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SOLAR-CELL AIRPLANE SOLAIR I:  
IMPRESSIVE DEMONSTRATION AFTER THE ILA

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Translation of "Sonnenzellenflugzeug  
Solair I: Eindrucksvolle Demonstration  
nach der ILA," Aerokurier, No. 6, 1982, p. 690

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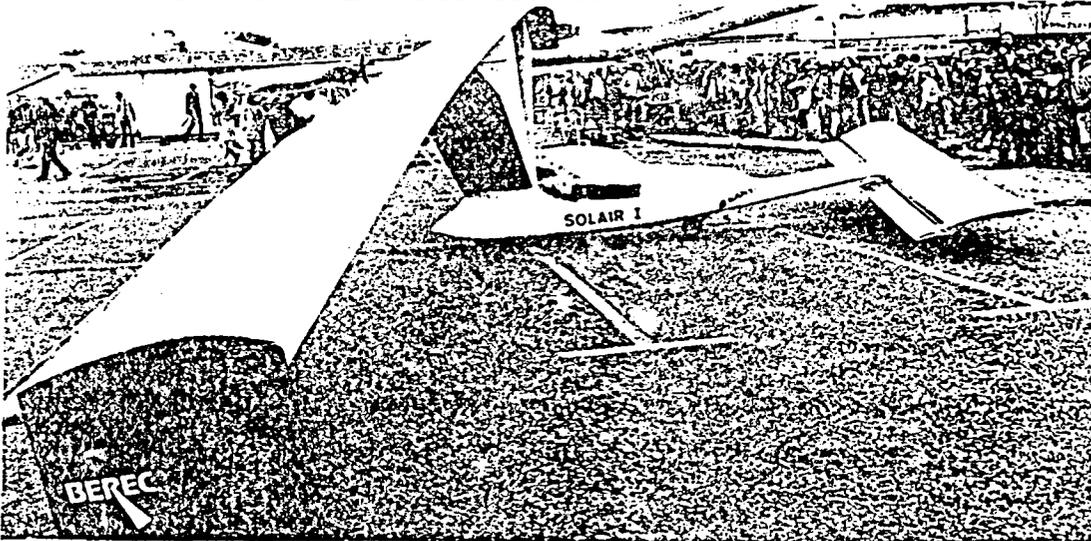
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SOLAR-CELL AIRPLANE SOLAIR I:  
IMPRESSIVE DEMONSTRATION AFTER THE ILA



An attraction at the ILA: Günter Rochelt's Solair I, which has already completed 50 flights powered by solar energy. (Photo: Jutta Kleinsorge)

Industrial designer Günter Rochelt has been making headlines for some time now. Last year he caused a lot of talk when he announced the maiden flight of Solair I--a solar plane he designed and built himself--and spoke of crossing the Channel on solar power like Paul MacCready. Günter Rochelt was the first German to equip a plane (Farner-Ente) with an electromotor driven by energy from solar cells (Aerokurier article 4/81).

To refresh your memory: the Solair I is a canard (a "duck-type" or tail-first machine) of lightweight construction equipped with an electromotor and pusher propeller, whose main and forward wings are overlaid with solar cells. The scheduled channel-crossing unfortunately had to be called off at the last minute, when several of these solar cells were

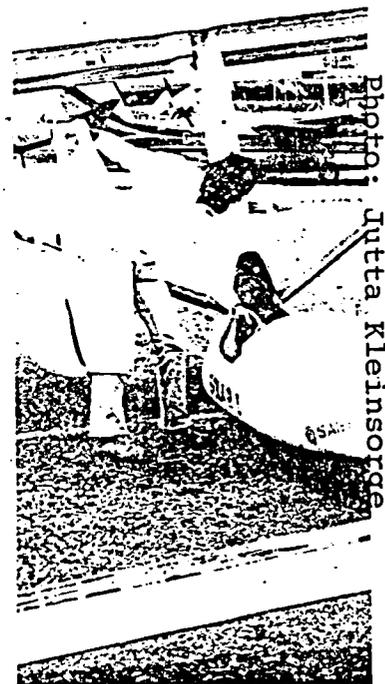


Photo: Jutta Kleinsorge

damaged while the plane was being transported to the take-off site, making it impossible for the motor to be supplied with adequate power. After that, Günter Rochelt and his Solair I withdrew from the scene for awhile, until--as he puts it--he could come up with the funds to go forward with his project.

At this stage, it should be mentioned once again that Rochelt financed the development and construction of the plane entirely out of his own pocket--without support from the industry.

But Rochelt was there again for the ILA--and with a substantially improved Solair I that since its maiden flight had now racked up 50 take-offs and reached flying altitudes of up to 50 meters.

Wind-tunnel tests performed on the Solair by Rochelt during the winter had resulted in optimization of the slotted wing, whose performance was significantly enhanced. Even the fuselage was radically modified--that is to say, it was completely rebuilt.

The new fuselage shell, now weighing a mere 9kg, was constructed entirely of aramide fibers, and only areas requiring special reinforcement received it.

Rochelt succeeded in further reducing the weight partly by using a hood of lighter construction, but primarily by redesigning the seat and by employing 10-LC displays instead of traditional, heavier instruments.

By redesigning the fuselage, the designer was able to lighten the craft by about 20kg (!) and wound up with a plane whose total weight is about 120kg. This figure includes retractable landing gear, with which the Solair I is equipped.

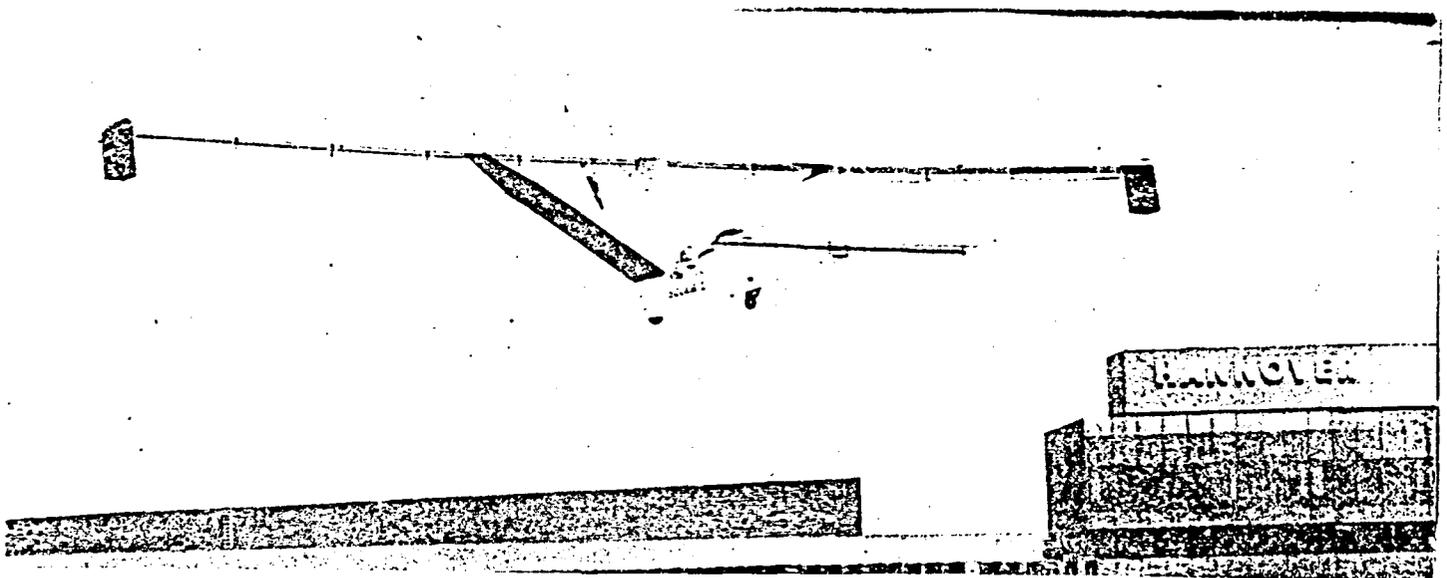
The landing gear itself weighs a mere 900g, divided between 500g

for the wheel with its hub, and 400g for the landing-gear rods, which were manufactured from carbon and aramide fibers.

Rochelt was not content with these aerodynamic improvements and weight-reduction measures, however. The present motor also represents an improvement over the original design. It is more powerful: with an increase from 390 to 450rpm, it provides the craft with an ascent capability of  $\frac{1}{2}$  meter/sec.

The original plan called for a demonstration flight of Solair I at the ILA, weather permitting. As it turned out, insufficient sunshine and forceful winds prevented this.

The day following the ILA saw it all happen, however: television crews were there as Rochelt made an impressive flight along the exhibition grounds in Hannover.



And it actually flies--at least when the sun is shining: the Solair I designed by Günter Rochelt. (Photo: G. Ruf) The day following the ILA, Solair I made a spectacular 12-min. flight in Hannover, reaching an altitude of up to 100meters.

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