DOE/RF/3533-78/1

AN INDEX OF MANUFACTURERS, RESEARCHERS, AND DISTRIBUTORS CURRENTLY INVOLVED IN THE DEVELOPMENT OF WIND ENERGY CONVERSION SYSTEMS

February 1978

Work Performed Under Contract No. EY-76-C-04-3533

American Wind Energy Association
Bristol, Indiana

U.S. Department of Energy

Solar Energy

DISCLAIMER

NOTICE

DOE/RF/3533-78/1
Distribution Category UC-60

AN INDEX OF MANUFACTURERS, RESEARCHERS, AND DISTRIBUTORS CURRENTLY INVOLVED IN THE DEVELOPMENT OF WIND ENERGY CONVERSION SYSTEMS

American Wind Energy Association
54468 CR 31
Bristol, Indiana 46507

February 1978

Prepared for
Rockwell International, Atomics International Division
Wind Energy Systems
P.O. Box 464
Golden, Colorado 80401

Contract PF-58745

As A Part Of The United States
Department of Energy
Division of Solar Technology
Federal Wind Energy Program

DOE Contract No E-(29-2)-3533

Forward

This index of manufacturers, distributors, researchers and others was prepared by the American Wind Energy association (AWEA) under contract to Rockwell International Corporation. Rockwell International, in turn, is contracted with the Department of Energy to provide management and technical support for the development of wind systems for farm and rural use.

It is intended that this publication should serve organizations and individuals within the wind energy industry and the interested public in developing awareness about wind energy systems and services that are available. The information contained herein was compiled from responses to a questionaire mailed to individuals and organizations known to AWEA to have an interest in the field of wind energy. The questions were general in nature allowing flexibility in response. All data provided in the returned questionaires have been included in this compilation. Minor editorial changes have been made for clarity with every effort made to retain the intent of the respondents' answers.

The index is organized into two sections. The first section lists only names of individuals and organizations by category of interest: Manufacturer, distributor, researcher or other. Where a respondent listed more than one category that respondent's name appears under each. The second section is a compilation of all information supplied by respondents to the questionnaire. Entries are in alphabetical order by organization or individual name.

The information contained in this document was assembled prior to October 1, 1977, at which time the Energy Research and Development Administration (ERDA) was replaced by the Department of Energy (DOE). All references to ERDA should therefore be replaced by DOE.

SECTION I. List of Entries by Category of Interest

I. 1 - MANUFACTURERS

AEROLECTRIC CO.

AEROVIRONMENT, INC.

ALTERNATIVE ENERGY SYSTEMS

AMERICAN ENERGY ALTERNATIVES, INC.(Amerenalt Corp.)

ENERGY DEVELOPMENT CO.

ENVIRONMENTAL ENERGIES, INC.

GENERAL ELECTRIC CO.

THE GEORATOR CORP.

HELLER-ALLER CO.

HOME SPUN POWER CO.

HYDRO-CATYLATOR CORP.

INDEPENDENT ENERGY SYSTEMS

INDEPENDENT POWER DEVELOPERS, INC.

ROBERT M. JEFFREYS

KAMAN AEROSPACE CORP.

KEDCO, INC.

MERRITT WINDMILL, INC.

MERTON ENG. CO., INC.

NATURAL POWER CORP.

NATURAL POWER, INC.

NATURAL POWER SYSTEMS, INC.

NORTH WIND POWER CO, INC.

OWENS-CORNING FIBERGLASS

PINSON ENERGY CORP.

JAMES A. POTTER

RALPH SCHUPBACK

SOLEQ CORP.

STRUCTURAL COMPOSITE INDUSTRIES, INC.

TONY SADAR

TELEDYNE AERO-CAL

CHUCK TELLAS

WADLER MANUFACTURING CO., INC.

WESTINGHOUSE ELECTRIC CORP.; ADVANCED ENERGY SYSTEMS

WIND POWER SYSTEMS, INC.

WINDEPENDENCE ELECTRIC CO.

WINDY-TEN LTD.

WINPOWER CORPORATION

I. 2 - DISTRIBUTORS

AEOLIAN ENERGY CO.

AMERICAN ENERGY ALTERNATIVES, INC. (Amerenalt Corp.)

COULSON WIND ELECTRIC

MARK DRABICK

EDMUND SCIENTIFIC CO.

ENERGY ALTERNATIVES, INC.

ENERGY DEVELOPMENT CO.

ENERTECH CORP.

ENVIRONMENTAL ENERGIES, INC.

INDEPENDENT ENERGY SYSTEMS

INDEPENDENT POWER DEVELOPERS, INC.

KEDCO, INC.

NATURAL POWER, INC.

NATURAL POWER SYSTEMS, INC.

BOB McBROOM

JOHN I. MARPLE

NORTH WIND POWER CO., INC.

O'BROCK WINDMILL DISTRIBUTORS

PINSON ENERGY CORP.

PRAIRIE SUN AND WIND CO.

REAL GAS & ELECTRIC CO., INC.

RALPH SCHUPBACK

SHEEHAN CONSULTANTS

SIGMA ENGINEERING CO., INC.

SOLAR/WIND CENTER

SOLEQ CORP.

WINDEPENDENCE ELECTRIC CO.

WINDLITE-ALASKA

WINPOWER CORPORATION

ALFRED O. WURDELMAN

I. 3 - RESEARCHERS

AEROLECTRIC CO.

AEROVIRONMENT, INC.

AMERICAN INSTITUTE OF ARCHITECTS

AMERICAN WIND ENERGY ASSOCIATION

APPLIED SOLAR TECHNOLOGY, INC.

ATHABASCA RESEARCH CORPORATION

BAKER MFG. CO.

BATTELLE, PACIFIC NORTHWEST LAB.; ATMOS. SCI. DEPT.

KARL J. BEA ASSOCIATES

CALIFORNIA STATE UNIVERSITY

CENTER FOR NATURAL RESOURCES, ENERGY & TRANSPORTATION

COLORADO STATE UNIVERSITY; FLUID DYNAMICS & WIND

CREWS, MACINNES, & HOFFMAN

DISCO, INC.

MARK DRABICK

EDMUND SCIENTIFIC CO.

ENERGY DEVELOPMENT CO.

ENVIRONMENTAL ENERGIES, INC.

EUGENE WATER & ELECTRIC BOARD

FOUNDATION FOR RURAL TECHNOLOGY

FRANKLIN INST. RESEARCH LABS

GENERAL ELECTRIC CO.

GENERAL ELECTRIC; SPACE DIV.

GENTLE ENERGY SYSTEMS, INC.

GEORGIA INSTITUTE OF TECHNOLOGY; ENG. EXP. STATION

DR. ROBERT GORDON

MARTIN L. GREENWALD

HELLER-ALLER CO.

HOLYOKE GAS & ELECTRIC

HOME SPUN POWER CO.

HONEYWELL INC.; SYSTEM & RESEARCH CENTER MN17-2688

HYDRO-CATYLATOR CORP.

INDEPENDENT POWER DEVELOPERS, INC.

INSTITUTE FOR ENVIRONMENTAL STUDIES

IOWA STATE UNIVERSITY; ELEC. ENG. DEPT.

IOWA STATE UNIVERSITY; ELEC. ENG. DEPT.

I.R.E.Q.

JBF SCIENTIFIC CORP.

ROBERT M. JEFFREYS

KAMAN AEROSPACE CORP.

KAMAN SCIENCES CORP.; ENERGY SYSTEMS DEVEL. GROUP

KEDCO, INC.

KELSEY WIND SYSTEMS

LAWRENCE LIVERMORE LAB.; UNIV. OF CALIFORNIA

LEHIGH UNIVERSITY, DEPT. OF MECH. ENG. & MECHANICS

JOHN L. MARPLE

MCDONNELL-DOUGLAS AIRCRAFT CO.

MERRITT WINDMILL, INC.

MERTON ENG. CO., INC.

N.A.S.A. - LeRC

N.A.S.A. - LeRC

N.A.S.A. - LeRC

NATURAL POWER CORP.

NATURAL POWER, INC.

NATURAL POWER SYSTEMS, INC.

NAVAL CONSTRUCTION BATTALION CENTER; CIVIL ENG. LAB

NEW MEXICO STATE UNIVERSITY; PHYSICAL SCIENCE LAB

NIELSEN ENGINEERING & RESEARCH

NORTH WIND POWER CO., INC.

NORTHWESTERN UNIVERSITY, CIVIL ENG. DEPT.

OCEANOGRAPHIC SERVICES, INC.

OCONTO ELECTRIC COOPERATIVE

S. OHBA & ASSOCIATES

OKLAHOMA STATE UNIVERSITY; SCHOOL OF ELEC. ENG.

OWENS-CORNING FIBERGLASS

PACIFIC GAS & ELECTRIC: DEPT. OF ENG. RESEARCH

PINSON ENERGY CORP.

POLYTECHNIC INSTITUTE OF NEW YORK

JAMES A. POTTER

PRAIRIE SUN AND WIND CO.

J. P. RAMEAU INC.

ROCKWELL INTERNATIONAL; ATOMICS INT'L DIV., WIND SYSTEMS PROG.

TONY SADAR

SHEEHAN CONSULTANTS

RALPH SHUPBACK

SIGMA ENGINEERING CO., INC.

SOLAERO RESEARCH

SOLAR WIND CENTER

STRUCTURAL COMPOSITE INDUSTRIES, INC.

T.R.C. OF NEW ENGLAND

TELEDYNE AER-CAL

UNITED TECHNOLOGIES RESEARCH CENTER; AERODYNAMICS CNTR.

UNIVERSITY OF MASSACHUSETTS, DEPT. OF ENG.

UNIVERSITY OF RHODE ISLAND; DEPT. OF MECH. ENG.

WESTINGHOUSE ELECTRIC CORP.

WESTINGHOUSE ELECTRIC CORP.; ADVANCED ENERGY SYSTEMS

WEST TEXAS STATE UNIVERSITY

WIND-DE-GO, INC.

WIND POWER SYSTEMS, INC.

WIND POWER DIGEST

WINDWORKS

WINDY-TEN LTD.

I. 4 - OTHERS

AMERICAN WIND ENERGY ASSOCIATION

ELDON J. ARMS

KARL. J. BEA ASSOCIATES

CENTER FOR NATURAL RESOURCES, ENERGY & TRANSPORTATION

CENTRAL NE PUBLIC POWER & IRRIGATION DISTRICT

CREWS, MACINNES, & HOFFMAN

DAVID DROZD

EUGENE WATER & ELECTRIC BOARD

FOUNDATION FOR RURAL TECHNOLOGY

GENTLE ENERGY SYSTEMS, INC.

JOHN B. HALDIMAN d.b.a. HALDI RANCH, GILA CO., AZ

HOLYOKE GAS & ELECTRIC DEPT.

INDEPENDENT ENERGY SYSTEMS

ROBERT M. JEFFREYS

KAMAN AEROSPACE CORP.

KAMAN SCIENCES, CORP.; ENERGY SYSTEMS DEVEL. GROUP

MERTON ENG. CO., INC.

OCEANOGRAPHIC SERVICES, INC.

OCONTO ELECTRIC COOPERATIVE

TED PFEIFF

PINSON ENERGY CORP.

REAL GAS & ELECTRIC CO., INC.

ROCKWELL INTERNATIONAL; ATOMICS INT'L DIV., WIND SYSTEMS PROG.

RALPH SCHUPBACK

SHEEHAN CONSULTANTS

TOWARD TOMORROW FAIR

WIND-DE-GO, INC.

WINDWORKS

WINDY-TEN LTD.

WIND POWER DIGEST

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SECTION II. Index of Manufacturers, Distributors, Researchers, and Others

AEOLIAN ENERGY CO.
RD #4
Ligonier, PA 15658

Phone: (412)593-7905 (or 593-7040)
Distributor
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

DISTRIBUTION

Services provided: site selection
installation
repair

AEROLECTRIC CO.
13517 Winter Lane
Cresaptown, MD 21502

Contact: Kevin E. Moran
Manufacturer, Researcher

MANUFACTURE

Type of W.E.C.S.: horizontal axis
System classified as: 9 ft. production item, 12 ft. prototype (in production within 1-6 months).
Rotor diameter: 7-12 ft.
3 blades
Unit begins to generate @ 8.5 mph.
Unit designed to withstand 100 mph.
Unit generates: 12V dc, adjusts to 18V dc for line drop.
Rated output: 660 Watts @ 27 mph.
Sold under limited warranty or guarantee.
System in operation for 0-3 years.
System is adaptable to other applications.

RESEARCH

Research areas: W.E.C.S., W.E.C.S. components.
Not working under contract or grant.
Information is available to the public.
Work overview: In 1970 K. Moran built first mill for L. M. Glick, had some success so developed fiberglass rotor system to market $2000-3000 size systems. Never finished development. Moran went to work for Edmund Scientific in 1974 and found could sell under $1000 machine so decided to go mail order. Have built and sold about 50 small W.E.C.S. to date.

AEROVIRONMENT INC.
145 Vista Ave.
Pasadena, CA 91107

Contact: Dr. Peter Lissaman, Dr. Paul MacCready
Phone: (213)449-4392
Manufacturer, Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: W.E.C.S., Meteorological data systems, W.E.C.S. components.
Working under contract or grant from E.R.D.A.
Information is available to the public from Aerovironment Inc. for cost of reproducing reports.
Work overview: Theoretical studies of turbine rotors, instrumentation for remote wind measurement, development and test of advanced wind turbines.

ALTERNATIVE ENERGY SYSTEMS
Box 497 A
Kennebunkport, ME 04046

Contact: Peter Talmage
Phone: (207)967-5945
Manufacturer
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

MANUFACTURE

Type of W.E.C.S.; horizontal axis
System classified as prototype. (production within 18-36 months)
Rotor diameter: 1-6 ft, 13-20 ft.
2 blades each.
Unit begins to generate @ 7 mph.
Unit designed to withstand 100 mph.
Unit generates: dc
Rated output: 350 Watts @ 20 mph, 3000 Watts @ 18 mph.
Will be sold under warranty or guarantee.
System in operation for 0-3 years.
System is adaptable to other applications.

AMERICAN ENERGY ALTERNATIVES, INC. (Amerenalt Corp.)
5420 Arapahoe
Boulder, CO 80302

Contact: Mike Blakely
Phone: (303)442-0885
Manufacturer, Distributor
1-3 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

MANUFACTURE

Type of W.E.C.S.: horizontal axis
System classified as: production item.
Rotor diameter: 8' & 12'
No. of blades; 24 & 36.
Unit begins to generate @ 9 mph.
Unit designed to withstand 110 mph.
Unit generates: dc.
Sold under warranty or guarantee.
System in operation for 2 1/2 years.
System is adaptable to other applications.

DISTRIBUTION

Systems distributed: Amerenalt
Services provided: site selection, installation and repair.

RESEARCH

Research areas: W.E.C.S., W.E.C.S. components
Not working under contract or grant.
Information is available to the public.

AMERICAN INSTITUTE OF ARCHITECTS
1735 New York Ave., NW
Washington, D.C. 20006

Contact: Thomas V. Vonier
Phone: (202)785-7800
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.
Researcher

RESEARCH

Research areas: W.E.C.S., Other: relationships of wind energy to building ventilation and cooling, and to building and urban form.
Not working under contract or grant.
Information is available to the public from American Institute of Architects.
Cost varies.
Work overview: Interested in direct applications of wind energy for purposes other than mechanical and electrical power production.

AMERICAN WIND ENERGY ASSOCIATION, NATIONAL OFFICE
54468 CR 31
Bristol, IND 46507

Contact: Mr. Mike Evans
Phone: (219)848-4360

Research Association
10-15 part time employees in the wind energy field.
Involved in the wind energy industry for 4 years.

RESEARCH

Research areas: W.E.C.S., Meteorological data systems, W.E.C.S. components, Publications, Legislation, Inverters, Towers
Working under contract or grant from various sources.
Information is available to the public from National offices for various prices.
Work overview: The association was established to aid the development of the wind energy industry through research publications and legislative efforts.

APPLIED SOLAR TECHNOLOGY, INC.
5523 Mystic Ct.
Columbus, MD 21044

Contact: Michael A. Brown, P.E.
Phone: (301)730-7776
Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: W.E.C.S.
Information is not available to the public.
Work overview: We are presently preparing a proposal to E.R.D.A., perhaps through the Office of Energy Related Invention, for what we hope will be a very efficient W.E.C.S.

ELDON J. ARMS
Box 7
Woodman WI 53827

Contact: Eldon J. Arms
Phone: (608)533-2173
Buy and recondition used water pumpers for farms and ranches, also bought and sold a few Jacobs & Wincharger generators.
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

ATHABASCA RESEARCH CORP.
11210 143rd St.
Edmonton, Alberta, Canada, T5M IV5

Contact: Lawrence A. Schienbein
Phone: (403)452-0924
Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Researcher areas: Meteorological data systems.
Work overview: Provide a wind inventory and site selection service including the supply of monitoring equipment, data acquisition and data analysis.

BAKER MFG. CO.
133 Enterprise St.
Evansville, WI 53536

Contact: Neil C. Lien
Phone: (608)882-5100
Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 26 years or more (1873-1948).

RESEARCH

Research areas: W.E.C.S. and Towers
Information is not available to the public.

COMMENTS

Baker Mfg. Co. over the last 100 years has contributed the "moniter" windmill. Since 1946 the sale of this type of windmill dropped below the point of economic manufacture. Those who stayed in the business have enjoyed a renewed business. We are still interested in windmills and some day desire to be back in business. In the meantime we desire to research both the "hard" and "soft" data and will engage in more extensive research as opportunities arise.

BATTELLE, PACIFIC NORTHWEST LAB.; ATMOS. SCI. DEPT.
P.O. Box 999
Richland, WA 99352

Contact: J. V. Ramsdell
Phone: (509)946-2749
Researcher
6-10 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: Meteorological data systems; wind characteristics for design, performance evaluation, pre-siting evaluation, site selection.
Working under contract or grant from (See Comments Section).
Information is available to the public from NTIS, U.S. Dept. of Commerce, Springfield, VA for price dependent on length.
Work overview: PNL conducts and sponsors work, as E.R.D.A.'s agent, on wind characteristics to support the wind energy conversion program. Work must correspond to directions set forth in a program-development plan prepared annually for the wind characteristics program element.

KARL J. BEA ASSOCIATES
128 Dewitt St.
Syracuse, NY 13203

Contact: Karl J. Bea
Phone: (315)474-5231
Researcher, Consulting Engineer
6-10 full time employees in the wind energy field.
Involved in the wind energy industry for 4 years.

W.E.C.S. Professional Engineers
Type of W.E.C.S.: horizontal axis & vertical axis
System classified as prototype.
Rotor diameter: 21 ft or more
2 blades and 3 blades.
Unit begins to generate @ 8 mph.
Unit designed to withstand 150 mph.
Unit generates: ac, dc, and patented variable displacement compressor or pump, gas generator if necessary.
Rated output: Up to 225K Watts @ 27 mph (constant tip speed ratio operation)
Will not be sold under warranty or guarantee.
(erection of 300 hp compressor suspended 1975 for lack of funds)
System is adaptable to other applications.

RESEARCH

Research areas: W.E.C.S.; W.E.C.S. components; compressors, and variable speed increasers.
Not working under contract or grant.
Information is available to the public; consulting eng. services available at standard rates.
Work overview: Developing W.E.C.S. directed at recovery of oil, gasification of solid waste, methanol production, sewage treatment, cryogenics, and irrigation.

CALIFORNIA STATE UNIVERSITY
Northridge, CA 91330

Contact: Prof. Arnold Court
Phone: (213)885-3521
Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 11-25 years.

RESEARCH

Research area: Wind behavior
Information is not available to the public.
Work overview: Statistical climatology.

CENTER FOR NATURAL RESOURCES, ENERGY & TRANSPORTATION
United Nations, Rm. DC 828
New York, NY 10017

Contact: Kenneth W. Bosley, Energy & Mineral Development Branch
Phone: (212)754-8773
His home address: Rt. 2, Box 7
Sparks, MD 21152
(301)771-4316

Researcher
Public relations; asst. editor of Energy Atlas.
Involved in the wind energy industry for 4-10 years.

RESEARCH

Research areas: W.E.C.S.; political, technical, consumer aspects.
Information is available to the public from Kenneth Bosley (home address) for $1.00 - 3.00, depending on report.

CENTRAL NE PUBLIC POWER & IRRIGATION DISTRICT
P.O. Box 356
Holdrege, NE 68949

Contact: E. L. Hamilton, Chief Electrical Engineer
Phone: (308)995-8601

BRANCH OFFICE

CENTRAL NE PUBLIC POWER & IRRIGATION DISTRICT
Kingsley Dam, Rt. 2 Box 62Y
Ogallala, NE 69153; and
P.O. Box 188
Gothenburg, NE 69138
Phone: (308)284-2332; (308)537-3582
Utility
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

COMMENTS

One of 17 utilities in the running for four W.E.C.S. (200 to 1500 kW). We are presently monitoring wind velocity and direction at our Kingsley Dam site under an E.R.D.A. contract. Waiting for E.R.D.A. to site the two 1500 kW units, we hope they let us test one. Western Scientific in Fort Collins, CO, processes the data from our, and other, monitoring sites.

COLORADO STATE UNIVERSITY; FLUID DYNAMICS & WIND
Fort Collins, CO 80523

Contact: Dr. Robert N. Meroney, William Gray
Phone: (303)491-8572
Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

RESEARCH

Research areas: Meteorological data systems
Working under contract or grant from E.R.D.A.
Information is available to the public from NTIS and Colorado State University.
Work overview: W.E.C.S. siting in complex topography.

COULSON WIND ELECTRIC
RFD #1, Box 225
Polk City, IA 50226

Contact: Ronald Coulson
Phone: (515)984-6038
Distributor
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 26 years or more.

DISTRIBUTION

Systems distributed: Jacobs, Zephyr, Winpower, Wincharger, and others.
Services provided: site selection, installation, and repair.

CREWS, MACINNES, & HOFFMAN
4111 Minnesota Dr.
Anchorage, AK 99503

Contact: Ronald Aksamit
Phone: (907)277-5605
Researcher
Consulting engineers
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: W.E.C.S.; Meteorological data systems; W.E.C.S. components; Inverters; Towers
Information is not available to the public.
Work overview: Research is limited to equipment and site of a specific client.

DISCO, INC.
1010 Greenwood Lake Tpk.
Ringwood, NJ 07456

Contact: James C. Gayler, III
Phone: (201)728-7731
Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: W.E.C.S.
Not working under contract or grant.
Information is not available to the public.
Work overview: Development of a 10 kW W.E.C.S., with a 22 ft diameter rotor, generating dc to storage batteries or a Gemini Synchronous Inverter.

MARK DRABICK
322 North 7th St., #11
Allentown, PA 18102

Contact: Mark Drabick
Phone: (215)264-0448 (or 437-6758)

BRANCH OFFICE

KRAMCO
Box 1536
Allentown, PA 18105

Phone: (215)437-6758
Distributor, Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

DISTRIBUTION

Systems distributed: Jacobs
Services provided: site selection, installation, repair

RESEARCH

Research area: Meteorological data systems.
Information is not available to the public.
Work overview: Am developing an inexpensive wind passage counter with print-out capabilities.

DAVID DROZD
558 Churchill St.
Southington, CT 06489

Phone: (203)628-9487
Hobbyist
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Information is available to the public.

EDMUND SCIENTIFIC CO.
101 East Gloucester Pk.
Barrington, NJ 08007

Contact: Kevin Moran
Phone: (609)547-3488
Branch Office: None (have representatives in Chicago, Toronto, Australia, and Japan)
Distributor
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

DISTRIBUTION

Systems distributed: Wincharger; Aerolectric

DEVELOPMENT

Development area: Meteorological data systems
Not working under contract or grant.
Information is available to the public from Edmund Scientific for $3.00 -- instruction set.
Work Overview: In 1970 Kevin Moran built first windmill for L. M. Glick, and had some success, so developed fiberglass rotor system to market $2000 - $3000 size machines but never finished development. Went to work for Edmund in 1974 and found could sell under $1000 machine so decided to go mail order. Have built and sold about 50 small W.E.C.S. to date.

ENERGY ALTERNATIVES, INC.
69 Amherst Rd.
Leverett, MA 01054

Contact: Klaus Kroner, Pres., Frank Kaminsky
Phone: (413)549-3644

BRANCH OFFICE

ENERGY ALTERNATIVES, INC.
Rt. 2, Mohawk Trail
Shelburne, MA

Phone: (413)625-2725
Distributor
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

DISTRIBUTION

Systems distributed: Elektro; Wincharger
Services provided: site selection, installation, repair.

ENERGY DEVELOPMENT CO.
179 E. Rd. #2
Hamburg, PA 19526

Contact: Terrance Mehrkam
Phone: (215)562-8856
Manufacturer; distributor, researcher.
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

MANUFACTURE

Type of W.E.C.S.: horizontal axis
System classified as production
Rotor diameter: 21 ft or more
4 blades
Unit begins to generate @ 5 mph.
Unit designed to withstand 120 mph.
Unit generates: ac; dc
Rated output: 10 or 20 KW @ 25 mph.
Will be sold under warranty or guarantee.
System in operation for 0-3 years.
System is adaptable to other applications.

DISTRIBUTION

Systems distributed: Winpower, Wincharger
Services provided: site selection, installation, repair.

RESEARCH

Research areas: W.E.C.S., Meteorological data systems, W.E.C.S. components, Inverters, Towers
Not working under contract or grant.
Information is available to the public from Energy Development Co. for free.

ENERTECH CORP.
Box 420
Norwich, VT 05055

Contact: Dr. William E. Drake, Pres., Robert Sherwin, Jr., V.P.
Ned Coffin, Mgr., Henry Clews
Phone: (802)649-1145 or 649-1350
Distributor
6-10 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

DISTRIBUTION

Systems distributed: Elektro, Dunlite, Wincharger, Sencenbaugh.
Services provided: site selection, installation, repair.

ENVIRONMENTAL ENERGIES, INC.
Box 73, Front St.
Copemish, MI 49625

Contact: Al O'Shea, Tim Horning
Phone: (616)378-2000
manufacturer, distributor, researcher.
6-10 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

MANUFACTURE

Type of W.E.C.S.: horizontal axis
System classified as prototype. (in production within 7-18 months)
Rotor diameter: 21 ft or more.
Unit begins to generate @ 6.5 mph.
Unit designed to withstand 165 mph.
Unit generates: ac or dc.
System in operation for 0-3 years.
System is adaptable to other applications.

DISTRIBUTION

Systems distributed: Jacobs, Elektro, Dunlite, Wincharger.
Services provided: site selection, installation, repair, other.

RESEARCH

Research areas: W.E.C.S., W.E.C.S. components, Towers.
Not working under contract or grant.
Information is available to the public from selected mailing list.
Work overview: To provide a mass produceable W.E.C.S. that is reliable, easily installed, and cost effective for a 1980 market.

EUGENE WATER & ELECTRIC BOARD
Box 10148
Eugene, OR 77401

Contact: H. S. Worcester
Phone: (503)484-2411
Electric Utility Researcher.
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

RESEARCH

Research areas: W.E.C.S., Meteorological data systems.
Not working under contract or grant.
Information is available to the public.
Work overview: Working on: (1) finding wind energy sites;
(2) prototype design of 25 m unit.

FOUNDATION FOR RURAL TECHNOLOGY
903 Pine St.
Boulder, CO 80302

Contact: Nicholas R. Espeset
Phone: (303)444-1673
Researcher: contract designer of systems for manufacturers.
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

RESEARCH

Research area: W.E.C.S.
Working under contract or grant from Mackenzie-Phillips Corp.
Information available to the public from Nicholas R. Espeset at no charge. (personal correspondence, to an extent not violating manufacturers' contract)
Work overview: Basic systems at this time are flexible rotor Darrieus for non-storage applications, and fabric Savonius for storage and mechanical drive applications.

FRANKLIN INST. RESEARCH LABS
20th St. & the Parkway
Philadelphia, PA 19103

Contact: Dr. Burton Rauch, Chief of Rotating Machinery
Phone: (215)448-1566
Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

RESEARCH

Research areas: W.E.C.S., W.E.C.S. components

GENERAL ELECTRIC; SPACE DIV.
Box 8555
Philadelphia, PA 19101

Contact: Dr. Lowell Krawitz
Phone: (215)962-6347
Researcher
0-5 full time employees in the wind energy field (personally, not G.E.).
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: Meteorological data systems, climatology of wind energy; techniques for estimating available wind energy at remote sites.
Working under contract or grant from E.R.D.A.
Information is available to the public from technical publications.
Work overview: Wind characteristics.

GENERAL ELECTRIC CO.
P.O. Box 8555
Philadelphia, PA 19101

Contact: Walter C. Pijawka, Mgr., Wind Energy Program
Phone: (215)962-5235
Manufacturer, Researcher
26+ full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

MANUFACTURE

Type of W.E.C.S.: horizontal axis
System classified as prototype (production within 7-18 months)
Rotor diameter: 21 ft or more.
2 blades
Unit begins to generate @ 11 mph.
Unit designed to withstand 150 mph.
Unit generates: ac or dc.
Rated output: 1500 Watts @ 22 mph.

RESEARCH

Research area: W.E.C.S., W.E.C.S. components
Working under contract or grant from NASA-Lewis.

GENTLE ENERGY SYSTEMS, INC.
Ireland Rd.
Starksboro, VT 05487

Contact: Frederic Lowen, President
Phone: (802)453-3546
Researcher, Wind analysis and preliminary design.
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research area: Meteorological data systems.
Not working under contract or grant.
Information is not available to the public.
Work overview: Following the work initiated by Putnam in wind measurements connected to the Smith-Putnam wind turbine, we aim to develop a faster, more economical, and more accurate wind survey service than is currently offered by W.E.C.S. manufacturers and dealers.

THE GEORATOR CORP.
9016 Prince William St.
Manassas, VA 22110

Contact: C. E. Trefzger, Director
Manufacturer
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 11-25 years.

MANUFACTURE

Type of W.E.C.S.: permanent magnet alternators, 150 VA - 25 kVA
System classified as production.
Unit begins to generate @ 300 rpm @ generator.
Unit designed to withstand 4200 rpm @ generator.
Unit generates: ac or dc.
Rated output: Watts 150 VA - 25 kVA.

GEORGIA INSTITUTE OF TECHNOLOGY; ENG. EXP. STATION
Atlanta, GA 30332

Contact: C. G. Justus
Phone: (404)894-3014
Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: Meteorological data systems, Towers.
Working under contract or grant from E.R.D.A.
Information is available to the public from E.R.D.A. VA-60 reports.
Work overview: Wind characteristics and performance evaluation of W.E.C.S. systems and arrays.

DR. ROBERT GORDON
620 West Huntington Dr.
Arcadia, CA 91006

Contact: Dr. Robert Gordon
Phone: (213)445-3833
Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: W.E.C.S. components.
Information is not available to the public.
Work overview: Low cost blade manufacturing concepts.

MARTIN L. GREENWALD
RD #1
Thompson Ridge, NY 10985

Contact: Martin L. Greenwald
Phone: (914)733-4397
Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: W.E.C.S., W.E.C.S. components.
Not working under contract or grant.
Information is available to the public from various speaking engagements.
Work overview: Involved in the teaching of courses and research at the college level on alternate energy systems, primarily wind and solar.

JOHN B. HALDIMAN d.b.a. HALDI RANCH, GILA CO., AZ
P.O. Box 791
Phoenix, AZ 85001

Contact: John B. Haldiman
Phone: (602)262-5411
Ranch with windmill for water.
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

HELLER-ALLER CO.
Box 29
Napoleon, OH 43545

Contact: William J. Selhorst
Phone: (419)592-1856 (or 592-3216)
Manufacturer, Researcher.
26+ full time employees in the wind energy field.
Involved in the wind energy industry for 26 years or more.

MANUFACTURE

Type of W.E.C.S.: horizontal axis
System classified as production.
Rotor diameter: 1-12 ft (four units)
blades: 20; 36; 30; 32
Unit designed for water pumping only.
Unit never tested to establish pack wind resistance but installations have withstood Carribbean hurricanes.
Will be sold under warranty or guarantee.
System in operation for 26 years or more.
System is not adaptable to other applications.

RESEARCH

Reseacher areas: W.E.C.S. (electric generation)
Not working under contract or grant.
Information is not available to the public.
Work overview: Utilization of the multi-blade wheel.

HYDRO-CATYLATOR CORP.
3579 East 10th Ct.
Hialeah, FL 33013

Contact: Edward C. Wagoner, Vice President
Phone: (306)696-2504
Manufacturer and Researcher.
Involved in the wind energy industry for 0-3 years.

MANUFACTURE

Type of W.E.C.S.: catalytic battery caps.
System classified as production.
Will be sold under warranty or guarantee.
System in operation for 11-25 years.
System is adaptable to other applications.

RESEARCH

Research areas: electrical storage.
Information is available to the public.

HOLYOKE GAS & ELECTRIC DEPT.
70 Suffolk St.
Holyoke, MA 01040

Contact: George C. Leary
Phone: (413)534-0221
Electric Utility Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: W.E.C.S.
Working under contract or grant from E.R.D.A./N.A.S.A.
Information is available to the public from E.R.D.A./N.A.S.A.
Work overview: E.R.D.A. large wind generator systems-candidate site.

HOME SPUN POWER CO.
1085 Columbus
Fredericksburg, TX 78624

Contact: Earl Brehmer
Phone: (512)997-3762

BRANCH OFFICE

ECON-O-PRINT
110 Midcrest
San Antonio, TX 78228

Phone: (512)733-1231
Manufacturer and Researcher.
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

MANUFACTURE

Type of W.E.C.S.: horizontal axis
System classified as prototype. (production within 7-18 months)
Rotor diameter: 7-12 ft
3 blades
Unit begins to generate @ 9 mph.
Unit designed to withstand 80 mph.
Unit generates: dc.
Rated output: 1500 Watts @ 20 mph.

RESEARCH

Research areas: Towers

HONEYWELL INC., SYSTEM & RESEARCH CENTER MN17-2688
2600 Ridgway Pky.
Minneapolis, MN 55413

Contact: Fred Malver, D. Herb Lindquist
Phone: (612)378-5538, (612)378-4141
Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: W.E.C.S., economic viability
Working under contract or grant from E.R.D.A.
Information is available to the public from E.R.D.A. (when published)
Work overview: The study has explored the economic viability of W.E.C.S. for utility application. The work was performed with Minnesota Power & Light Co. as the subject of a case study.

INDEPENDENT ENERGY SYSTEMS
6043 Sterrettania Rd.
Fairview, PA 16415

Contact: John D'Angelo, President
Phone: (814)833-0829
Manufacturer, Distributor, Retail Catalogue Sales.
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

MANUFACTURE

Type of W.E.C.S.: horizontal axis
System classified as prototype. (production within 1-6 months)
Rotor diameter: 7-12 ft.
3 blades
Unit begins to generate @ 8 mph.
Unit designed to withstand 120 mph.
Unit generates: dc.
Rated output: 2000 Watts @ 22 mph, 3000 Watts @ 22 mph.
Will be sold under warranty or guarantee.
System in operation for 0-3 years.
System is adaptable to other applications.

DISTRIBUTION

Systems distributed: Jacobs, and our own in the near future.
Services provided: site selection, installation, repair.

RESEARCH

Research areas: W.E.C.S. components information is available to the public.

INDEPENDENT POWER DEVELOPERS, INC.
Box 1467
Noxon, MT 59853

Contact: Bill Delp, III, President
Phone: (406)847-2315
Manufacturer, Distributor, and Researcher.
6-10 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

MANUFACTURE

Type of W.E.C.S.: horizontal axis
System classified as prototype. (production within 7-18 months)
Rotor diameter: 21 ft or more.
3 blades
Unit begins to generate @ 6 mph.
Unit designed to withstand 120 mph.
Unit generates: dc.
Rated output: 500 Watts @ 6 mph (20K Watts @ 23 mph).
Will be sold under warranty or guarantee.
System in operation for 0-3 years.
System is adaptable to other applications.

DISTRIBUTION

Systems distributed: Jacobs, Elektro, Dunlite, Wincharger.
Services provided: site selection, installation, repair.

RESEARCH

Research areas: W.E.C.S., Meteorological data systems, W.E.C.S. components, Inverters, Towers.
Is working under a contract or grant from State of Montana (SB 86).
Information is available to the public from Independent Power Developers, Inc.
Cost upon request.

INSTITUTE FOR ENVIRONMENTAL STUDIES
1225 West Dayton St.
Madison, WI 53706

Contact: Carel C. Dewinkel
Phone: (608)263-4578 (or 262-1726)
Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: W.E.C.S.
Working under contract or grant from Wisconsin Office of State Planning & Energy.
Information is available to the public from Institute for Environmental Studies.
Usually at no charge.
Work overview: W.E.C.S. as fuel savers for the service area of the Dairyland Power Cooperative, an electric utility that services a large predominantly rural area in WI, MN, IA, and IL.
Special attention to rapidly growing heating load, W.E.C.S. and load management and heat storage.

IOWA STATE UNIVERSITY; ELEC. ENG. DEPT.
Rm 213, Davidson Hall
Ames, IA 50011

Contact: L. H. Soderholm
Phone: (515)294-5723
Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: W.E.C.S., Meteorological data systems.
Working under contract or grant from E.R.D.A. through A.R.S.
Information is available to the public from periodic technical papers.
Work overview: Primary interest: development and application of W.E.C.S. for heating of rural structures and control of demand on rural power distribution systems.

IOWA STATE UNIVERSITY; ELEC. ENG. DEPT.
231 Coover Hall
Ames, IA 50010

Contact: Allan G. Potter
Phone: (515)294-2510
Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: W.E.C.S., Meteorological data systems, Inverters.
Working under contract or grant from Iowa Electric Light and Power.
Information is available to the public from Power Affiliates, Rm 111 Coover Hall, ISU.
Work overview: Working on an induction machine driven by 15 ft diameter Jacobs blades with torque and centrifugal trim in tandem. Direct interconnection to ac power grid is used. Storage is in batteries or as liquid ammonia. Return to grid on peak is through an inverter for batteries and through an ammonia turbine for ammonia storage. Wind energy density in kW-hr/day for an ideal wind turbine with a 1 m^2 capture area is being recorded (two years of data at Ames, IA). Ours (Elec. Eng. Dept., ISU) is a wind peaking power study for IELP.

I.R.E.Q.
P.O. Box 1000, Varennes
Quebec, Canada, J0L 2P0

Contact: J. H. VanSant
Phone: (514)652-8428
Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

RESEARCH

Research areas: W.E.C.S., W.E.C.S. components, Energy storage.
Not working under contract or grant: (All work sponsored by parent organization -- Hydro Quebec.
Information is not available to the public.
Work overview: Development of W.E.C.S. for electrical utilities.

JBF SCIENTIFIC CORP.
1701 K St., NW, #905
Washington, D.C. 20006

Contact: Dr. Theodore R. Kornreich
Phone: (202)659-4411

BRANCH OFFICE

JBF SCIENTIFIC CORP
2 Jewel Dr.
Wilmington, MA 01887

Phone: (617)657-4170
Researcher
6-10 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: W.E.C.S.
Working under contract or grant from E.R.D.A.
Information is available to the public from NTIS.
Work overview: Technical and economic analysis of W.E.C.S., program planning and technical information dissemination.

ROBERT M. JEFFREYS
1204 Goodview Ave.
Fayetteville, NC 28305

Contact: Robert M. Jeffreys
Phone: (919)484-9343
Manufacturer, Researcher, and private citizen building own system recycling items for small investment.

MANUFACTURE

Type of W.E.C.S.: horizontal axis
System classified as prototype. (production within 1-6 months)
Rotor diameter: 13-20 ft.
3 blades
Unit begins to generate @ 7-9 mph.
Unit generates: dc.
Rated output: 3500 Watts.

RESEARCH

Research areas: W.E.C.S., Inverters, Towers, Complete wiring of household, batteries, and H_2 conversion.
Not working under contract or grant.
Information is not available to the public.
Work overview: Building a solar heated house and a 3500 Watt wind generator, with truck batteries, inverters, and wiring systems.
Also looking into H_2 dissociation with excess current, several voltages in same household, pipe tower.

KAMAN AEROSPACE CORP.
Old Windsor Rd.
Bloomfield, CT 06002

Contact: C. H. Kaman, Pres.; R. D. Moses, V.P. Mktg.; D. W. Robinson, V.P. Eng.; R. C. Bundgaard, Chief Sci.; W. R. Batesole, Mgr. Wind Energy; J. J. Barzda, Sys. Res. Chief; H. W. Gewehr, Prog. Mgr.; Dr. E. Kush, Res. Spec.; Arved Plaks, Sr. Anal. Eng.; B. A. Goodale, Mktg.

BRANCH OFFICE

KAMAN AEROSPACE CORP.
1911 Jefferson Davis Hwy., Suite 706
Arlington, VA 22202

Phone: (703)979-2500
Manufacturer, Researcher, and Consultants.
26+ full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

MANUFACTURE

Type of W.E.C.S.: horizontal axis, and vertical axis.
System classified as prototype. (production within 18-36 months)
Rotor diameter: 21 ft or more.
2 and 3 blades.
Not sold under warranty or guarantee.
System in operation for Prototype components only.
System is adaptable to other applications.

RESEARCH

Research areas: W.E.C.S., W.E.C.S. components.
Working under contract or grant from NASA, Sandia, Westinghouse, VPI (others pending).
Information is available to the public through speakers.
Work overview: Mod-1 study for NASA-Lewis, design and fabrication of rotor blades for Sandia's 17m Darrieus vertical axis wind turbine; design and fabrication of 150 ft all-composite blade for NASA tests; study of off-shore W.E.C.S. for Westinghouse under E.R.D.A. contract; consultant to Va. Polytechnic Inst. for U.S.D.A. contract bids pending on 8 kW and 40 kW wind turbines for Rocky Flats, and 300 ft diameter Mod-2 for NASA.

KAMAN SCIENCES CORP.; ENERGY SYSTEMS DEVEL. GROUP
P.O. Box 7463
Colorado Springs, CO 80933

Contact: D. M. Jardine, Senior Eng.
Phone: (303)596-4900
Researcher, and Systems Integration.
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: W.E.C.S. applications into overall energy systems.
Information is not available to the public.
Work overview: Acceptable utility interfacing, thermal storage of converted wind energy, wind assisted storage optimized power system integration, fuel saver applications, and negative load applications.

KEDCO, INC.
9016 Aviation Blvd.
Inglewood, CA 90301

Contact: W. C. Strumpell, Pres.; Jack Park, Cons.
Phone: (213)776-6636
Manufacturer, Distributor, and Researcher.
6-10 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

MANUFACTURE

Type of W.E.C.S.: horizontal axis
System classified as production.
Rotor diameter: 7-12 ft. 13-20 ft. (21 ft or more -- prototype).
3 blades
Unit begins to generate @ 7-8 mph. (Governing onset -- 25 mph)
Unit generates: dc.
Rated output: 1200 Watts @ 21/16 mph; 2000 Watts @ 25/21 mph.
Will be sold under warranty or guarantee.
System in operation for 0-3 years.
System is adaptable to other applications.

RESEARCH

Research areas: W.E.C.S., Inverters.
Information is available to the public.

KELSEY WIND SYSTEMS
P.O. Box 465
Zuni, NM 87327

Contact: Patrick Kelsey
Researcher
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: W.E.C.S., Towers.
Information is available to the public from Kelsey Wind Systems, Zuni, NM at no charge.
Work overview: Reconditioning, and experimenting.

LEHIGH UNIVERSITY, DEPT. OF MECH. ENG. & MECHANICS
Bethlehem, PA 18105

Contact: Dr. Robert G. Sarubbi
Phone: (383)691-7000
Researcher
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: Meteorological data systems.
Working under contract or grant from Pennsylvania Power & Light Company.
Work overview: Statistical analysis of wind and sun energy at one location to determine whether a combined system can reduce slack periods significantly.

LAWRENCE LIVERMORE LAB.; UNIV. OF CALIFORNIA
P.O. Box 808
Livermore, CA 94550

Contact: Dr. Donald Hardy
Phone: (415)447-1100 (x3481)
Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: Wind energy resource assessment; spatial and temporal variations of wind energy.
Working under contract or grant from E.R.D.A. - D.S.E.
Information is available to the public from Law. Liv. Lab. Technical Information Dept.
Work overview: Assessment of wind energy potential in hilly or mountainous areas.

BOB MCBROOM
217 Kansas
Holton, KS 66436

Contact: Bob McBroom
Phone: (913)364-2443
Distributor
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

DISTRIBUTION

Systems distributed: Jacobs, Winpower, and Wincharger.
Services provides: site selection, installation, and repair.

MCDONNELL-DOUGLAS AIRCRAFT CO.
Box 516
St. Louis, MO 63166

Contact: Charles C. Cassmeyer, Mktg.
Phone: (314)232-0232
Researcher.
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: W.E.C.S.
Working under contract or grant from E.R.D.A. (contract EY-76-C-02-2617)
Information is not available to the public.
Work overview: Giromill wind tunnel test program.

JOHN L. MARPLE
633 Pleasant Ave.
Saugatuck, MI 49453

Contact: John L. Marple
Phone: (616)857-2030
Distributor, and Researcher.
0-5 part time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

DISTRIBUTION

Systems distributed: Jacobs, and Natural Power Inc.
Services provided: site selection, installation, and repair.

RESEARCH

Research areas: W.E.C.S., and Meteorological data systems.
Information available to the public from speeches and slide show at meetings.
Work overview: Matching sites and load with currently available equipment.

MERRITT WINDMILL, INC.

Box 1374
Merritt, BC, Canada, VOK 2BO

Phone: (604)378-2552, (604)378-2215
Manufacturer, and Researcher.
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

MANUFACTURE

Type of W.E.C.S.: horizontal axis, vertical axis.
System classified as prototype (production as soon as I find a buyer for my patent).
Rotor diameter: 1-12 ft (dependent on required hp).
Unit begins to generate @ 8 mph.
Unit designed to withstand 70 mph and above.
Unit generates: ac or dc.
Rated output: (No graph average).
Will be sold under one year warranty or guarantee.
System in operation for 0-3 years, vertical; 4-10 years, horizontal.
System is adaptable to other applications.

RESEARCH

Research areas: W.E.C.S., and Towers.
Not working under contract or grant.
Information is not available to the public.
Work overview: My standard horizontal axis windmills are aerating several lakes (16) in order to cope with 74 mph sudden winds. I have found the new rotor superb.

MERTON ENG. CO. INC.
119 Stuart Rd.
Racine, WI 53406

Contact: C. E. Kinney
Phone: (414)886-3445
Manufacturer, Researcher, and Consulting for Allis Chalmers on control problems of steam turbines in service.
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

MANUFACTURE

Type of W.E.C.S.: horizontal axis.
System classified as prototype.
Rotor diameter: 21 ft or more.
2 blades
Unit begins to generate @ 10 mph - 12 mph.
Unit designed to withstand 25 mph.
Unit generates: Heat, by direct conversion in air.
Rated output: 50 hp @ 25 mph.
System in operation for 0-3 years.
System is adaptable to other applications. Industrial users of heat could use similar converters driven by the largest available windmills.

RESEARCH

Research areas: Limit speed control, Towers.
Not working under contract or grant.
Information is available to the public from Merton Eng. Co., Inc.
Work overview: The windmill became operative 5/21/77 with 18 ft diameter blades driving a Model II converter per drawing W-38-A-1, delivering warm air to an adjacent ventilated garage.

N.A.S.A. - LeRC
21000 Brookpark Rd.
Cleveland, OH 44135

Contact: Robert English
Phone: (216)433-4000 (x6949)
Researcher
26+ full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

RESEARCH

Research area: W.E.C.S.
Working under contract or grant from E.R.D.A.
Information is available to the public from E.R.D.A. and N.A.S.A. reports from Gov't. Printing Office.
Work overview: Large (at least 100 kW) horizontal axis wind turbines.

N.A.S.A. - LeRC
21000 Brookpark Rd.
Cleveland, OH 44135

Contact: J. M. Savino
Phone: (216)433-4000 (x294)
Researcher
26+ full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

RESEARCH

Research areas: W.E.C.S., W.E.C.S. components, Inverters, Towers, (All components of large propeller type systems).
Working under contract or grant from E.R.D.A.
Information is available to the public from NTIS.
Work overview: Technology development of large propeller type W.T.G.

N.A.S.A. - LeRC
21000 Brookpark Rd.
Cleveland, OH 44135

Contact: Robert A. Wolf
Phone: (216)433-4000
Researcher
11-25 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

RESEARCH

Research areas: W.E.C.S., Meteorological data systems, W.E.C.S. components.
Working under contract or grant from E.R.D.A. headquarters.
Information is available to the public from Technology Application Center, NM for nominal cost.
Work overview: Working on Mod-OA and Mod-1 WTGs.

NATURAL POWER CORPORATION
6031 St. Clair Ave.
Cleveland, OH 44103

Phone: (216)361-3156
Manufacturer and Researcher.
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

MANUFACTURE

Type of W.E.C.S.: vertical axis.
System classified as prototype. (production within 7-18 months)
Rotor diameter: 21 ft or more.
2 blades
Unit begins to generate @ 10 mph.
Unit designed to withstand 80 mph.
Unit generates: ac and dc.
Rated output: 60K Watts @ 33 mph.
Will be sold under warranty or guarantee.
System in operation for 0-3 years.
System is adaptable to other applications.

RESEARCH

Research areas: W.E.C.S.
Not working under contract or grant.
Information is available to the public from Natural Power Corp. for $10.00 per year.
Work overview: We will generate electricity for direct usage, when proper conditions exist. Maximal storage will be in high temperature (900 degrees F) storage. Minimal storage will be in ten 12V storage batteries.

NATURAL POWER, INC.
Francestown Twp
New Boston, NH 03070

Contact: Mr. Richard Katzenberg, President
Phone: (603)487-2456
Manufacturer, Distributor, and Researcher.
6-10 full time employees in the wind energy field.
Involved in the wind energy industry for 4 years.

MANUFACTURE

Manufacturers of electronic components incorporated in Solar & Wind Systems.

DISTRIBUTION

Systems distributed: Wind measuring instrumentation Gemini Inventor Towers.

RESEARCH

Research areas: W.E.C.S., Meteorological data systems, W.E.C.S. components, publications, and Towers.
Not working under contract or grant.
Information is available to the public from Natural Power, Inc.

NATURAL POWER SYSTEMS, INC.
3316 Augusta Ave.
Omaha, NE 68144

Contact: Jon Traudt, President
Phone: (402)334-5881
Manufacturer, Distributors, and Researchers.
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

MANUFACTURE

Type of W.E.C.S.: horizontal axis.
System classified as prototype. (production within 7-18 months)
Rotor diameter: 21 ft or more.
3 blades
Unit begins to generate @ 9 mph.
Unit designed to withstand 165 mph.
Unit generates: ac.
Rated output: 5500 Watts @ 20 mph @ density = 0.0012 g/cc.
Will be sold under warranty or guarantee.
System in operation for 0-3 years.
System is adaptable to other applications.

DISTRIBUTION

Systems distributed: Our own called "Wind Catcher".

RESEARCH

Research areas: W.E.C.S.
Not working under contract or grant.
Information is available to the public from Natural Power Systems, Inc. for $1.00.

NAVAL CONSTRUCTION BATTALION CENTER; CIVIL ENG. LAB
Port Hueneme, CA 93043

Contact: Dharam Pal
Phone: (805)982-4207
Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: W.E.C.S., Meteorological data systems, W.E.C.S. components.
Working under contract or grant from Naval Material Command.
Information is available to the public.
Work overview: Developing methods and hardware to utilize wind power at Naval bases.

NAVAL CONSTRUCTION BATTALION CENTER; CIVIL ENG. LAB
L03AE, Port Hueneme, CA 93043

Contact: J. M. Slaminske, Energy Program Mgr.
Phone: (805)982-5468
Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: W.E.C.S., Meteorological data systems.
Not working under contract or grant.
Information is available to the public from NTIS, Dept. of Commerce, Springfield, VA (Technical Notes and Technical Reports) 22161.
Work overview: Evaluate wind power generation systems integrated with building environmental systems or electrical power grids at Navy bases.

NEW MEXICO STATE UNIVERSITY; PHYSICAL SCIENCE LAB.
Las Cruces, NM 88003

Contact: Dr. Kenneth M. Barnett
Phone: (505)522-4400 (x237)
Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: W.E.C.S., Public relations re: wind energy.
Working under contract or grant from State of NM, Energy Resources Board.
Information is available to the public from Dr. Kenneth M. Barnett.
Work overview: To provide information for public distribution in New Mexico that will encourage more use of wind energy. Encourage public utility use of wind to generate electricity. Proposals:
(1) Evaluation and exhibition of a W.E.C.S. for a rural home.
(2) Evaluation of mountain winds in NM for possible commercial application.
NM State University conducts a course on Windmill Technology for water pumping. It is hoped that a new course for electricity generation can be established soon.

NIELSEN ENGINEERING & RESEARCH
510 Clyde Ave.
Mountain View, CA 95030

Contact: Dr. Jack N. Nielsen, Pres.; Selden Spangler, V.P.;
Dr. Richard Schwind, Res. Eng.,
Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: W.E.C.S., Inverters, Towers, and Consumer information.
Working under contract or grant from E.R.D.A.
Information is not available to the public.
Work overview: Writing buyer's information book, Wind Power for Farms, Homes, and Small Industry. It will be published by the Government Printing Office.

NORTH WIND POWER CO., INC.
Box 315
Warren, VT 05674

Contact: Don Mayer, Dave Sellers
Phone: (802)496-2955
Manufacturer, Distributor, Researcher, and Remanufacturer of components.
6-10 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

MANUFACTURE

Type of W.E.C.S.: horizontal axis.
System classified as prototype. (production within 1-6 months)
Rotor diameter: 13-20 ft.
3 blades
Unit begins to generate @ 10 mph.
Unit designed to withstand 125 mph.
Unit generates: dc.
Rated output: 2K Watts @ 22 mph; 3K Watts @ 24 mph.
Will be sold under warranty or guarantee.
System in operation for 4-10 years.
System is adaptable to other applications.

DISTRIBUTION

Systems distributed: Jacobs, Aeropower, and Scencenbaugh.
Services provided: site selection, installation, and repair.

RESEARCH

Research areas: W.E.C.S., W.E.C.S. components, and Towers.
Not working under contract or grant.
Information is available to the public from North Wind Power Co., Inc. for $2.00 (catalogue).
Work overview: North Wind Power Co. has three ongoing W.E.C.S. research projects that are in the pre-production prototype stages. These include the development of a 2kW and 4kW W.E.C.S. and a special lighweight, corrosion resistant windmill tower.

NORTHWESTERN UNIVERSITY, CIVIL ENG. DEPT.
Evanston, IL 60201

Contact: Dr. Ross B. Corotis
Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: Meteorological data systems.
Working under contract or grant from E.R.D.A.
Information is available to the public from NTIS, Northwestern Reports (free), publication in open literature.
Work overview: Probabilistic and stochastic analysis of wind energy characteristic and siting procedures, including survey duration and requirements.

O'BROCK WINDMILL DISTRIBUTORS
9435 12th St.
North Benton, OH 44449

Contact: Ken O'Brock
Phone: (216)584-4681
We have dealers all over the State of Ohio.
Distributor.
6-10 full time employees in the wind energy field.
Involved in the wind energy industry for 11-25 years.

DISTRIBUTION

Systems distributed: Wincharger, Baker Pumping, and Aermoter Pumping.
Services provided: site selection, installation, and repair.

OCEANOGRAPHIC SERVICES, INC.
135 East Ortega St.
Santa Barbara, CA 93105

Contact: Dr. William Anikouchine
Researcher and Consultants.
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 3-0 years.

RESEARCH

Research areas: W.E.C.S. applications.
Working under contract or grant from E.R.D.A., Westinghouse, Global Marine Dev.
Information is not available to the public.
Work overview: Meteorology and oceanography of offshore W.E.C.S. applications. Organization provides site selection services as well.

OCONTO ELECTRIC COOPERATIVE
Oconto Falls, WI 54154
Contact: Ralph E. Oltrogge, General Mgr.
Phone: (414)846-2816
Researcher, Electric Power Utility.
0-5 full time employees in the wind energy field (data gathering for future potential only).
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: Possible application of ac wind generator.
Information is available to the public from Oconto Electric Coop. or University of Wisconsin @ Milwaukee.
Work overview: Measuring wind speed and charting at 70 ft level above ground.

S. OHBA & ASSOCIATES
5969 North Elston Ave.
Chicago, IL 60646

Phone: (312)792-3578 (TWX (910)221-0306)

BRANCH OFFICE

SOLEQ CORP. (sales and operation mfg.)
5969 North Elston Ave.
Chicago, IL 60646

Phone: (312)792-3811
Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 11-25 years.

RESEARCH

Research areas: Inverters, Power distribution control logic, and chopper controllers for electric vehicles.
Not working under contract or grant: (general industry, individual investors).
Information is available to the public from S. Obha & Associates at no charge (upon completion).

OKLAHOMA STATE UNIVERSITY; SCHOOL OF ELEC. ENG.
Stillwater, OK 74074

Contact: Dan Lingelbach
Phone: (405)624-8635
Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 11-25 years.

RESEARCH

Research areas: W.E.C.S., W.E.C.S. components, and Inverters.
Working under contract or grant from E.R.D.A.
Information is available to the public from Engineering Lab, E.S. 202, OSU for $8.00 (workshop proceedings).
Work overview: Design and demonstration of a useable 15-30 ft diameter horizontal axis fixed pitch W.T.G. system to obtain optimum energy from the wind.

OWENS-CORNING FIBERGLASS
Fiberglass Tower, T7
Toledo, OH 43659

Contact: Molly A. McCormick, Mktg. Mgr.
Phone: (419)248-8146
Manufacturer of raw materials, and Researcher.
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: W.E.C.S. blades.
Not working under contract or grant.
Information is available to the public from Corporate Offices, Electrical. Marketing Section (above address) at no charge.
Work overview: Physical performance testing of raw materials.

PACIFIC GAS & ELECTRIC; DEPT. OF ENG. RESEARCH
3400 Crow Canyon Blvd.
San Ramon, CA 94583

Contact: Tom Hillesland
Phone: (415)820-2000 (x294)

BRANCH OFFICE

PACIFIC GAS & ELECTRIC (Headquarters)
77 Beale St.
San Francisco. CA 94106

Phone: (415)781-4211
Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: W.E.C.S., Meteorological data systems, and Inverters.
Working under contract or grant from E.R.D.A. (assisting to collect wind info at a site we nominated for large wind generator).
Information is available to the public from Tom Hillesland (when not restricted by contractor).
Work overview: "Wind Coordinator" for Eng. Research Dept.; nominated site (Pt. Arena) to E.R.D.A. for large W.T.G. assisting monitoring wind at site; completed nine month performance study of 6 kW W.T.G. with inverter connected to our system (beginning joint study with Dr. D.W. Aitken, CSU-San Jose to improve efficiency of same); participating in Electric Power Research Inst. through a wind projects review committee; reviewed proposals from individuals and research firms for possible joint studies in wind energy, where applicable to electric generation or conservation.

TED PHEIFF
1103 Hillside Dr.
Bettendorf, IA 52722

Contact: Ted Pheiff
Other: teacher of Industrial Arts

RESEARCH

Work overview; My interest in the design and use of wind-powered generators applies to one of the courses I teach. I have a 200 Watt Wincharger on a 30 ft tower to be used for teaching purposes.

PINSON ENERGY CORP.
Box 7
Marstons Mills, MA 02648

Contact: Herman M. Drees, Pres.; William P. Sheperdson, V.P., Ross Bisplinghoff, V.P.
Phone: (617)477-2913
Manufacturer, Distributor, Researcher, and Consulting.
6-10 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

MANUFACTURE

Type of W.E.C.S.: vertical axis.
System classified as prototype. (in production within 1-6 months)
Rotor diameter: 7-12 ft.
3 blades
Unit begins to generate @ 7 mph.
Unit designed to withstand 120 mph.
Unit generates: ac and dc, and mechanical applications.
Rated output: 3000 Watts @ 24 mph (4000 Watts @ 30 mph).
Will be sold under one year parts and labor warranty or guarantee.
System in operation for 0-3 years.
System is adaptable to other applications.

DISTRIBUTION

Systems distributed: PEC cycloturbine.
Services provided: site selection, installation, and repair.

RESEARCH

Research areas: W.E.C.S., and W.E.C.S. components.
Not working under contract or grant.
Information is available to the public from Pinson Energy Corp. for $1.00.
Work overview: Pinson Energy Corp. is involved in the development and marketing of a vertical axis, straight bladed wind energy conversion system.

POLYTECHNIC INSTITUTE OF NEW YORK
Rt. 110
Farmingdale, NY 11735

Contact: Dr. P. M. Sforza
Phone: (516)694-5500
Researcher
6-10 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

RESEARCH

Research areas: W.E.C.S.
Working under contract or grant from E.R.D.A.
Information is available to the public from Dr. P. M. Sforza, free.
(except where work is available elsewhere, say, NTIS).
Work overview: Research and development on the vortex augmentor concept (VAC) which I invented. Laboratory and field tests of wind energy conversion systems.
Wind characteristics studies.

JAMES A. POTTER
12 Green House Blvd.
West Hartford, CT 06110

Contact: James A. Potter
Phone: (203)628-0911
Manufacturer, and Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

MANUFACTURE

Type of W.E.C.S.: vertical axis.
System classified as (production within 7-18 months)
Rotor diameter: 21 ft or more.
Unit generates: ac, dc, or Mechanical.
System in operation for 0-3 years.
System is adaptable to other applications.

RESEARCH

Research areas: W.E.C.S., W.E.C.S. components, and Towers.
Working under contract or grant.
Work overview: Development of a proprietary product by the application of appropriate technology to the design of a windmill which can be erected, maintained, and repaired by the small businessman, the farmer, or the householder.

PRAIRIE SUN AND WIND CO.
4408 62nd St.
Lubbock, TX 79414

Contact: Kenneth L. Ketner, Ph.D.
Phone: (806)795-1412
Distributor, Researcher.
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

DISTRIBUTION

Systems distributed: Jacobs, Wincharger, and Aeropower.
Services provided: site selection, and (in our locality) installation, and repair.

RESEARCH

Research areas: W.E.C.S., and W.E.C.S. components.
Not working under contract or grant.
Information is available to the public.
Work overview: I have been seeking to improve efficiency of small W.E.C.S. in capacities of approximately 500 watts.

J. P. RAMEAU INC.
Box 117
Bailey Harbor, WI 54202

Phone: (414)839-2855
Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: W.E.C.S. components, Inverters, and Towers.
Information is available to the public for cost of printing.
Work overview: Efforts to create a wind system, capable of providing total household needs in an area of variable wind conditions and ice problems, at a reasonable cost.

REAL GAS & ELECTRIC CO., INC.
Box 193
Shingletown, CA 96088

Contact: Bob Eckert
Phone: (916)474-3456

BRANCH OFFICE

REAL GAS & ELECTRIC CO., INC.
Box F
Santa Rosa, CA 95401

Contact: Solomon Kagin
Phone: (707)526-3400
Distributor, and Installer.
0-5 full time employees in the wind energy field.
Involved in the wind energy industry 4-10 years.

DISTRIBUTION

Systems distributed: Elektro, and Dunlite.
Services provided: site selection, installation, and repair.

UNIVERSITY OF RHODE ISLAND; DEPT. OF MECH. ENG.
Kingston, RI 02881

Contact: Prof. Rodger B. Dowdell
Phone: (401)792-2541
Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

RESEARCH

Research areas: W.E.C.S.
Information available to the public from Prof. Rodger B. Dowdell free.
Work overview: Studying various systems such as wind-driven heat pump combination with solar panels and also hydro-generator storage.

ROCKWELL INTERNATIONAL; ATOMICS INTERNATIONAL DIVISION, WIND SYSTEMS PROG.
Box 464
Golden, CO 80401

Contact: I. B. Allen, J. F. Boland, W. S. Bollmeier, C. P. Butterfield, P. W. Carlin, A. J. Eldridge, C. A. Hansen, T. J. Healy, P. C. Jones, R. L. Moment, L. A. Seaverson, A. R. Trenka, P. K. C. Tu
Phone: (303)497-4470
Researcher, and Testing --- 0-100 kw wind turbines.
11-25 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: W.E.C.S., W.E.C.S. components, Towers, and WECS development.
Working under contract with DOE's wind energy branch.
Information will be available to the public from NTIS.

TONY SADAR
4346 Spring Garden Rd.
Pittsburgh, PA 15212

Contact: Tony Sadar
Phone: (412)321-4654
Manufacturer, and Researcher.
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

MANUFACTURE

Type of W.E.C.S.: vertical axis.
System classified as prototype. (production within 1-6 months)
Rotor diameter: 1-6 ft.
3 blades
Unit begins to generate @ 12 mph.
Unit generates: ac.
System in operation for 0-3 years.
System is adaptable to other applications.

RESEARCH

Research areas: W.E.C.S., Meteorological data systems.
Information is available to the public through national ethnic publication.
Work overview: New to the wind energy manufacturing and research field.
B.S. degree in meteorology.

RALPH SCHUPBACK
321 13th St.
Alva, OK 73717

Contact: Ralph Schupback
Phone: (405)327-1685
Manufacturer, Distributor, Researcher, and Designer.
0-5 part time employees in the wind energy field.
Involved in the wind energy industry for 26 years or more.

MANUFACTURE

Type of W.E.C.S.: horizontal axis.
System classified as prototype. (production within 7-18 months)
Rotor diameter: 7-12 ft and 21 ft or more.
Unit generates: ac, or dc. (the large unit will furnish all the electricity consumed by two large homes.
Possibly will be sold under warranty or guarantee.
System in operation for 0-3 years.
System is adaptable to other applications.

DISTRIBUTION

Systems distributed: Wincharger.
Services provided: installation, repair, parts and service.

RESEARCH

Research areas: W.E.C.S.
Not working under contract or grant.
Information is available to the public from Ralph Schupback.

SHEEHAN CONSULTANTS
5320 Ken Caryl Rd.
Littleton, CO 80123

Contact: John Sheehan
Phone: (303)979-5313
Distributor, Researcher, and Consulting Engineer.
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

DISTRIBUTION

Systems distributed: Customer's choice.
Services provided: site selection, installation, and repair.

RESEARCH

Research areas: W.E.C.S., Meteorological data systems, and W.E.C.S. components.
Working under contract or grant from Colorado.
Information is available to the public as a speaker for expenses.

SIGMA ENGINEERING CO., INC.
Box 5285
Lubbock, TX 79417

Phone: (806)762-5690
Distributor, and Researcher.
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

DISTRIBUTION

Systems distributed: Jacobs, and D.A.F..
Services provided: site selection, installation, and repair.

RESEARCH

Research areas: W.E.C.S.
Not working under contract or grant.
Information is available to the public from Sigma Engineering Co., Inc. for cost to be determined.
Work overview: Working with West Texas State University on prototype wind unit and system.

SOLAERO RESEARCH
Box 11613
Tucson, AZ 85734

Contact: Roger F. Goodrich
Phone: (602)298-3294
Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: Analytical studies, limited testing of systems and components.
Working under contract or grant.
Information is available to the public from Solaero Research (to be published early summer 1977) for $5.00.
Work overview: Analytical studies on available energy given system parameters. Building and testing small systems.

SOLAR/WIND CENTER
RFD #1
Exeter, NH 03833

Contact: Paul W. Kimball
Phone: (603)772-3858
Distributor, and Researcher.
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

DISTRIBUTION

Systems distributed: (in the near future) Kedco.
Services provided: site selection, installation, and repair.

RESEARCH

Research areas: W.E.C.S., and Towers.
Information available to the public, the near future.

SOLEQ CORP.
5969 N. Elston Ave.
Chicago, IL 60646

Contact: S. Ohba
Phone: (312)792-3811
Manufacturer, and Distributor.
6-10 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

MANUFACTURE

Manufacturers of Inverters .5kW - 6kW. Larger models available to customer specifications.

DISTRIBUTION

Systems distributed: Inverters.

STRUCTURAL COMPOSITES INDUSTRIES, INC.
6344 North Irwindale Ave.
Azusa, CA 91702

Contact: Oscar Weingart, Program Manager
Phone: (213)334-8221

BRANCH OFFICE

STRUCTURAL COMPOSITES INDUSTRIES, INC.
665 St. Cyr. Rd.
Bellefontaine Neighbors, MO 63137

Phone: (314)867-8050
Manufacturer, and Researcher.
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

MANUFACTURE

Type of W.E.C.S.: horizontal axis, (blades and blade spars of composite materials)
System classified as prototype. (production within 7-18 months)
Rotor diameter: 21 ft or more.
2 blades
Unit begins to generate **.
Unit designed to withstand **.
Unit generates: **.
Rated output: **.
System in operation for **.

**We have bid as a team with Westinghouse and Kaman on the Mod-2 System. See Westinghouse questionnaire for these answers.

RESEARCH

Research areas: W.E.C.S. components. (low cost large size blades)
Working under contract or grant from NASA-Lewis (subcontract from Kaman for 150 ft blade).
Information is available to the public from NASA Reports, Press Releases, and Technical Papers (there is an article including information on our work in the July 77 issue of Modern Plastics Magazine).
Work overview: We have developed a very low cost propriety method for fabricating large blades and blade spars of composite materials by the filament winding process. We have existing production facilities for very large (up to 150 ft) rotor blades and spars.

TELEDYNE AER-CAL
528 East Mission Rd.
San Marcos, CA 92069

Contact: Ken Heckman
Phone: (714)744-1131
Manufacturer, and Researcher.
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

MANUFACTURE

Type of W.E.C.S.: horizontal axis, and vertical axis.
System classified as prototype.
Rotor diameter: Various sizes.
# of blades varies.
Unit generates: ac, and dc.
System in operation for 0-3 years.
System is adaptable to other applications.

RESEARCH

Research areas: W.E.C.S. components, and Towers.
Not working under contract or grant.
Information is not available to the public.
Work overview: Roll form, roll tapering, rotor blades, and leading edge.

CHUCK TELLAS
3075 Judd Rd.
Milan, MI 48160

Contact: Chuck Tellas
Phone: (313)439-2431
Manufacturer
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

MANUFACTURE

Type of W.E.C.S.: Octahedron towers
System classified as production.
Will be sold under warranty or guarantee.
System in operation for 0-3 years.
System is adaptable to other applications.

TOWARD TOMORROW FAIR
105 Hills North
University of Massachusetts
Amherst, MA 01003

Phone: (413)545-0474
A yearly exposition of alternatives for the future, of which wind is certainly one.

T.R.C. OF NEW ENGLAND
125 Silas Deane Hwy.
Wethersfield, CT 06109

Contact: Arthur Bostick, Pres,; Earl Davis, Sr. Res. Sci. Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: Meteorological data systems.
Working under contract or grant from E.R.D.A.
Information is not available to the public.

UNITED TECHNOLOGIES RESEARCH CENTER; AERODYNAMICS CENTER
Silver Lane
East Hartford, CT 06108

Contact: M. C. Cheney
Phone: (203)565-8536
Researcher.
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: W.E.C.S., and W.E.C.S. components.
Working under contract or grant from E.R.D.A.
Information is available to the public from E.R.D.A.
Work overview: Developing self-regulating composite bearing-less wind turbine. Model tests completed and full scale design under way.

UNIVERSITY OF MASSACHUSETTS, DEPT. OF ENG.
Amherst, MA 01003

Contact: Fred Perkins
Phone: (413)545-1924
Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: W.E.C.S. and W.E.C.S. components.
Information is not available to the public.
Work overview: Design of large rotors (16-35 ft radii) and materials applications.

WADLER MANUFACTURING CO., INC.
Rt. #2, Box 76
Galena, KS 66739

Contact: Jerry Wade
Phone: (316)783-1355
Manufacturer
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

MANUFACTURE

Type of W.E.C.S.: vertical axis.
System classified as production item.
System in operation for 4-10 years.
System is adaptable to other applications.

RESEARCH

Information is not available to the public.

WESTINGHOUSE ELECTRIC CORP.
700 Bradock Ave., Bldg. 7L27
East Pittsburgh, PA 15112

Contact: Mr. L. A. Kilar
Phone: (412)256-2843
Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: W.E.C.S. and W.E.C.S. components, (advanced system technology).
Working under contract or grant from E.R.D.A. -- Washington.
Information available to the public from E.R.D.A. -- final reports.
Work overview: Technical and economical feasibility of offshore wind systems.

WESTINGHOUSE ELECTRIC CORP.; ADVANCED ENERGY SYSTEMS
P.O. Box 10864
Pittsburgh, PA 15236

Contact: D. C. Goldberg
Phone: (412)892-5600 (x6531)
Manufacturer and Researcher.
6-10 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

MANUFACTURE

Type of W.E.C.S.: horizontal axis.
System classified as prototype. (production within 19-36 months)
Rotor diameter: 21 ft or more.
2 blades
Unit begins to generate @ 8 mph.
Unit designed to withstand 120 mph.
Unit generates: ac.
Rated output: 200k Watts (and upward to 3000 kW).
Not sold under warranty or guarantee.
System in operation for 0-3 years.

RESEARCH

Research areas: W.E.C.S.
Working under contract or grant from NASA LeRC.
Information is available to the public from NTIS, when reported.

WEST TEXAS STATE UNIVERSITY
Box 248
Canyon, TX 79016

Contact: Vaughn Nelson
Phone: (806)656-3904
Researcher
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

RESEARCH

Research areas: W.E.C.S. and rural applications: heating and cooling, irrigation, and wind characteristics for the state of Texas.
Working under contract or grant from State of TX: Governor's energy advisory council. Cooperation agreement with USDA on an irrigation project.
Information is available to the public from G.E.A.C., 7703 N. Lamar, Austin, TX 78761.
Work overview: Potential for wind generated power in Texas: Feasibility of using wind power to pump irrigation water: Improved computer program for calculating the theoretical performance parameters of a propeller type wind turbine.

WIND-DE-GO, INC.
1940 West Cheryl
Phoenix, AZ 85021

Contact: E. K. Hillman
Phone: (602)943-0439
Researcher, and Prototype developer of inventions for first stage marketing analysis.
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

RESEARCH

Research areas: W.E.C.S., Meteorological data systems, W.E.C.S. components, and Electronics for control of charging and discharging energy storage systems.
Not working under contract or grant.
Information is not available to the public.
Work overview: The use of innovative ideas to upgrade the efficiency of wind generating systems, both on the power output of generating systems and also the conservation of stored energy.

WINDEPENDENCE ELECTRIC CO.
Box M1188
Ann Arbor, MI 48106

Contact: Craig Toepfler
Phone: (313)769-8469
Manufacturer and Distributor.
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

MANUFACTURE

Type of W.E.C.S.: horizontal axis.
System classified as restored.
Rotor diameter: 13-20 ft.
2 blades and 3 blades.
Unit begins to generate @ 8 mph.
Unit designed to withstand 125 mph.
Unit generates: dc.
Rated output: 2800 Watts @ 26 mph; 1800 Watts @ 22 mph.
Will be sold under warranty or guarantee.
System in operation for 4-10 years.
System is adaptable to other applications.

DISTRIBUTION

Systems distributed: Jacobs and Used.
Services provided: site selection, installation and repair.

WINDLITE-ALASKA
3701 Mt. View Dr.
Anchorage, AK 99510

Phone: (907)272-2205
Distributor
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

DISTRIBUTION

Systems distributed: Dunlite, Wincharger, Scencenbaugh and Aerowatt.
Services provided: site selection, installation and repair.

WIND POWER DIGEST
54468 CR 31
Bristoo, IN 46507

Contact: Mr. Mike Evans
Phone: (219)848-4360
Researcher and Publisher.
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 4 years.

RESEARCH

Researcher areas: W.E.C.S., Meteorological data systems, W.E.C.S. components, Publications, Inverters and Towers.
Not working under contract or grant.
Information is available to the public from Wind Power Digest for Subscription rates.
Work overview: Wind Power Digest is the publisher of a quarterly magazine devoted to the exchange of information within the wind energy field.

WIND POWER SYSTEMS, INC.
P.O. Box 17323
San Diego, CA 92117

Contact: Edmund L. Salter, Pres., George Mansfield, P.E., V.P.
Phone: (714)560-9452

BRANCH OFFICE

WIND POWER SYSTEMS, INC.
8871 Balboa Ave.
San Diego, CA 92123

Manufacturer and Researcher.
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

MANUFACTURE

Type of W.E.C.S.: horizontal axis.
System classified as prototype. (production within 7-18 months)
Rotor diameter: 7-12 ft.
2 blades.
Unit begins to generate @ 7-9 mph.
Unit designed to withstand 180 mph.
Unit generates: ac.
Rated output: 560 Watts @ 17 mph.
Will be sold under warranty or guarantee.
System in operation for 0-3 years.
System is adaptable to other applications.

RESEARCH

Research areas: W.E.C.S. (blades & governors), Meteorological data systems, (Windplant Performance Simulator).
Not working under contract or grant.
Information is not available to the public: (due to lack of funds).
Work overview: Developed successful three-rotor, rim-driven 4kW machine in 1973-75.
Presently looking for competent manufacturer to license. Developed Windplant Performance Simulator, which can be programmed to simulate any windplant and will be introduced in June 1977. Currently working on high reliability direct drive unit intended for critical requirements at remote sites. We are funding this program internally with proceeds from consulting and other business so progress is very slow.

WINDWORKS
Box 329, Rt. 3
Mukwonago, WI 53149

Contact: Ben Wolff
Phone: (414)868-4408
Researcher and Engineering Consultant.
6-10 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

RESEARCH

Research areas: W.E.C.S., W.E.C.S. components, Gemini Synchronous Inverters, and Towers.
Working under contract with Rockwell International.
Information available to the public from Windworks for $3.00. Poster or bibliography free.

WINDY-TEN LTD.
150 Orchard View, Box 111
Shelby, MI 49455

Manufacturer and Researcher.
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 4-10 years.

MANUFACTURE

Type of W.E.C.S.: vertical axis.
Have plans for prototype.
Rotor diameter: 13-20 ft.
4 blades.
Unit begins to generate @ 15 mph.
Unit designed to withstand 50 mph.
Unit generates: dc.
Not sold under warranty or guarantee.
System in operation for 4-10 years.
System is not adaptable to other applications.

RESEARCH

Not working under contract or grant.
Information is available to the public from Windy-Ten LTD. for $1.00 (brochure).

WINPOWER CORP.
Newton, IA 50208

Contact: Roshan Chhabra
Phone: (515)792-1301
Manufacturer and Distributor.
0-3 part time employees in the wind energy field.
Involved in the wind energy industry for 26 years or more.

MANUFACTURE

Type of W.E.C.S.: horizontal axis.
System classified as prototype. (production within 1-6 months)
3 blades (maybe).
Unit begins to generate @ 5-10 mph.
Unit designed to withstand 50 mph.
Unit generates: ac and dc.
Rated output: 15k Watts @ 25 mph.
Will be sold under warranty or guarantee.
System in operation for 0-3 years.
System is adaptable to other applications.

DISTRIBUTION

Systems distributed: Winpower.

ALFRED O. WURDELMAN
Huron City Rd.
Port Hope, MI 48468

Contact: Alfred O. Wurdelman
Distributor.
0-5 full time employees in the wind energy field.
Involved in the wind energy industry for 0-3 years.

DISTRIBUTION

Systems distributed: Dunlite.

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