

Hobby People®

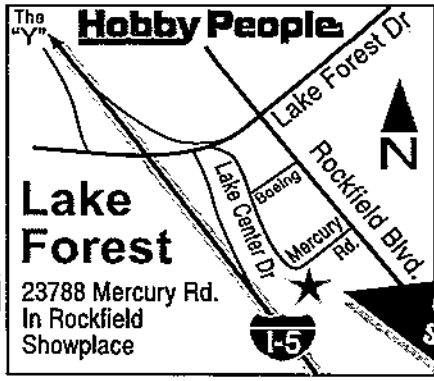
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CLUB MEMBER SPECIALS!

**HELP
WANTED**

Come join the team!
* Hobby People is growing! *
We are always looking for enthusiastic, knowledgeable people to come and join our great team! Openings available in management and retail sales. Contact your local Hobby People store manager.



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15% Off tag price!
All types
Covering, trim, graphics



15% OFF

ONE COUPON PER CUSTOMER. OFFER EXPIRES AUGUST 31, 2003

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WATTAGE
No. 128418
Regularly 59.99

Sukhoi SU-31
R/C ARF electric
Park Scale Flyer

SAVE \$10
49.99

ONE COUPON PER CUSTOMER. OFFER EXPIRES AUGUST 31, 2003

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20% Off tag price!
Your choice!
Fly safe, with a fresh pack!

CIRRUS Receiver Battery Packs

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Regularly 49.99

PF-12 Charger
AC/DC Peak 4-12c

SAVE \$10
39.99

ONE COUPON PER CUSTOMER. OFFER EXPIRES AUGUST 31, 2003

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Equip all your R/C planes with the wiring they need!

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Hobby People CLUB COUPON

With Meter & Charger!
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Regularly 24.99

MAGNUM Glow Starter

SAVE \$5
19.99

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In So. Calif. & Nevada!

Hobby People®

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Corner of Rockfield & Mercury
(949) area code

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760-739-5888

SAN DIEGO
4344 Convo St.
South of Balboa
858-268-7997

EL CAJON
469 Broadway
At Ballantyne
619-444-6135

WEST LOS ANGELES
10815 W. Pico Blvd.
Pico at Westwood
310-234-2425

LA HABRA
1401 S. Beach Blvd.
Near Imperial
562-947-2574 714-894-5721

PASADENA
270 North Hill Ave.
North Hill at Locust
626-568-0883

ENCINO
5541 Balboa
Balboa at Burbank
818-995-1162

ORANGE
311 E. Kalella Ave.
Near Glassell St.
714-288-8170

LAWNDALE
16725 Hawthorne
Hawthorne & 168th
310-214-0244

FOUNTAIN VALLEY
18475 Pacific Street
405 Fwy, Euclid exit
714-964-8846

LAKELWOOD
5449 South Street
South at Bellflower
562-804-2515

CAMARILLO
1775 E. Daily Drive, H
near Carmen Drive
805-445-1305

SANTA CLARITA
20855 Soledad Can.#41
Between I-5 & I-14
661-298-3300

CHINO HILLS
2571 Chino Ave.
In Rolling Ridge Plaza
909-364-0167

RIVERSIDE
10128 Indiana Ave.
Tyler Village Center
909-785-6773

RANCHO CUCAMONGA
12459 Foothill Blvd.
Foothill at 15 Fwy.
909-463-0557

MURRIETA
26755 Jefferson Ave.
Between Murietta &
Winchester
909-677-5816

REDLANDS
835 Tri City Center Drive
I-10 at Alabama
909-307-1185

N V A D A

LAS VEGAS #1
2610 S. Decatur Blvd.
Decatur at W. Sahara
702-871-6191

LAS VEGAS #2
5466 Boulder Highway
At E. Tropicana Ave.
702-547-2204

HOBBY PEOPLE STORE HOURS: Monday-Friday: 10a.m.-9p.m., Saturday: 10a.m.-6p.m., Sunday: 10a.m.-5p.m.

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AMA Charter #128
The Western Soaring Capital
<http://www.1hss.org>



SEPTEMBER 2003

President Message

Well, let us start off Sept. Newsletter with the good news first. We still have a flying field at Fairview Park, that's good.

HSS asking city of Costa Mesa to move the mounds near the walkway, so all the flying can be done north west of the walkway. The club feels that would reduce the low flying over the walkway. The club also needs to go to the city now, to see if we can do some mowing for the winch aria for SC2 contest in Oct.

Second, good is, Fred Hesse is taking over the Newsletter editor job. (Thank you Fred) and Michael Gaczowski is going to help out Fred. (Thank you Mike)

Now who's going to do the VP job?

Now for the bad news, it's almost Labor Day weekend, where did this year go? Time sure goes fast when you're having fun or is it just me getting older and can't remember one minute from the next?

FLY HIGHT and tell the smokers to keep their butts off the ground. KARL, THE BIG-P.

HSS PO BOX NEW, A new magazine came in the mailbox last week, FLY R C, after looking through it, I would recommend checking it out, a lot on Electric Flight and on page 17, they show a 8,200mAh power pack, a replacement for 12-cells 3000mAh. See flyrcmag.com, I'll have the magazine at the next meeting Sept.2, if you would like to take a look at it.

PRESENTING: The one, and only **Dennis Brandt**, out standing model builder, flyer, and nice guy. President of ISSA, International Scale Soaring Association and member of HSS, **Dennis**, will be at the Sept. 2 HSS meeting to show and tell use about his 1935 Vintage Gruna Baby 2B, weighing in at about 37 pounds, 40% scale size, with a 6 meter wingspan, 226 inch.

EL TORE

Dennis will fill use in on **OCMA**, Event at El Tore, **By Invitation only**- The Southern California Glider Aero tow Festival, September 19, and 20 and 21 2003.

September 2 HSS meeting don't miss it, it's sure to be a good one!

Harbor Soaring Society Club Shirts, See Karl Hawley if you would be interested in getting a club shirt, they are about \$38.00 for a nice one or less for a T-shirt. We will need to order about 14 for that price. Or if anyone knows of a place with a better price, please let me know as soon as possible. Thank you, Karl!

FirstName	LastName	City
Chris/Casey	Adamczyk	Corona Del Mar
Mike	Aguirre	Diamond Bar
John	Amies	Newport Beach
Dennis	Anderson	Westminster
John	Anderson	San Clemente
George	Azvedo	Tustin
Joe	Ballasch	Downey
Bob	Barry	Manhattan Beach
John	Bradford	Anaheim
Dennis	Brandt	Anaheim
Mark	Browning	Laguna Beach
Nicholas	Buzolich	Irvine
Phillip	Caricof	Costa Mesa
Kiho	Chang	Stanton
Frank	Chasteler	Costa Mesa
Gene	Cherryholmes	Westminster
William	Clark	Costa Mesa
Ben	Clerx	Newport Beach
Walter	Cloer	Huntington Beach
David	Cohen	Santa Ana
Will	Conrad	Fountain Valley
Tom	Copp	Costa Mesa
Alvin	Cron	Santa Ana
Bernard	Debbasch	Newport Beach
Ron	DePinto	Huntington Beach
John	Donelson	Huntington Beach
Bill	Eckles	Irvine
Larry L.	Enger	Wildomar
John	Farley	San Juan Capistrano
Mark	Ferreira	Orange
Richard	Fish	Fountain Valley
Michael	Gackowski	Mission Viejo
Bob	Geer	Mission Viejo
Michael	Geers	Huntington Beach
Steve	Grande	Irvine
Warren B.	Greer	Costa Mesa
Bill	Hagthorp	Santa Ana
Herman L.	Hall	Orange
James L.	Hanson	Costa Mesa
John (Yani)	Hasircoglu	San Juan Capistrano
Karl	Hawley	Costa Mesa
Kyle C.	Hawley	Costa Mesa
Mike	Heath	San Clemente
Deron	Hehr	Newport Beach
Steve	Hendry	Fullerton
Fred	Hesse	Huntington Beach
Frank	Hoffman	Laguna Beach

FirstName	LastName	City
Chuck	Hollinger	Costa Mesa
Larry	Jolly	Westminster
Joseph B.	Jones	Fountain Valley
Del	Kahan	Newport Beach
Rick	Keating	Fountain Valley
Chris	Kenyon	Yorba Linda
Les	Kenyon	Newport Beach
John	Krug	Orange
Chester C.	Lincoln Jr.	Newport Beach
Roger	Mac Gregor	Newport Beach
Charles	McPhee	Huntington Beach
David P	Nemecek	Vista
Dick	Pantzar	Newport Beach
Michael	Parker	Mission Viejo
Jim	Parsons	Garden Grove
Ron	Quintana	Cypress
Don	Quiroz	Huntington Beach
Larry	Reed	Santa Ana
Tim	Renaud	Lake Forrest
Gordon	Ritschke	Costa Mesa
Eric E.	Roberts	Balboa Island
Bruce	Schaeffer	Anaheim
Rodger	Selander	Mission Viejo
Bob	Sliff	Costa Mesa
Jared	Stalls	Lakewood
Tatsujiro	Takayama	Hacienda Heights
Ross/Maxine	Thomas	Santa Ana
Eric	Thorton	Orange
Tom	Vincent	Placentia
William	Vincent II	Newport Beach
Bob	Walker	Huntington Beach
Arthur	Weiland	Huntington Beach
Gary	Westland	Rancho Santa Margari
Robert A.	Wright	Santa Ana
Arnold	Frankenberger	Costa Mesa
Norman	Kutch	Costa Mesa
Troy	Peterson	Costa Mesa
Richard	Culbertson	Santa Ana Heights
Jim	Sneed	Cypress
Kenneth	Hildreth	Huntington Beach
Don	Hofeldt	Huntington Beach
John e	Barr	BREA
Jerry F	Laux	Huntington Beach
Robert A	Mellerski	Corona Del Mar
Greg/Adrianna/	Smet	Anaheim
Henery A	Smith	Tustin
Don	Zink	Yorba Linda

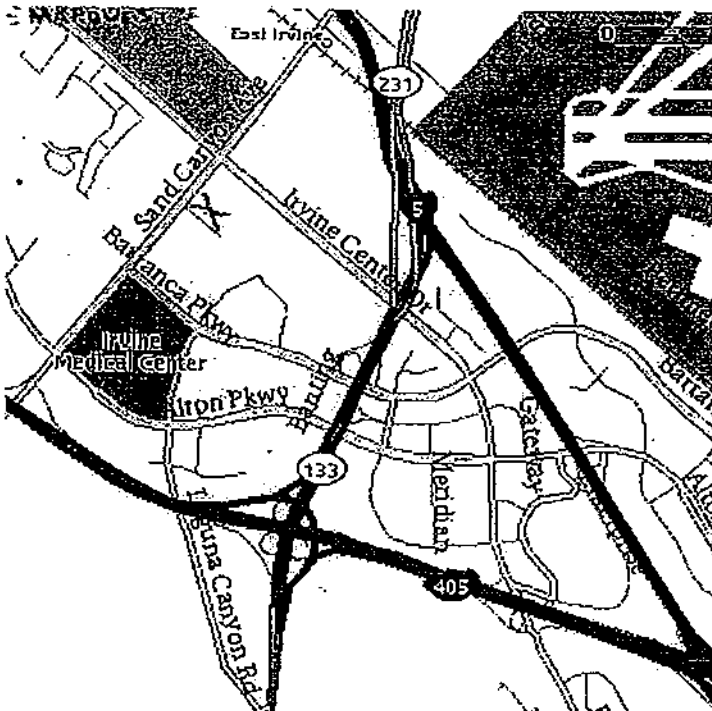
FirstName	LastName	City
Michael	Nisbet	Huntington Beach
Mike	Voegtli	Anaheim
Gary	Gullikson	Garden Grove
Kip	Duff	Costa Mesa
Mark	Gund	Costa Mesa
Don	Ramsay	Newport Beach
Bill	Iles	Huntington Beach
Duane/Galeh	Giggs	Tustin
Ronald	James	Foothill Ranch

CLUB MEETING: September 2, 7:00 PM. SHOW AND TELL, 7:30 SHORT BUSNEST MEETING. DENNIS BRANDT, THE MAIN MAN!

CLUB CONTEST: September 7, 8:45 AM. FOUR TEN ROUNDS, MAN ON MAN OR WHATEVER.

IRVINE WATER DISTRICT

Located on Sand Canyon Ave. 1/2 mile East of 405 fwy. 1/2 mile West of 5 fwy.
South side of avaneue.



**COME TO
YOUR NEXT
MEETING
September 2
7 pm
Show & Tell
Meeting 7:00**

August 2003 Harbor Soaring Society Minutes

Note: secretaries comments in () when he remembers!

Karl brought meeting to order at 7:30 pm.

(The August meeting went well. 14 in attendance. Hey, you missed out!)

Officers in attendance, Karl, Warren, Chris, and Troy. Larry Jolly has resigned as VP. Want to represent your club? See Karl.

Karl has asked that a letter to be drafted to the city of Costa Mesa regarding safety at the park. Karl would like the mounds to be moved an additional 100' in order to facilitate a flat area west of the path for landing and take-offs. The mounds currently have only a 45' distance to the path, which is much too narrow. We are unable to hold a 10-man contest due to this. The field also needs to be mowed to safely facilitate larger contests.

Fred Hesse reported on his progress with the flying school. He is currently looking at an AMA grant that would help with funding. Fred has also obtained criteria for Introductory Pilot Selection. This is a good thing. Before we teach, lets make sure we are checked out. For more on Fred's progress, see enclosed update from Fred. Thanks for your support Fred.

Fred has volunteered to be the Editor and another club member has also volunteered to lend a hand with the layout. Looks as if Karl will be taking a smaller role in this and the new volunteers are thanked for your participation. More updates to follow on this.

Fred Hesse has the clubs collection of newsletters dating to circa 1985.

We need a historian who is willing to take care of the clubs memorabilia. If you have an interest, see a club officer.

October 25, 2003 is the annual HSS sponsored SC2 event. We need help to run this contest. Jobs range from check-in, field clean-up, radio impound, all-around gopher, etc. Please see Karl or a club officer and donate some of your time for your club. Lets impress the other clubs that show up to fly.

Karl has several Real Balls winches he has done maintenance on, and I believe, several he has recently received in the mail. Karl has also converted two Chevy-based winches to stronger Ford starter-motors. When you see him, thank Karl for all his hard work.

Karl has done some preliminary pricing of club shirts. They are approximately \$38 if we purchase 14 or more. The proposal is for an embroidered logo on the front and a thee-color silk screen on the back of the shirt. Let Karl know if you are interested. (This will really help club organization and bring the club together, get your order in early.)

Don Zink talked to the club about free-flight. This was quite interesting. He showed several planes and they are really quite sophisticated. One is for calm air and the other for somewhat windy conditions. His ideas are not only good for free-flight, but good for RC too. A ton of information was given, and many were amazed at the intricacy of the hobby. Thanks Don for your excellent presentation.

Henry Smith shared his bi-plane. He scratch-built his bi-wing beauty. You gotta see this one. This guy is sure handy with the shop tools. Congratulate Henry on this beauty next time you see him at the field (he drive a convertible Audi TT).

As Always, be sure to check all posted contest and club-function dates to confirm that they correspond with the correct numerical day. (Please, no more grumbling about this at the meetings, you can look at a calendar and cipher it out for yourself!)

Remember, lets fly safely and quietly. Stay north of the path except for landings. Let's be good neighbors.

Meeting adjourned 8:40 pm.

Old minutes which are still current.

Hobby People of Fountain Valley donated not one, but two Cirrus ARF 2M sailplanes for the Adopt-a-School program. HSS would like to send warm thanks to Hobby People, not only for this most recent donation, but for all the gifts presented to the club over many years. Hobby People, your kindness and generosity are appreciated. If you have a hobby need, satisfy it at Hobby People.

The city has approved the HSS flying site and sent the Fairview Park site-plans to the state.

The Daily Pilot came out to the field on Saturday May 17, 2003 and several times the following week. Karl also went to the field to meet the reporter. He took time off of work to do this. Please thank Karl for doing this. Long live Karl Hawley and the Harbor Soaring Society.

Troy Peterson was elected to the position of liaison to the Friends of Fairview Park in the May 2003 meeting. Troy also helps out with field policing. Troy has attended several park meetings and done a fine job representing HSS. We appreciate your commitment to HSS Troy. Thank you.

(Read this one again.) Around the first of the year, a member made a great point, which should be obvious to all of us. It is one we often forget, or are just not aware of. Fairview Park is owned by the city of Costa Mesa. The city has given us a great gift in our flying site. Therefore, view the flying rules and general etiquette in light of this great gift. Rebels not needed.

(Get yourself out to the monthly meetings. Suggest how HSS can be better in the future. It is your club!).

Orange County Modelers' Association

OCMA Event Invitation



JR Southern California GLIDER FESTIVAL

September 19, 20 and 21, 2003* at
OCMA's El Toro Field, Irvine, CA

For Event Info
Call Rick Briggs
(562) 421-4864
<http://www.soaringssa.org>

***Limited invitation to non-OCMA members/spectators ONLY on Saturday, Sept. 20th from 8:00 am - 6:00 pm (No spectators on Friday or Sunday) Event participants (registered pilots) have exclusive use of the field during: Friday; noon-dusk, All day Saturday, and Sunday; 8:00 am - 2:00 pm**

NO PARTICIPANT OR SPECTATOR ADMITTANCE WITHOUT THIS INVITATION**

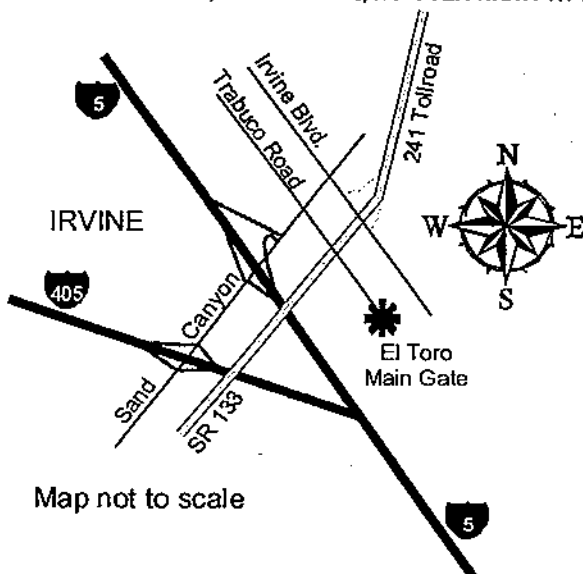
****OCMA Members do not need this invitation to gain access to the event - just show your ID badge at the gate**

Display THIS invitation on vehicle dashboard at all times during event

The former MCAS El Toro remains a secured facility by the U.S. Navy and as such strict compliance with the following requirements is mandatory:

- * This invitation must be displayed on the vehicle's dashboard for Orange County Sheriff personnel to verify and approve
- * Once access through El Toro main gate is granted, proceed, AT THE POSTED SPEED LIMIT (25 MPH)
- * Follow OCMA Event signs and DO NOT stray off the designated routes (white and yellow lines on map below)
- * Unauthorized travel on the base will lead to immediate removal and possible fines and will jeopardize future OCMA events
- * Follow any directions given by the OC Sheriff or OCMA Event Staff

***NO PETS, NO ALCOHOL, NO OVER-NIGHT RV PARKING**



Map not to scale



WWW.FLYOCMA.COM

A brief history of RC flight at the Torrey Pines Gliderport

Soaring at Torrey Pines began in the 1930s as a result of pioneers such as Charles Lindbergh, Hawley Bowlus, John Robinson, and others flying their manned full scale sailplanes above the cliffs. RC soaring at Torrey Pines started in the early to mid 1950s as a result of workers at local aerospace companies such as Ryan, Consolidated, Convair, etc. showing interest in ham radio and aeronautics. These pilots, with interest in both full scale sailplanes and RC models, were drawn into flying RC sailplanes at Torrey Pines when the winds were too light to sustain full scale sailplanes (and once the radio equipment had become sufficient to maintain steady control). The specific details about this early RC history have been difficult to determine.

In 1956, Bob Chase flew his RC sailplane at Torrey Pines establishing a new world record for RC sailplane endurance of 8.5 hours. This was the first flight over 8 hours by an RC sailplane and is the earliest written documentation of RC flight at Torrey known at the current time. The League of Silent Flight (established in the 1970s) still uses an 8-hour slope flight as a measure of Level V achievement (highest possible)...so even by today's standards a slope flight of 8 hours is very significant.

In 1969, the Torrey Pines Gulls Radio Controlled Soaring Society formed and became (what is believed to be) the second oldest AMA club focused solely on RC soaring (the Harbor Slope Soaring Society just up the coast in Orange County was the first). Members of both the Torrey Pines Gulls (TPG) and Harbor Slope Soaring Society (HSSS) including Dale Willoughby and others, used Torrey Pines for slope soaring during the late 1960s and early 1970s. The TPG has been recognized world-wide as one of the leading clubs in the advancement of RC soaring.

In 1971, Kelly Pike, then President of the TPG attempted an FAI world speed record for RC sailplanes. His first pass was faster than the current record, but the second pass was slower and the average was not enough to beat the Russians.

During the period 1970-1975 a great deal of new RC sailplane designs were flight tested at Torrey Pines including many designed by Rod and Mark Smith (Windward, Windfree, Wanderer) which became widely used during this period. Kraft radio was headquartered within 30 miles of Torrey Pines and as such, new advancements in radio were also tested in aircraft at Torrey Pines. This tradition of Torrey Pines as an "outdoor wind tunnel" for model aircraft design testing has continued to the present.

During 1973-1974, Mark Smith was asked to develop and fly RC model seagulls for the motion picture "Johnathon Livingston Seagull." A series of foam RC seagulls was produced and test flown at Torrey Pines, with portions of the filming taking place at Torrey, Carmel, and Maui. Mark Smith (member of both HSSS and TPG) went on to win the U.S. Soaring Championships 1970-1974 flying the Windfree sailplane.

Other pilots who have contributed in many significant ways to the advancement of RC soaring and RC electric sailplanes had their early flights at Torrey Pines. One of the key historic features of Torrey is perhaps not the flights that took place there but the multitude of people who learned

to fly at Torrey and served the AMA and aeromodeling in future years in amazing ways. These include Don Edberg, Steve Neu, Larry Fogel, Paul Denson, Buck Faure, Al Doig, and many others. The number of RC pilots who had their first flights at Torrey must number well over 1,000. The number of slope races and contests held at this location must also be equally large.

During the 1980s and early 1990s, RC scale models of sailplanes became more popular at this location, leading to the development of a second AMA model club, the Torrey Pines Scale Soaring Society that now shares this location with the TPG.

In 1995, Gary Fogel established the current U.S. Class A RC sailplane declared distance record by flying from the beach at the north end of the Torrey Pines cliffs, to the Scripps Pier located at the south end of the Torrey Pines cliffs, a total distance of 4.19 miles.

Working with various City officials, during the 1990s, Larry and Gary Fogel established the Torrey Pines Gliderport as a National Soaring Landmark of the National Soaring Museum, Elmira, New York and obtained recognition for Torrey as a City Historic Site, with listing on the State and Federal Registers of Historic Places. It is important to note that RC soaring has been an integral portion of this history, with model aircraft flown at this location for over 50 of nearly 75 years of soaring flight at Torrey Pines.

The addition of a special commemoration by the AMA provides assurance that aeromodeling will continue in the future at this historic location.

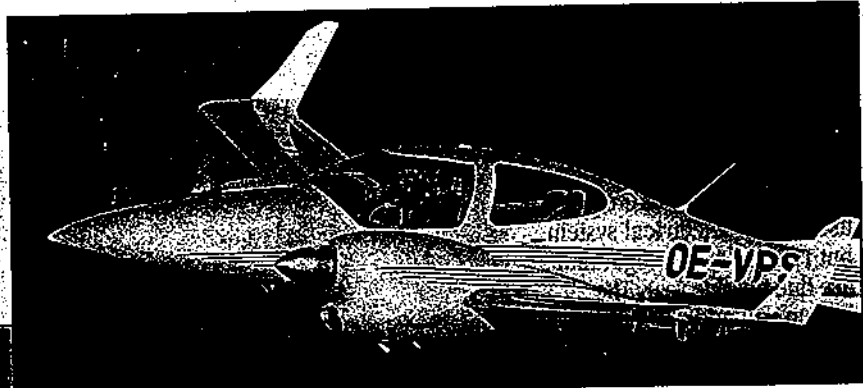
Dear Karl,

As you know, the Torrey Pines Gliderport will be dedicated at 1pm on August 30th as the first AMA landmark site. Here is some background you may want to share with your members. If they bring a model sailplane, every effort will be made to have them fly as a guest of a rated Torrey Pines pilot.

Sun, Aug. 24	Thousand Oaks	YES	<u>Thousand Oaks Soaring Society- TOSS</u>	Winch	<u>MAP1</u>	<u>DIR</u>	<u>No</u>
		YES		Hand	<u>MAP2</u>		
Sun, Sept. 28	Riverside	YES	<u>Inland Soaring Society-ISS</u>	Winch	<u>MAP</u>	<u>DIR</u>	<u>No</u>
Oct. 4- 5	Visalia	NO	<u>CVRC Fall Soaring Festival **</u>	Winch	<u>MAP</u>	<u>DIR</u>	<u>No</u>
Sun, Oct. 26	Costa Mesa	YES	<u>Harbor Soaring Society-HSS</u>	Winch	<u>MAP</u>	<u>DIR</u>	
		YES		Hand			

One European aviation magazine says diesels are the wave of the future for light aircraft. Not only are they cheaper to operate, they use more

The Twin Star, a diesel-powered twin-engine aircraft built by Diamond Aircraft Industries, flies 126.6 mph at maximum economy settings and gets the equivalent of an astounding 42 mpg.



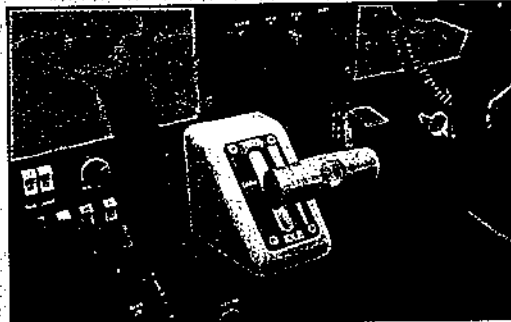
widely available fuel, have substantially increased ranges, and are more durable as well as safer than gas engines.

FROM AUTOS TO AIRPLANES

TAE was formed three years ago to adapt an automotive engine to aircraft. The program benefited from Thielert's experience in optimizing Formula 1 engines and helping auto companies develop new engines. Two major motivating factors behind the development of the aircraft diesel were the high cost of aviation gasoline in Europe and growing global concerns about that fuel's future availability as more and more aviation refining turns to jet fuel.

The Thielert aviation diesel was initially called the TAE 125, but was

renamed the Centurion 1.7. Both engines are identical, but the company feels the Centurion name has more cachet. The engine operates on diesel and Jet A fuel, but not aviation gasoline. Nor



It only takes one control to keep the diesel Centurion humming. There are no mixture controls or carburetor heat.

DYNAMIC DIESEL PERFORMANCE

The twin-engine Twin Star, at 80% power and 18,000 ft altitude, flew 201 knots true airspeed while consuming 11.8 gallons/hr. That means the diesel-powered plane got 19.6 mpg while traveling over 231 mph.

At 75% power and 10,000 ft, the airplane's absolute range is 1,012 miles with standard 52-gallon tanks. The 74-gallon long-range tanks boost that range to 1,440 miles. But with the standard tanks and minimum power settings, the theoretical maximum endurance is 19 hr and 2,532 miles, which is farther than from Chicago to Los Angeles.

Loaded to just 15% below maximum gross weight, the Twin Star climbs more than 2,000 fpm at 90 knots. At 110 knots, the climb rate is 1,700 fpm. Single-engine climb rates to 12,000 ft averaged 600 fpm.

are biodiesel fuels approved. So far, the engine has undergone 10,000 hr of testing, with 1,500 hr of that time in an aircraft.

The Centurion 1.7 is a turbocharged four-cylinder, four-valve, in-line engine with common-rail fuel injection. It is liquid cooled and uses off-the-shelf antifreeze. It puts out 135 hp and 302.4 lb-ft of torque. Displacement is 1.68 liters or 103 cu in., with a 3.15-in. bore, 3.31-in. stroke, and a compression ratio of 18:1.

The engine weighs 259 lb dry, which is 6 to 9 lb more than a Lycoming O320. With all its accessories, the engine tips the scales at 295.4 lb. And a complete installation from the firewall forward in a Cessna 172 weighs 430.2 lb. The engine measures 30.6 in. wide, 31.2 in. long, and 23.2 in. high.

Gear reduction between engine and prop lowers prop speed to a more efficient level and has the ancillary benefit of decoupling vibrations between the engine and prop. Special, soft engine mounts further reduce vibrations and noise. In retrofits, soft mounts must replace existing ones.

The engine runs at 3,900 rpm, which gets reduced 1.69:1 to turn the prop at 2,300 rpm. Only a constant-speed (i.e., variable-pitch) prop can be used. The only approved prop is the three-blade Muehlbauer.

SPEED AND ECONOMY				
Power (%)	TRUE AIRSPEED		ECONOMY	
	Speed (knots)	Speed (mph)	Gallon/hr	Mpg
80	181	208	10.7	19.5
60	166	191	8.0	24
50	147	169	6.7	25
Max Economy	110	127	3.0	42

The engine comes with 90-A alternator and belt, starter, turbocharger, vacuum pump, and prop governor. The engine uses a 12-V electrical system, but 12 and 24-V configurations are due out this year. The 24-V system will add approximately \$1,782 to the \$19,500 engine, which is delivered broken-in.

There are no special starting procedures for either hot or cold engines. This is in contrast to contemporary Cessna fuel-injected gas engines, which pilots sometimes find hard to start after brief, hot shut downs on warm days.

Aside from the engine's fuel economy, pilots also appreciate the fact power is controlled by a single lever. There are no fuel mixture or carburetor heat controls requiring pilot attention. And the engine's entire operating history is logged on a data-recording device as part of the standard electronic controls. It warns pilots of impending problems and provides data for servicing.

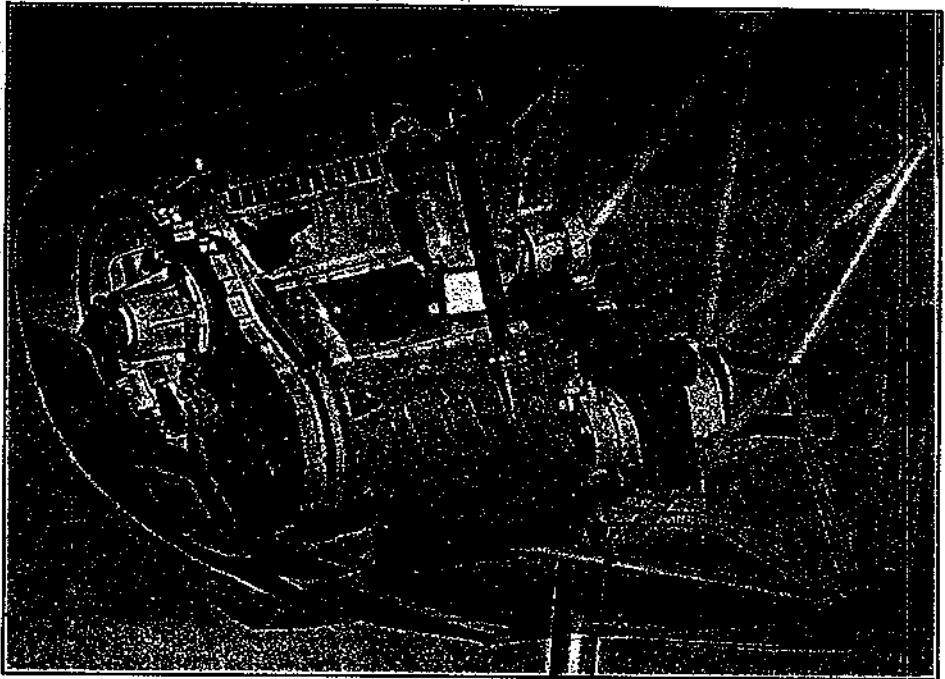
The Centurion 1.7 should only be overhauled at the Thielert factory, and it has to be replaced after 2,400 hr of operation. Engines are built in a one-man, one-engine approach instead of on assembly lines.

Down the road is a further development from Thielert, the Centurion 4.0. It is a diesel slated to put out 310 hp.

NOW FLYING IN EUROPE

Currently, the only OEM aircraft manufacturer preparing to deliver diesel airplanes is **Diamond Aircraft Industries** (www.diamond-air.at), with headquarters in Wiener Neustadt, Austria. Diamond is installing Centurion engines in its Diamond Star DA40, an airplane currently being delivered with 180-hp Lycoming gas engines under the designation DA40-180. As one aviation expert observes, the DA40 with the gasoline engine is a beautiful new airplane powered with 50-year-old technology.

Fitted with the diesel, the airplane is renamed the DA40 TDI Diamond Star. It has earned JAR 23 certifica-



The Piper PA-28 is another common airframe which has been retrofitted with the Centurion diesel. A PRO/E CAD rendering shows how it fits beneath the cowling.

tion by Austro Control, the Austrian Airworthiness Authority, and is the first production aircraft powered by the Centurion 1.7.

Although Diamond has a plant in Lon-

don, Ont., Canada, installing the first 100 Centurions will be limited to Europe so that the engines are close to the factory if customers need technical assistance. The company is evaluating possible sales

The beauty of diesels and variable-pitch props

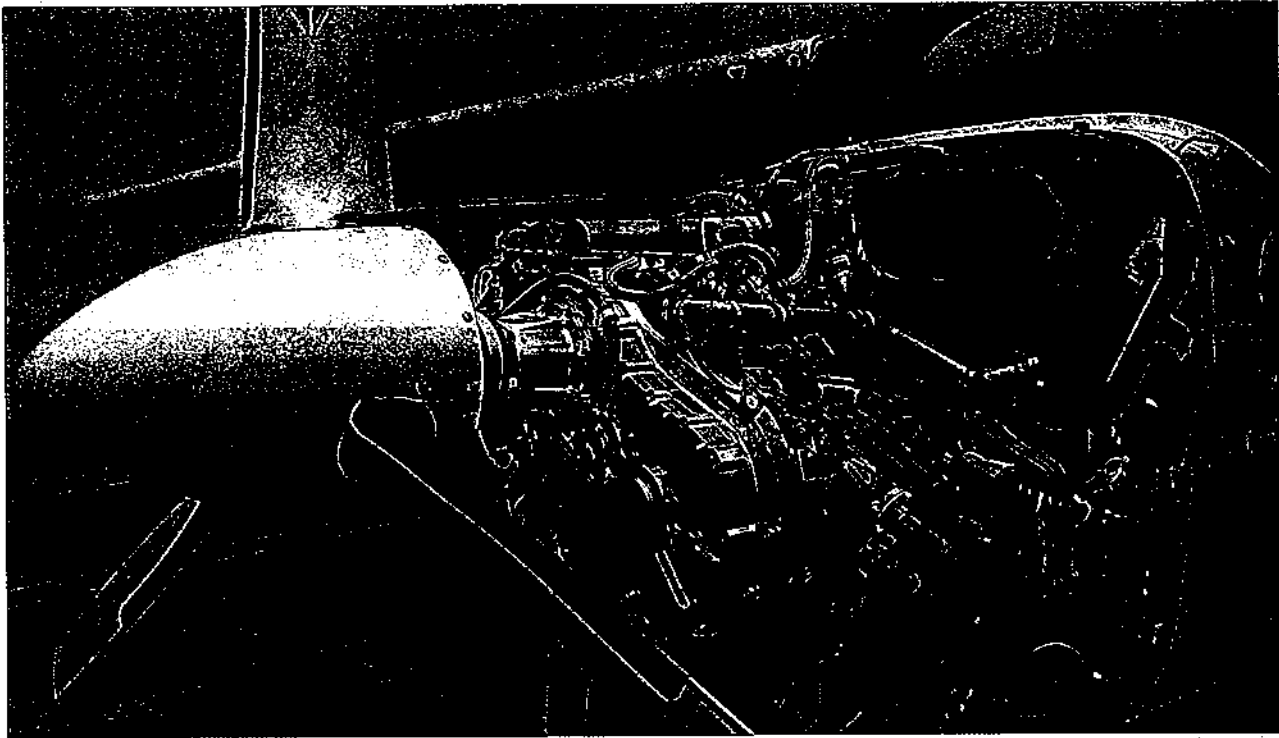
Aircraft engines are more heavily loaded than auto engines, but they tend to run at constant speeds, which reduces wear. Automobile engines suffer immense wear by running at a wide variety of speeds as they constantly accelerate and decelerate.

The Centurion 1.7, for example, has only three power levels: takeoff, cruise, and idle. Thus, mechanical components, as well as engine management and prop operation, can be optimized for these three regimes. This lets airplanes get more usable power from their engines, which tend to be more durable than automotive engines.

Although rated at only 135 hp, the Centurion 1.7 can replace more powerful gasoline engines because it provides more static thrust. Static thrust is what you feel when you push the throttle forward. It is a function of engine torque, gear reduction to the propeller, and pitch of the blades. The Centurion static thrust, for example, is greater than that of a Lycoming O320 and equal to that of the more powerful Lycoming O360.

With a fixed-pitch prop aircraft, takeoff rolls are much like trying to speed off in a stationary car that's in high gear. The variable pitch (i.e., constant-speed) prop of the Centurion provides somewhat of an aerodynamic "gear reduction" and is more efficient than fixed-pitch props used with Lycoming engines. This leads to the Centurion 1.7's better takeoff performance as compared to a PA-28 or Cessna 172.

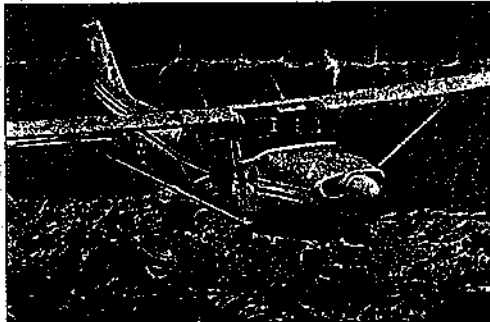
Under so-called standard conditions, the Centurion's climb rate will be slightly less than that of the Cessna or Piper, but it still meets FAA standards. And with turbocharging, the Centurion can be expected to perform well in hot weather and from high-altitude airports, both of which degrade engine performance.



of the Diamond Star TDI in North America, and says it will make a decision in the near future.

Another Diamond airplane under development and powered by the TAE Centurion is the twin-engine, retractable gear, DA42 Twin Star. It first flew last December 9. The first flight with gear retracted was February 13 of this year, and during that flight, the craft climbed to 18,000 ft. The Twin Star can carry 900 lb of passengers and cargo when completely fueled. The Twin Star and Diamond Star are four-place aircraft. The Twin Star should go on sale in mid-2004, and in North America, the price is projected to be \$360,000. Thielert says it is working with other OEM airframe manufacturers, but confidentiality agreements prevent naming any other than Diamond.

A Piper PA-28 and various Cessna 172s have been retrofitted in Europe with TAE diesels. These retrofits require Supplemental Type Certification, or STC, and various models of 172s already have this certification or are near to it. STC conversions cost \$40,000, including engine and labor. Certification has also been granted for TAE-powered kit planes and experimental models. It



is expected that toward the end of this year, people building experimental craft will be able to install their own Centurion engines. The Centurion, however, is regarded as too heavy for ultralight aircraft.

The Cessna 172s and Piper PA-28 are the only two installations Thielert has in its immediate plans for retrofits. However, based on the Centurion's engineering features involving torque, gear reduction, and prop pitch, the engine can replace conventional aircraft powerplants up to 180 hp.

Interestingly, inquiries to Cessna on their Centurion retrofits provided only a cursory response devoid of meaningful specifics. An inquiry to Piper was not answered.

The apparent blackout on information from the firms could be meaning-

ful. It might indicate that both companies see the Centurion as a threat. Is it possible Diamond will gobble up market share in the light aircraft market? What would massive public acceptance of the Centurion do to the overall business of dealers operating maintenance facilities? And have the firms, like Diamond, embraced the engine, or at least included it in future plans? ■

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