

# Insects in the wind lead to less power

Peter Weiss

A folk song declares, "There ain't no bugs on me!" To that, a pair of wind-turbine researchers now can respond, "More power to you!" That's because they've shown that crusty insect remains on power-generating turbines cause what had been a perplexing loss in efficiency.

In California, wind-turbine operators have learned from experience that if they regularly wash insect debris off their turbines, they avoid performance dips. But the pattern of the dips defied the obvious explanation—that dead insects piling up on blades were slowly sapping turbine power, notes Herman F. Veldkamp of wind-turbine maker NEG Micon of Randers, Denmark.



*Insect bodies litter a wind-turbine blade's leading edge.*

M. D. Burns/Oak Creek Energy Sys.

Instead, turbine operators found that their machines' bug-encrusted vanes lost power in steps. Though operating fine in low winds, the machines could not attain full power in high winds. With each return of high winds, the step-down would be worse.

Veldkamp and Gustave P. Corten of the Energy Center of the Netherlands in Petten have sleuthed out the reason behind this. The duo report its findings in the July 5 *Nature*.

First, the scientists attached to turbine blades reflective labels with flaps that flip open if the air stops flowing smoothly over the blade surface, a sign of reduced efficiency. The researchers simulated the insectlike roughness on blade edges by applying tape. Then, using video recordings, they confirmed that roughness correlated with inefficient flow, as revealed by raised flaps on the blades.

In search of the last pieces of the puzzle, the researchers compared histories of turbine performance with weather data. They found that efficiency dipped most after periods that combined low winds, in which insects put in the most flight hours, with no rain to wash away carcasses. Wind-turbine makers are developing self-cleaning turbine

blades, says Veldkamp.

\*\*\*\*\*

## References and Sources for this Article

### *References:*

Corten, G.P., and H.F. Veldkamp. 2001. Insects can halve wind-turbine power. *Nature* 412(July 5):41.

### *Further Readings:*

Raloff, J. 2001. Power harvests. *Science News* 160(July 20):45. Available at <http://www.sciencenews.org/20010721/bob14.asp>.

### *Sources:*

Michael D. Burns  
Oak Creek Energy Systems, Inc.  
14633 Willow Springs Road  
Mojave, CA 93501

Gustave P. Corten  
Unit of Wind Energy  
Energy Centre of the Netherlands  
P.O. Box 1  
1755 ZG Pette  
Netherlands

Herman F. Veldkamp  
NEG Micon/DOWEC  
Regulierenring 12d  
3981 LR Bunnik  
Netherlands

From *Science News*, Vol. 160, No. 5, Aug. 4, 2001, p. 73.