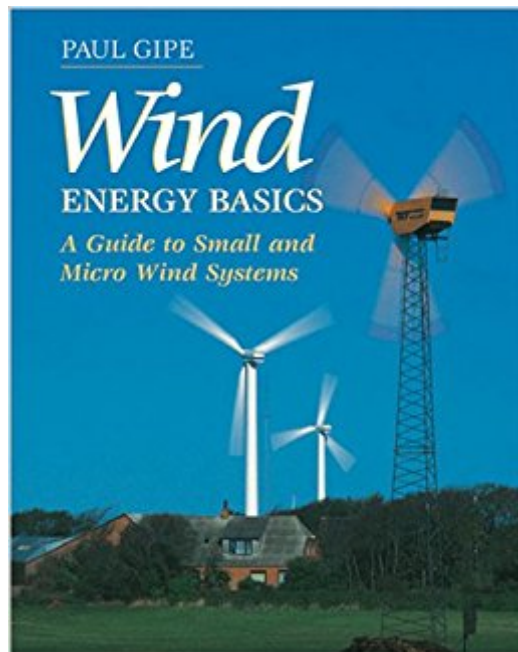




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Wind Energy Basics: A Guide To Small And Micro Wind Systems



Synopsis

The wind power industry has been transformed in the 1990s by dramatic breakthroughs in efficiency, economy, and adaptability. *Wind Energy Basics* is the most up-to-date source available of information about small wind systems. The book includes the unique "standard small wind turbine rating" developed by the author, which is designed to help readers wade through conflicting performance claims by manufacturers in the U.S. and overseas. Also included is detailed information on planning, siting, and installing a wind system, and on integrating wind power with solar for more cost-effective and reliable off-the-grid applications. In addition, Gipe provides a discussion of "net metering" and intertie possibilities, explaining how homeowners in many states can now sell their excess electricity back to the utility company. *Wind Energy Basics* is an excellent introduction to wind power for educational programs concerned with state-of-the-art renewable energy options, and will be indispensable for those considering today's generation of quiet, efficient, and reliable "micro" wind turbines. *Wind Energy Basics* describes a new class of small wind turbines, dubbed micro turbines, which are so small that they can be purchased for less than \$1000 and carried in your hands. The debut of micro wind turbines brings the technology within reach of almost everyone. These inexpensive machines, when coupled with readily available photovoltaic panels (solar cells), have revolutionized living in remote homes off-the-utility grid. And the increasing popularity of micro wind turbines has opened up new applications previously considered off-limits to wind energy, such as charging electric fences and powering remote telephone call boxes, once the sole domain of solar cells. Micro wind turbines have been around for decades for use on sailboats, but they have gained increasing prominence in the 1990s as their broader potential for off-the-grid applications on land has become more widely known. While micro wind turbines have yet to reach the status of widely available consumer commodities such as personal computers, the day may not be far off. The use of wind power is "exploding," say Karen and Richard Perez in their foreword. "There are currently over 150,000 small-scale RE (renewable energy) systems in America and they are growing by 30% yearly. The small-scale use of wind power is growing at twice that amount--over 60% per year," according to the Perezes, the editors of *Home Power* magazine. Southwest Windpower awakened latent consumer interest in micro wind turbines with the introduction of its sleek Air 303. Since launching the 300-watt turbine in 1995, Southwest Windpower has shipped 18,000 of the popular and inexpensive machines. "What Americans, and folks all over the world, are finding out," the Perezes say, "is that wind power is an excellent and cost-effective alternative" to extending electric utility lines, and fossil-fueled backup generators. *Wind Energy Basics* explains how it is possible—in some states—for homeowners to run their kilowatt-hour meter

backwards with a small wind turbine. This book confronts the common but controversial practice of "power rating" that may mislead consumers about the potential of some small wind turbines. Known for his frank style, Gipe quickly cuts through technological jargon and the hype surrounding power ratings. "Nothing tells you more about a wind turbine's potential than rotor diameter—nothing. The wind turbine with the bigger rotor will almost invariably generate more electricity than a turbine with a smaller rotor, regardless of their generator ratings," he says. Gipe also comes down hard on roof-top mounting. "Don't bother," he warns. "It's not worth the trouble." He also minces few words on mounting wind turbines in trees. "Sometimes wind energy isn't the right choice," Gipe says. "If you live in a forest of tall trees and you can't afford a tower tall enough to clear the trees, then wind energy isn't for you." Worldwide, wind energy is booming. Not since the heyday of the American farm windmill has wind energy grown at such a dramatic pace. By the new millennium, more than 40,000 medium-size wind turbines will be in operation worldwide, mostly in California, Europe, and India. These commercial wind turbines, including those found in California's giant wind power plants, will produce 20 terawatt-hours (20,000 million kilowatt-hours) of wind-generated electricity annually—enough to meet the needs of more than three million energy-hungry Californians, or twice that number of more energy-conscious Europeans. The commercial success of medium-size wind turbines, or wind farm machines, is only part of the story. Small wind turbines have found their role expanding as well. Whether it's on the contemporary homestead of Ed Wulf in California's Tehachapi Mountains, in the Chilean village of Puaicho overlooking the Pacific Ocean, or on the Scoraig peninsula of Scotland's wind-swept west coast, small wind turbines are making an important difference. While their contributions may be small in absolute terms, small wind turbines make a big difference in the daily lives of people in remote areas around the globe. Small wind turbines may produce only a few tens of kilowatt-hours per month, but this electricity goes much further and provides as much, if not more, value to those who depend upon it as does the generation of their bigger brethren. Today there are more than 50 manufacturers of small wind turbines worldwide, and they produce more than 100 different models. Altogether manufacturers in western countries have built about 60,000 small wind turbines during the last two decades. And tens of thousands more have been manufactured in China for use by nomads on the Mongolian steppes. Wind Energy Basics is richly illustrated with photographs of small wind turbines, from those on the Patagonian steppes at the tip of South America to those on the wind-swept shores of Denmark. The book contains information on most major small wind turbines on the international market. It also provides photographs of common wind turbine applications, including their use for wind power plants, vacation homes, third world villages, farms, water pumping, and so on. Engineers will like the

"exploded views" of popular micro and mini wind turbines such as the Ampair 100, Southwest Windpower's Air 303, and Bergey Windpower's BWC 850 and BWC 1500. The book also introduces the "griphoist" to American readers. This amazing tool, coupled with new lightweight wind turbine towers that have recently become available, has the potential to transform the installation of micro turbines. With the "griphoist", two people can safely raise a micro wind turbine on a specially designed tower without resorting to cumbersome electric winches. The appendix to Wind Energy Basics includes detailed product specifications for most popular micro and mini wind turbines, as well as sources for wind pumps (farm windmills), used wind turbines, anemometers, inverters, trade associations, and mail-order catalogs that sell wind turbines.

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Customer Reviews

"Gipe provides the reader with an informative and easy-to-understand guide to small and micro wind systems for the generation of energy. . . Wind Energy Basics is a 'must' for environmentally supportive advocates seeking to establish non-polluting energy resources for themselves, their families, and their businesses."--Midwest Book Review, (Refers to the first edition of Wind Energy Basics.) "Without abandoning the needs of individuals aiming for energy independence, Gipe wisely promotes community-scale wind power in his new book. He is not only an unrivalled expert, but an excellent teacher as well."--Peter Barnes, author of Climate Solutions "Paul Gipe, the country's leading expert on small scale and locally-owned wind energy, has written the how-to manual for those who want to literally bring power to the people."--David Morris, Vice President, Institute for

Local Self Reliance, and author of Seeing the Light: Regaining Control of Our Electricity

System" This second edition of Gipe's Wind Energy Basics is a much needed critique of the state of small wind today. Gipe advances what will inevitably be a growth industry in the US, community wind projects, based on the successful models in many parts of Europe over the past three decades. Paul also advocates for equitable feed-in tariffs for wind to level the playing field for wind turbines that work. Finally, Gipe wades through the numerous internet wonders and surrounding hype that are doing more harm than help for prospective turbine owners. Wind Energy Basics is a must read, and reread. ---Mick Sagrillo, "Advice from an Expert" columnist for the American Wind Energy Association and coauthor of Power from the Wind "Paul Gipe is an independent, opinionated voice on wind energy, cutting right to the core on almost any wind energy topic. He analyzes the issues with uncompromising standards. With Paul's journalistic background and years in the worldwide wind industry, he has no trouble sharing the story as he sees it, encouraging all to explore business models and policies that offer something more, something for all of us. Paul is a visionary on the energy front, presenting a compelling case for change." --Lisa Daniels, Executive Director, Windustry "[A] wonderful primer for all but the professional wind enthusiast." --Trevor Robotham, proprietor of Sun Wind & Power (solar and wind installations) (Refers to the first edition of Wind Energy Basics) "If you want straight talk on wind electricity, with no bull, seek out Paul Gipe. Not beholden to any company or segment of the industry, Paul tells it like it is. His no-nonsense book will steer you in the right direction--away from fantasy and failure and toward a successful wind-electric system." --Ian Woofenden, Senior Editor, Home Power magazine "Gipe's call for an ethical energy policy in Wind Energy Basics is a message that North American politicians should heed. The people deserve nothing less." --Glen Estill, past President of the Canadian Wind Energy Association and successful wind entrepreneur --This text refers to an alternate Paperback edition.

Paul Gipe is an author, advocate, and analyst of the renewable energy industry. He has written extensively about the subject for the past four decades, receiving numerous awards for his efforts. Gipe has lectured before groups from Patagonia to Puglia, from Tasmania to Toronto, and from Halifax to Husum. He has spoken to audiences as large as 10,000 and as small as a private presentation for Vice President Al Gore. Gipe is well known for his frank appraisal of the promise and pitfalls of wind energy, including his stinging critiques of Internet wonders and the hustlers and charlatans who promote them. He led the campaign to adapt electricity feed laws to the North American market -- the same policy that has stirred a renewable energy revolution in Germany.

In *Wind Energy Basics*, Paul Gipe provides the reader with an informative and easy-to-understand guide to small and micro wind systems for the generation of energy. Gipe includes detailed information on planning, purchasing, siting, and installing a wind system, and explains the integration of wind power with solar photovoltaics for more cost-effective and reliable off-the-grid applications. Gipe also explains "net metering" and intertie possibilities, describing how homeowners and businesses in many states can now sell their excess electricity back to the utility company. *Wind Energy Basics* is a "must" for environmentally supportive advocates seeking to establish non-polluting energy resources for themselves, their families, and their businesses.

I bought this book expecting it to go over the installation of a wind system. It does very little of that. The author spends an inordinate amount of time on designs that did not work- instead of just summing up "Vertical Axis machines have never met their hoped for potential" - he goes over specific machines and why each failed. This information might be very useful to a person who is going to DESIGN and BUILD their own wind turbine. The book says BASICS. What person interested in BASICS is going to DESIGN their own machine? The book contains more information on what NOT to do rather than what to do. The good section of the book was on economics of wind power. The author clearly shows how wind power makes little sense economically on the small scale. He did such a good job on this that I am investing my money elsewhere. If you want to put in a small wind power plant because you just like to tinker - this is NOT the book for you - I would recommend *Wind Power for Idiots* or one of the many others on the market.

I'm a graduate student at a large state university with a 4.0 GPA studying Wind Energy. In this program, I have had to read several books on the subject, including massive textbooks, some costing nearly \$200 each. This inexpensive book is the best one I've come across so far, and I would choose it as the textbook for a first college (undergraduate or graduate level) class in Wind Energy. Paul Gipe is THE GURU of modern wind energy, and his decades of experience in this subject are the ace up my sleeve. If you want to learn all that you really need to know from a single book to get a really good grasp of this subject, this is that one book.

Paul Gipe is not only a leading authority on wind energy but he is an exceptional teacher. This second edition of *Wind Energy Basics* covers most of the current models of wind turbines on the consumer and commercial market as of 2009. The book is an excellent introduction to wind energy

that will serve both potential wind turbine buyers and those interested in wind energy well. There is some math involved but nothing over basic high school algebra and it is kept to a minimum. This is a great, inexpensive way to learn about wind turbines. If you are more interested in design and want more in depth analysis, Paul's other book, "Wind Energy", is an excellent choice.

THIS IS A LITTLE TECHNICAL TO UNDERSTAND, AND SOME OF THE GRAPHS AND CHARTS DONT HAVE ENOUGH EXPLANATION TO THE AVERAGE PERSON . I EXPECTED A EASY TO FOLLOW BASIC BOOK ON HOW TO , POSSIBLY MAKE YOUR OWN, IN A PICTURE OR ILLUSTRATIVE WAY . THE BOOK TOUCHED ON IT, BUT WAS TOO COMPLEX FOR A BASIC BOOK .. I SAW NO IDEA OF HOW BIG THE ELECTRICAL USE OF THE AVERAGE HOUSE WAS, SO I DONT KNOW HOW LARGE A WINDMILL MUST BE MADE OR PURCHASED.. PROBABLY A GREAT BOOK FOR ELECTRICIANS ,BUT NOT BASIC ENOUGH FOR ME .I WAS WANTING TO MAKE MY OWN (FROM SCRATCH)AND HAVE THE BOOK TELL ME WHAT I NEEDED ..

helpful if you are interested in buying or having someone install one. not much help if you want to build one.

Five stars

Thank you for the local prison project.

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