest mountain of the world on the border between Nepal and Tibet (China). Since first being climbed in 1953 by Sir Edmund Hillary and Tensing Norgay, Mount Everest has maintained a constant fascination for adventurers and explorers. At high, the summit of Everest has become the of to stretch limits Everest has been climbed alone, it has been skied down, but never before soared over almost 9000 m goal adventurers their personal and human. without oxigen, motorglider have the summit. Never before light aircraft connect Kathamndu (capital of Nepal) and Lhasa (capital of Tibet) via Top of the world, tuching the death zone. Flying at altitude 9000 m with normal light aircraft is ultimate challenge for

Taurus, enjoying to a much bigger extent the pleasure of gliding with my friends and in principle with my wife Cinzia, a former glider pilot, and with my two teen-ager sons, possibly future glider pilots as well. Taurus has a unique combination of gliding performance, grossly matching that one of a good Club class glider like the Standard Cirrus (actually Taurus glides a bit better at high speed due to negative flaps), good flight handling, unique comfort in the roomy and well-designed cockpit with a fantastic big canopy, extreme versatility because of easy ground handling, due to relative low weight and compact size, no need of assistance for taxing, short take-off run and good climbing performance due to its powerful and reliable Rotax 503 engine. Moreover, the quality of construction and surface finish is at the level of the best glider factories and some details you find in Taurus are still rare in many gliders, such as the parachute rescue system, which is a great safety feature with the not trivial fall-out of a better cockpit comfort because there is no need of a personal emergency parachute. Then, you can rely on a factory like Pipistrel which is absolutely unique for brilliant and innovative aviation design, So, I am definitely a very happy Taurus owner and expect to tell you shortly something more about my future long distance

flights with it. Luca Urbani



order. I was also encouraged by very favourable comments from some glider pilots friends of mine who had the chance to test-fly it at its first public appearance (Ozzano, Italy, June '04). But I placed the order without really seeing and/or flying it. Finally in November 2006 I got my beautiful Taurus. It was worth the wait. Now, after one and a half year I am very happy to own it, even tough unfortunately I hadn't the chance to fly it and exploit its full potential as I would have desired, just due to the Italian rules, (ultralights are facing a lot of restrictions). However, in the coming gliding season, I hope to finally have the chance to make some long distance flights with my

gies for future researches in the extreme conditions. The lightest motorglider Around The World on the hardest way, via three poles and numerous other indication spots of global warming, with the smallest amount of unleaded fuel.

World firsts to be set or broken:

- > first aircraft around the world via all three poles (North, South, Mt. Everest). > first single engine aircraft categories C1/c (-500kg), C1/b (-1000kg), C1/a (-1750kg) around the world via both poles
- > first solo world flight via poles
- > first flight Around the World in ultra light aircraft via Poles
- > first on Antarctica to South pole
- > first motorglider above Everest
- > first private aircraft flight from Katmandu (Nepal) to Lhasa (Tibet-China) > speed records

Story The Earth System is currently operating

distance flyer. He accomplished several aviation projects:

- > Worldtrannsiberia 2002: 28 000 km over 8 countries
- > Wingsforever 2004: 38 000 km Around the World over 23 countries
- > Africa 2005: 17 000 km over 13 countries

He flew in 48 countries around the globe and log more than 2000 hours in different single engine aircrafts. He owns Private Pilot Licence with night and IFR rating. He has also Ultralight Aircraft Pilote Licence.

Records: National speed record Around The World - Eastbound C1, World speed record Around The World - Eastbound C1A (unofficial), 2. place National RAL2 2005. FAI bronze, silver and gold colibri, FAI Circumnavigator East Diamond. Membership: AOPA Slovenija - member of the council, AOPA America, EAA America, Air Club AK Prlek, Air club DLZSD.

case of loosing controls (mountain waves, rotors...) flutter is inevitability and aircraft will most certainly fall apart. Almost 360 days per year the weather around Everest does not allow humans to be there. Ferocious winds, exceeding 200 km/h, thin air, stormy TC clouds rules Himalayas what makes one of the most unhospitable place on the Earth. Aircraft design is alway compromise between speed, lift, consumption and weight. It is impossible to create universal flying machine. Pipistrel Sinus is the best in its class. No other aircraft can fly so far, so long, so high and so fast with fuel consumption as low as 11 l/h. Crossing Himalaya via the top of the Mt. Everest will be good oportunity to document retreating glaciers and other environmental changes, the results of global warming.

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