



Industry Directory for On-Farm Biogas Recovery Systems

Second Edition

Revised July 2003



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The development of anaerobic digesters for livestock manure treatment and energy production has accelerated at a very fast pace over the past few years. Factors influencing this market demand include: increased technical reliability of anaerobic digesters through the deployment of successful operating systems over the past five years; growing concern of farm owners about environmental quality; an increasing number of state and federal programs designed to cost share in the development of these systems; and the emergence of new state energy policies (such as net metering legislation) designed to expand growth in reliable renewable energy and green power markets.

With about 40 digesters already in operation and 30 additional systems planned in 2003, the track record for this second generation of anaerobic digestion technologies is encouraging. To help build on this forward momentum, the AgSTAR Program has produced the second edition of the Industry Directory. It is intended to assist farm owners and others involved in developing commercial scale anaerobic digestion technologies to identify appropriate designers, project developers, energy service providers, equipment manufacturers and distributors, and commodity organizations.

Commodity organizations are associations that represent the interests of a specific crop or livestock commodity. Commodity organizations generally are involved in marketing and/or lobbying activities.

Consultants provide a variety of services related to biogas recovery systems. These services vary among consultants and may include activities such as feasibility analyses (e.g., technical, economic, and financial), agricultural planning, and environmental impact and regulatory assessments.

Developers design and install biogas recovery systems for livestock and other industries. In many cases, these are “turn-key” system developers who provide consultant services as part of the development package.

General energy services include electricity service providers.

Manufacturers/distributors include entities that manufacture, distribute, and in some cases, install equipment used in biogas recovery systems, including covers, engines, tanks, and system components.

Publishers develop and distribute journals and reports of interest to farm owners and others interested in biogas recovery systems.

Universities include institutions involved in developing and demonstrating on-farm biogas recovery systems and technologies.

The directory provides company descriptions, relevant experience, and contact information for each listed business. If you are in the planning stages of project development, we recommend that you use the Industry Directory in combination with the AgSTAR Handbook (which is available on the AgSTAR website at www.epa.gov/agstar) as project development tools to begin the initial project planning process to reduce risk and increase investment performance.

While the best efforts were made to contact domestic and international businesses with relevant experience, the Directory is not exhaustive. We will continue to update the Directory as new businesses emerge or existing businesses expand into the livestock waste market. These updates will be posted on the AgSTAR website, where the Directory and other AgSTAR Program products can be downloaded.

If you are interested in being included in the Directory, please call the AgSTAR Hotline at 1-800-95AgSTAR (1-800-952-4782) from 9:00 a.m to 5:00 p.m. Eastern Standard Time.

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AgSTAR Industry Directory

Commodity Organizations

Dairy Quality Assurance Center

Keith Carlson
801 Shakespeare Avenue
Stratford IA 50249
US

Tel: 515/838-2793
Ext:
Fax: 515/838-2788

Email: kcarlson@dqacenter.org
Web: www.dqacenter.org

Yrs in Business: 9
Employees: 3

The Dairy Quality Assurance Center provides national publicity to dairy farmers.

Consultants

Bioenergy & Environmental, LLC

Jun Yoshitani
211 East Illinois Street
Wheaton IL 60187
US

Tel: 630/588-8776
Ext: 630/588-8776
Fax: 630/588-8779

Email: westoak@ix.netcom.com
Web: www.BandE.com

Yrs in Business: 7
Employees: 3

Bioenergy & Environmental, LLC (B&E) offers comprehensive planning, design, and construction services for the implementation of integrated bioenergy and environmental facilities. Through the company's experience working with more than 20 livestock facilities, B&E has developed a systematic, computer-aided approach for helping producers analyze their farm energy potentials and understand their obligations to CAFO rules. B&E incorporates application of phytotechnology for low-cost, on-farm nutrient control systems and provides assistance in preparing Farm Bill Title IX grant/loan applications.

Bridgestone Associates, Ltd.

Martin C.T. Anderson
P.O. Box 1299
Chadds Ford PA 19317
US

Tel: 610/388-6191
Ext:
Fax: 610/388-0394

Email: mcta@brdgstn.com
Web: www.brdgstn.com

Yrs in Business: 12
Employees: 6

Consultants in the evaluation, design, financing, construction, and operations of animal manure anaerobic digestion and other disposal facilities and other renewable energy projects.

AgSTAR Industry Directory

Consultants

Dennis Gerber, Consultant

Dennis Gerber
15870 Rose Avenue
Los Gatos CA 95030
US

Tel: 408/395-9020
Ext:
Fax: 408/395-9020

Email: dhgerber@attbi.com
Web:

Yrs in Business:
Employees:

Mr. Gerber designs and installs anaerobic digester covers. His Gas Collecting Floating Cover design, which holds a U.S. Patent, is the de-facto standard for flexible membrane anaerobic digesters.

E3 Ventures

Mike Walker
1140 Kildaire Farm Road, Suite 304
Cary NC 27511
US

Tel: 919/469-3737
Ext:
Fax: 919/469-3656

Email: mwalker@e3ventures.com
Web: www.e3ventures.com

Yrs in Business: 7
Employees: 4

E3 Ventures provides regulatory consulting related to the Clean Air Act.

EnviroEnergetics

Sam Ghosh, PhD
1281 E. Federal Heights Drive
Salt Lake City UT 84103
US

Tel: 801/596-2166
Ext:
Fax: 801/596-2166

Email: ghoshsambhunath@hotmail.com
Web:

Yrs in Business: 14
Employees: 5

Established in 1988, EnviroEnergetics provides assistance on anaerobic digestion process development, demonstration, and full-scale application and operation. The company has designed, evaluated, and/or modified prototype or full-scale municipal, industrial, and agricultural digestion systems in China, California (Los Angeles), Illinois, Utah, India, Florida, Colorado, and other locations.

Environmental Resource Recovery Group, LLC (EnRRG)

Burt Tribble
15789 202 Street
Nortonville KS 66060
US

Tel: 913/886-8051
Ext:
Fax: 775/205-1966

Email: btribble@enrrg.com
Web: www.enrrg.com

Yrs in Business: NA
Employees: 10

Environmental Resource Recovery Group (EnRRG) is a recently formed company whose partners have experience in anaerobic digestion and waste-to-energy in agriculture, agribusiness, and the food industry. EnRRG's business is identifying practical energy recovery/anaerobic digestion/waste management projects, evaluating their economic potential, and bringing together qualified projects with development partners. Qualified projects meet technical requirements and economic investment guidelines.

AgSTAR Industry Directory

Consultants

Fraunhofer Center for Energy and Environment

Junchul Kim, PhD
5940 Baum Square, Suite 7
Pittsburgh PA 15206
US

Tel: 412/624-8609
Ext:
Fax: 412/624-8860

Email: jckim@enr.pitt.edu
Web:

Yrs in Business: 2
Employees: 4

Fraunhofer Center for Energy and Environment was established in 2001 as a non-profit organization. The goal of the Center is to introduce technologies and processes developed and demonstrated by Fraunhofer in Germany into the U.S., providing solutions to solve regional and national problems in energy and the environment. The Center cooperates with the School of Engineering at the University of Pittsburgh. All Fraunhofer projects will be affiliated with a variety of local, state and federal agencies, and private sectors. On-farm biogas generation using manure or other biomass is one of the technologies developed and successfully demonstrated by Fraunhofer. The technology's use has been extended to various applications, including sewage sludge treatment, industrial wastewater with high organic contents, co-digestion, and biowaste digestion.

Gas Technology Institute

J. Robert Paterek, Ph.D.
1700 Mount Prospect Road
Des Plaines IL 60018
US

Tel: 847/768-0720
Ext:
Fax: 847/768-0546

Email: robert.paterk@gastechnology.org
Web: www.gastechnology.org

Yrs in Business: 53
Employees: 320

Gas Technology Institute (GTI) and the Environmental Science & Technology Center have been carrying out research and development projects and technology demonstrations in the areas of anaerobic digestion and biogas generation since the 1970s. GTI holds a number of patents on the two-phase reactor system and other reactor designs and systems. The two-phase digestion technology has been in full-scale commercial use for activated sludge treatment for more than five years. The two-stage system has proven successful for swine and dairy manure in large-scale laboratory evaluations and GTI is preparing for farm demonstrations and full-scale deployments. Work is continuing on this technology and others to generate high-quality biogas with electric generation and heat recovery using farmer-friendly, stable, and dependable systems.

General Bioenergy, Inc.

Phillip Badger
P.O. Box 26
Florence AL 35630
US

Tel: 256/740-5634
Ext:
Fax: 256/740-5635

Email: pbadger@bioenergyupdate.com
Web: www.bioenergyupdate.com

Yrs in Business: 3
Employees: 4

Mr. Badger is the Technical Director for the Southeastern Regional Biomass Energy Program, which has funded a variety of projects related to farm-scale systems (mainly lagoon digester projects) and wastewater treatment plants. He publishes and sells the "Biogas Utilization Handbook." General Bioenergy has performed feasibility studies for farm biogas systems.

AgSTAR Industry Directory

Consultants

MacMillan & Associates

Roy MacMillan
17815 NE Courtney Road
Newberg OR 97132
US

Tel: 503/628-0277
Ext:
Fax:

Email: rm@macmillan-group.com
Web:

Yrs in Business: 30
Employees: 6

MacMillan & Associates is an integrated engineering and consulting company that specializes in providing energy-related services to the agricultural community.

MCON BIO, Inc.

Hans Meyer
39642 Via Temprano
Murrieta CA 92563
US

Tel: 909/600-1385
Ext:
Fax: 909/600-1285

Email: mconbio@mconbio.com
Web: www.mconbio.com

Yrs in Business: 10
Employees: 170

MCON BIO is a consulting, engineering, and management company that works with all aspects of biogas operations, from logistics and management to finished products applications. MCON BIO also represents Farmatic Biotech Energy AG, which builds complete biogas and waste water treatment plants.

Meridian Capital Investments, Inc.

Gino Heilizer
10220 River Road
Potomac MD 20854
US

Tel: 301/983-5000
Ext:
Fax: 301/983-9012

Email: gheilizer@meridianinvestments.com
Web: www.meridianinvestments.com

Yrs in Business: 15
Employees: 40

Meridian Investments is the largest provider of tax credit equity in America. Since 1992, the company has underwritten over \$8 billion worth of federal tax credits. Meridian Investments has experience in all major federal tax credit programs, including sections 42, 29 and 45. The company provides information on selling credits to clients with plants that currently generate or will be generating a qualifying fuel under section 29 or 45 of the IRC.

National Methane

William J. Lingo, Sr.
905 Glendean Avenue, Suite 7
Riverside OH 45431
US

Tel: 937/256-7500
Ext:
Fax: 937/256-7500

Email: bilingo@dma.org
Web:

Yrs in Business: 20
Employees: 5

National Methane holds a patent for a system that can verify the basis for each of the "multiple" avenues of income streams their system develops. National Methane provides complete farm evaluations and recommendations for incorporating biogas technology into a farm plan. National Methane has provided evaluations for more than 100 chicken farms (layers), more than 60 swine farms, more than 25 dairy farms, and one sheep farm. The company also provides grant writing and public relation services related to on-farm biogas recovery and fee-based speakers for Community Groups and Agricultural Seminars.

AgSTAR Industry Directory

Consultants

Nelson and Associates

D.O. "Swede" Nelson
76 Almedral Avenue
Atherton CA 94027
US

Tel: 650/364-7273
Ext:
Fax: 650/367-0365

Email: swedenelson@msn.com
Web:

Yrs in Business: 18
Employees: 12

Nelson and Associates is a domestic and international consulting group specializing in the planning, technical study, implementation, and financing of petroleum and environmental projects. The company is affiliated with firms with extensive experience in biogas projects and is currently completing design, installation, and start-up of a bioremediation and thermal desorption project in the Western U.S.

Omega-Alpha Recycling Systems

Robert Hamburg
Route 1, Box 51
Orma WV 25268
US

Tel: 304/655-8662
Ext:
Fax: NA

Email: anomalous@citlink.net
Web:

Yrs in Business: 24
Employees: 1

Omega-Alpha Recycling Systems (OARS) works on projects related to organic recycling and biogas systems integrated with organic farming and permaculture facilities. OARS has designed four small-scale, ambient temperature digesters: 1) Arcadia Farm, a goat, chicken, and horse farm in Orma, WV with a Chinese style extended batch digester; 2) Urbanic Farm, a horse, cow, and chicken farm in Chloe, WV with a Chinese style extended batch digester; 3) Agriculture Research Farm, a swine farm in Bamaco, Mali, West Africa with a Chinese style extended batch digester; and 4) the Mandali School, a school with cattle, in Chhopark, Nepal, an Indian design Gobar Gas demonstration project. OARS was also instrumental in halting a project that was environmentally and economically unsound.

R. K. Frobel & Associates

Ronald K. Frobel, P.E.
1153 Bergen Parkway; Suite M-240
Evergreen CO 80439
US

Tel: 303/679-0285
Ext:
Fax: 303/679-8955

Email: geosynthetics@msn.com
Web:

Yrs in Business: 15
Employees: 3

Established in 1988, R.K. Frobel & Associates Consulting Engineers provides design and construction assistance in the growing field of geosynthetics, including design assistance in both animal waste lining systems and waste / anaerobic digester cover systems. Design assistance is provided to full-service engineering firms or facility / farm owners. As principal of R.K.Frobel & Associates, Mr. Frobel has over 25 years of experience in synthetic lining and cover systems including agricultural applications.

AgSTAR Industry Directory

Consultants

Richmond Energy Associates

Jeff Forward
P.O. Box 615
Richmond VA 05477
US

Tel: 802/434-3770
Ext:
Fax: 802/434-2344

Email: forward@sover.net
Web:

Yrs in Business: 3
Employees: 1

Richmond Energy Associates is a renewable energy company specializing in anaerobic digestion feasibility analysis.

Robert A. Beckstrom, Electrical Consultant

Robert (Bob) Beckstrom
1512 Gladwin Lane
Modesto CA 95355
US

Tel: 209/576-1740
Ext:
Fax:

Email:
Web:

Yrs in Business:
Employees: 1

Mr. Beckstrom provides electrical design and consulting services and specializes in alternative power projects. He wrote the electrical specifications for the first 100 wind generators, which were installed on the Altamont Pass. In addition, Mr. Beckstrom participated in the design of the first geothermal test well in Hawaii and worked on the design of several hydro-electric plants.

Selective Site Energy

Terry Super
8500 West 110th Street, Suite 300
Overland Park KS 66210
US

Tel: 913/438-7700
Ext:
Fax: 913/438-7777

Email: terry.super@selectivesite.com
Web: www.selectivesite.com

Yrs in Business: 1
Employees: 4

Selective Site Energy was formed as a division of Selective Site Consultants, a wireless telecommunications, cellular tower, and facility design-build consultancy. All of the principles, partners, engineers, and related professional staff at SSC/SSE have extensive backgrounds in all forms of engineering and construction projects, including water/wastewater treatment, power, and cogeneration.

The Dubara Company

Stephen Hoyt
1177 Route 9
Castleton NY 12033
US

Tel: 518/732-7618
Ext:
Fax: 518/732-7618

Email: steveh@albany.net
Web:

Yrs in Business: 2
Employees: 1

The Dubara Company is currently operating three pilot reactors for the Vermont Department of Public Service and testing the rate of digesting whole dairy manure. The company is hoping to increase the rate of digestion and reduce the size of digesters, and also to address ways to remove sediment and prevent accumulation.

AgSTAR Industry Directory

Consultants

Tim Goodman & Associates

Tim Goodman
2337 Texas Avenue South
St. Louis Park MN 55426
US

Tel: 952/544-6005
Ext:
Fax: 952/544-2307

Email: tgoodman1@mn.rr.com
Web:

Yrs in Business: 1
Employees: 1

Tim Goodman & Associates has experience in a variety of biomass projects, including green waste composting, food waste composting, and biomass-to-energy facilities. The company can provide feasibility studies for anaerobic digestion of animal waste at farms and feedlot operations, biogas system design, and vendor procurement assistance.

Universal Entech, LLC

Daniel Musgrove
5501 N. 7th Avenue, PMB 233
Phoenix AZ 85013-1756
US

Tel: 602/268-8849
Ext:
Fax: 602/268-9742

Email: dmusgrove@earthlink.net
Web:

Yrs in Business: 10
Employees: 12

Universal Entech, LLC is an organic resource management company providing manure management and wastewater treatment services to the CAFO industry. The company's focus is in developing turnkey solutions that comply with their client's nutrient management plans and discharge requirements. Their team has extensive experience in the development and operation of renewable energy systems utilizing biogas from municipal wastewater and landfill applications.

Williams Creek Consulting, Inc.

Joel Johnston
P.O. Box 20821
Indianapolis IN 46220
US

Tel: 317/722-9567
Ext:
Fax: 317/726-0703

Email: jjohnston@williams creek.net
Web:

Yrs in Business: 1
Employees: 4

Williams Creek Consulting, Inc. specializes in designing and building natural waste-water treatment systems, including hybrid wetland systems. The company is currently working to incorporate biogas recovery into these systems to maximize the potential energy usage.

AgSTAR Industry Directory

Developers

ADI Systems Inc.

Albert A. Cocci
182 Main Street, Unit 6
Salem NH 03079
US

Tel: 603/893-2134
Ext:
Fax: 603/898-3991

Email: acocci@adi.ca
Web: www.adi.ca

Yrs in Business: 13
Employees: 15

Commercial Farm Projects: 0

ADI Systems has been involved in approximately 100 full-scale anaerobic system installations throughout the world. Approximately 50 of these systems treat difficult agri-waste from food-related processing, while the remaining systems treat brewery, beverage, and chemical wastes. Each of these systems involves biogas collection and flaring or utilization (in most cases via burning in a boiler to produce hot water and steam). In several instances, utilization has involved cogeneration.

Ag Environmental Solutions

Carl Theunis
2768 Poplar Street
Kaukauna WI 54130
US

Tel: 920/532-4804
Ext:
Fax: 920/532-5039

Email: aes@athenet.net
Web: ag-env-sol.com

Yrs in Business: 3
Employees: 6

Commercial Farm Projects: 1

Ag Environmental Solutions employs a process patented by Iowa State Research that is licensed to the company. Ag Environmental Solutions' Tinedale Project is one of the largest dairy farm biogas systems in the U.S. with a 2,500-head capacity. The process is a complete mix using thermophilic and mesophilic temperatures enabling the system to produce a Class A bio-solid.

Agri Bio Systems

Richard Vetter, PhD, PAS, ACAN
2333 Tara Drive
Elgin IL 60123
US

Tel: 847/888-7854
Ext:
Fax: 847/888-1484

Email: rvagribio@aol.com
Web:

Yrs in Business: 18
Employees: NA

Commercial Farm Projects: 7

Agri Bio Systems performs feasibility assessments and designs and installs biogas systems in the U.S. and abroad. Examples of biogas systems include: 1) Lindstrom Farm: a 50-cow dairy farm in Welch, MN; 2) Leefer Farm, a 1,000-cow beef confinement farm in Carbin Carlinville, IL; 3) Smith Farm, a 70,000-broiler poultry farm in Princeton, NC; 4) Naser Farm, a 1,000-sow finishing swine farm in Sibley, IA; 5) Hamilton Farm, a 450-sow finishing farm and a 120,000-layer poultry farm in Iowa Falls, IA; 6) Huntington Dairy, a 300-cow dairy farm in Cooperstown, NY; 7) Cushman Farm, a 600-cow dairy in Franklin, CT; and 8) International Project, Taiwan, Environmental Training Center for Waste Management. Agri Bio Systems also acts as a coordinator on numerous animal waste and food waste projects.

AgSTAR Industry Directory

Developers

AnAerobics

Sarah Ploss
P.O. Box 307, Aurora Place, Suite 202
Aurora NY 13026
US

Tel: 315/364-5062
Ext:
Fax: 315/364-7713

Email: info@anaerobics.com
Web: www.anaerobics.com

Yrs in Business: 7
Employees: 13

Commercial Farm Projects: 1

AnAerobics delivers treatment of organic waste streams using proprietary and patented technologies that create opportunities for renewable energy utilization. Methane gas produced by the company's patented process is used at their treatment sites to operate boilers that heat the wastewater for treatment. The methane can also be cleaned and used as a natural gas alternative.

Anergen Corporation

Esh Noojibail
663 Academy Drive
Northbrook IL 60062-2420
US

Tel: 847/498-4545
Ext:
Fax: 847/498-4547

Email: enoojibail@anergen.com
Web: www.anergen.com

Yrs in Business: 17
Employees: 25

Commercial Farm Projects: 0

Anergen specializes in designing and installing waste mitigation systems for agricultural and industrial organic wastes to recover biogas, reduce BOD, eliminate odor, separate nutrients, and generate electricity from biogas. Anergen has a fully instrumented, state-of-the-art pilot plant that can be used to test the material before installing the system. Anergen does not design and install any systems unless they perform a trial of the waste material at the pilot plant. Anergen uses latest anaerobic technology that generates 50 to 75 percent more biogas than conventional technologies. Average payback is three to six years with positive cash flow. The performance is guaranteed.

Applied Technologies, Inc.

John F. Kouba
16815 W. Wisconsin Avenue
Brookfield WI 53005
US

Tel: 262/784-7690
Ext:
Fax: 262/784-6847

Email: jfkouba@ati-ae.com
Web:

Yrs in Business: 15
Employees: 54

Commercial Farm Projects: 2

Applied Technologies, Inc. (ATI) is an engineering design and consulting firm that has designed its own anaerobic contact process. ATI has cosponsored seminars on anaerobic treatment of agricultural and high-strength wastes for the past 10 years. The company designed a complete mix anaerobic digester for poultry manure for Maple Leaf Farms in Wisconsin and a complete mix anaerobic digester for poultry manure and slaughter wastewater for Crescent Duck in New York.

AgSTAR Industry Directory

Developers

BioWaste Energy, Inc.

Zia Khan
P.O. Box 8520
Stockton CA 95208
US

Tel: 209/465-0296
Ext:
Fax: 209/465-1605

Email: ziakhan@pacbell.net
Web: <http://home.pacbell.net/ziakhan>

Yrs in Business: 30
Employees: 20

Commercial Farm Projects: 0

BioWaste Energy, Inc. and its predecessors have provided quality services to industries and municipalities since 1972 and have completed more than 300 power generation projects in the U.S. and abroad. The company develops and finances zero discharge projects utilizing anaerobic technology. These projects treat solid and liquid waste and produce saleable products, including electricity/methane, liquid fertilizer, CO₂, soil amendments, and recycled potable water. These facilities provide zero solid and liquid discharge. The company offers a full range of services covering all phases of project development from planning, feasibility studies, engineering design, equipment/systems supply, and construction/installation to start-up and operations.

EA Engineering, Science, and Technology

Robert Newman
15 Loveton Circle
Sparks MD 21152
US

Tel: 410/592-7269
Ext:
Fax: 410/771-4204

Email: rnewman@eaest.com
Web: www.eaest.com

Yrs in Business: 28
Employees: 400

Commercial Farm Projects: 0

EA Engineering, Science, and Technology focuses on biogas projects (i.e., conceptualization, design, building), primarily at meat-processing facilities. For example, the firm is currently constructing a lagoon enclosure in Texas that will result in the collection of 60,000 cubic feet of biogas, which will be ducted to boilers on-site. Virtually all methane will be oxidized.

Environmental Energy Company

Dennis Burke
6007 Hill Road NE
Olympia WA 98516
US

Tel: 360/923-2000
Ext:
Fax: 360/923-1642

Email: dab@cyclus.com
Web: www.makingenergy.com

Yrs in Business: 12
Employees: 12

Commercial Farm Projects: 0

Environmental Energy Company, formerly Cyclus Envirosystems (a division of Western Environmental Engineering), solves waste management problems through innovative process technologies. The company developed and patented new anaerobic and flotation processes that allow them to solve waste management problems at significantly less cost and with better capture of components.

AgSTAR Industry Directory

Developers

Fox Engineering Associates, Inc.

Dale Watson
1601 Golden Aspen Drive
Ames IA 50010
US

Tel: 515/233-0000
Ext:
Fax: 515/233-0103

Email: dwatson@foxeng.com
Web: www.foxeng.com

Yrs in Business: 40
Employees: 38

Commercial Farm Projects: 2

Fox Engineering specializes in environmental and civil engineering services for industrial, municipal, and agricultural sectors. The company focuses on water, wastewater, soil, and air media issues and has designed a digester for Crawford Farm (demonstration project), a swine farm in Nevada, IA.

GHD Inc.

Steve Dvorak
P.O. Box 69
Chilton WI 53014
US

Tel: 920/849-9797
Ext:
Fax: 920/849-9160

Email: ddghd@tds.net
Web:

Yrs in Business: 13
Employees: 12

Commercial Farm Projects: 6

GHD provides engineering and system installation experience in the anaerobic digester industry. GHD has five operating anaerobic digesters utilizing its proprietary mixed plug flow digester design in the Midwest and one additional digester under construction.

Hadley and Bennett, Inc.

Spencer Bennett
P.O. Box 517
Henniker NH 03242
US

Tel: 603/428-3851
Ext:
Fax: 603/428-3851

Email: bennettfarm@conknet.com
Web:

Yrs in Business: NA
Employees: 1

Commercial Farm Projects: 6

Hadley and Bennett, Inc. designs and builds anaerobic digesters. Examples of projects include: 1) Hadley Farm, a dairy in Henniker, NH; 2) Foster Brothers, a dairy in Middlebury, VT; 3) Tait Farm, a veal farm in North Whitefield, ME; 4) Shugah Vale, a dairy in Claremont, NH; 5) Curtin Brothers, a dairy in Oneida, NY; and 6) Bruce Farm, a dairy in Oldenburg, NY.

Orgo Systems, Inc.

Mayyar Irani
16 White Block
Selingsgrove PA 17870
US

Tel: 570/374-4402
Ext:
Fax: 570/374-0487

Email: mayyar@orgosystems.com
Web: orgosystems.com

Yrs in Business: 4
Employees: 3

Commercial Farm Projects: 1

Orgo System's farm project is a 1,100 farrow-to-finish hog operation with 4,000-hog total capacity. The 24 kW engine currently supplies the barn, and the project will soon be upgrading to 100 kW engine. Orgo Systems designed an operational prototype that produces electricity, reduces odors, and separates solids for better handling of waste. Orgo Systems is working on plans for a second generation digester system at a 300-cow dairy that will digest, separate, compost, and aerate for total nutrient management.

AgSTAR Industry Directory

Developers

PRIME Technologies, LLC

Phillip D. Lusk
108 E. Missouri Avenue
Pierre SD 57501
US

Tel: 605/945-1311
Ext:
Fax: 605/945-0194

Email: plusk@primecapture.com
Web: www.primecapture.com

Yrs in Business: 3
Employees: 16

Commercial Farm Projects: 0

The proposed PRIME Technologies biorefinery includes a locally managed system comprised of a 20-million gallon/year ethanol plant that uses local crops and an adjoining 28,000-head confined cattle feedlot connected to an anaerobic digester. There will be an additional 13,000- to 15,000-head of cattle in "backgrounding" operations, which will be run by independent contractors. The complex will produce fuel-grade ethanol, finished cattle, biogas, and biofertilizers. The biorefinery is economically attractive with an estimated Internal Rate of Return (IRR) of approximately 30 percent, which is achievable through significant economies of scope. A commercial demonstration of this referenced biorefinery is undergoing final detailed engineering and project development at a site located outside of Pierre, SD. Construction is scheduled to commence late spring of 2002 and start-up is scheduled for the summer of 2003.

RCM Digesters, Inc.

Mark Moser
P.O. Box 4716
Berkeley CA 94704
US

Tel: 510/658-4466
Ext:
Fax: 510/658-2729

Email: rcmdigesters@att.net
Web: www.rcmdigesters.com

Yrs in Business: 18
Employees: 2

Commercial Farm Projects: 30

RCM Digesters, Inc. has designed 30 farm-scale biogas projects. Examples include: 1) Apex Pork (for AgSTAR), a swine farm in Rio, IL with a covered, heated, mixed lagoon; 2) Freund Dairy (for AgSTAR), a dairy farm in East Canaan, CT with a plug flow digester; 3) AA Dairy (for AgSTAR), a dairy farm in Candor, NY; 4) Martin Hog Farm (for AgSTAR), a swine farm in South Boston, VA with a covered lagoon; 5) Barham Hog Farm (for AgSTAR), a swine farm in Zebulon, NC with a covered lagoon; 6) Craven Dairy, a dairy farm in Cloverdale, OR with a plug flow digester; 7) Cal Poly Dairy (for AgSTAR), a dairy farm in San Luis Obispo, CA with a covered lagoon; 8) Palmer Hog Farm, a swine farm in Yell County, AR with a covered lagoon; 9) Tohoku Farm, a swine farm in Aamori Prefecture, Japan with a mixed digester; and 10) Langerwerf Dairy, a dairy farm in Durham, CA with a plug flow digester.

Sharp Energy, Inc.

Roy Sharp
24684 Road 148
Tulare CA 93274
US

Tel: 559/688-2051
Ext:
Fax: 559/688-1111

Email: rsharp6363@aol.com
Web:

Yrs in Business: 18
Employees: 2

Commercial Farm Projects: 5

Sharp Energy, Inc. consults, designs, and sets up effective and efficient waste management and energy production systems. Sharp Energy developed systems for the following farms: 1) Royal Farms, a 16,000-head swine farm in Tulare, CA; 2) Sharp Ranch, a 5,000-head swine farm in Tulare, CA; 3) Sharp Enterprises, an 8,000-head swine farm in Caruthers, CA; and 4) Petrorio Farm, a 3,000-head swine farm in Skopje, Macedonia. Sharp Energy designed covers for the following farms: Cal Poly San Luis Obispo (an AgSTAR Demonstration Farm), a 300-cow dairy in San Luis Obispo, CA; and Laurencio Dairy, a 1,200-cow dairy in Tulare, CA.

AgSTAR Industry Directory

Developers

Synagro

Paul Sellew
1800 Bering Drive, Suite 1000
Houston TX 77057
US

Tel: 978/371-0501
Ext:
Fax: 713/369-1750

Email: psellew@synagro.com
Web: www.synagro.com

Yrs in Business: 16
Employees: 1,000

Commercial Farm Projects: 1

Synagro operates at over 1,000 wastewater treatment plants throughout the country, providing operations and residuals management services. Many of these wastewater treatment plants employ anaerobic digestion. The company is using this experience and expanding into the agribusiness market with their first facility, which was designed, built, and is currently operating in Chino, CA. This digester is designed for 225 wet tons of fresh cow manure per day. It employs dewatering and onsite cogeneration using Capstone Microturbines.

Williams Engineering Associates

Doug Williams, P.E.
2073 Buckskin Drive
Los Osos CA 93402
US

Tel: 805/528-0131
Ext:
Fax:

Email: wmsengre@thegrid.com
Web:

Yrs in Business: 17
Employees: 1

Commercial Farm Projects: 1

Williams Engineering Associates specializes in anaerobic digestion, biogas energy utilization, and energy conservation and farm machinery systems. The company has designed and developed many methane digester systems for dairy and swine facilities.

Equipment Suppliers/Distributors: Covers

Dennis Gerber, Consultant

Dennis Gerber
15870 Rose Avenue
Los Gatos CA 95030
US

Tel: 408/395-9020
Ext:
Fax: 408/395-9020

Email: dhgerber@attbi.com
Web:

Yrs in Business:
Employees:

Mr. Gerber designs and installs anaerobic digester covers. His Gas Collecting Floating Cover design, which holds a U.S. Patent, is the de-facto standard for flexible membrane anaerobic digesters.

AgSTAR Industry Directory

Equipment Suppliers/Distributors: Covers

Engineered Textile Products

Carter Damp
P.O. Box 7474
Mobile AL 36670
US

Tel: 800/222-8001
Ext:
Fax: 888/222-8277

Email: cdamp2@aol.com
Web: www.etpinfo.com

Yrs in Business: 20
Employees: 36

Engineered Textile Products, Inc. manufactures and distributes lagoon covers. The company manufactured the covers for Martin's Farm, a swine farm with a covered lagoon in South Boston, VA, and Palmers Farm, a swine farm with a covered lagoon in Pettite Jean Mt., AR.

Environmental Fabrics, Inc.

Ray E. Pickel
85 Pascon Court
Gaston SC 29053
US

Tel: 803/551-5700
Ext:
Fax: 803/551-5701

Email:
Web:

Yrs in Business: 6
Employees: 30

Environmental Fabrics Inc. has manufactured covers for five farms, including: 1) Dowell Ramsey Farm, a swine farm in Nash County, NC; 2) Gold 'N Plump Poultry, a poultry farm in Cold Springs, MN; 3) Pelican Rapids, a farm in Pelican Rapids, MN; 4) Apex Pork, a swine farm in Rio, IL; and 5) Barham Farms, a swine farm in Zebulon, NC.

Firestone Building Products Company

William Johnson
575 Congressional Blvd.
Carmel IN 46032
US

Tel: 800/428-4442
Ext:
Fax: 317/575-7002

Email: johnsonwilliam@firestonebp.com
Web: www.firestonebpco.com

Yrs in Business: 18
Employees: 1300

Firestone Building Products Company manufactures a variety of EPDM rubber geosynthetic products for use by agriculture. Firestone can recommend a network of independent installers familiar with agricultural installations and Firestone's products. Firestone Building Products Company can advise customers in the selection of a cost-effective selection of EPDM rubber geosynthetic products for a number of agricultural uses including biogas recovery.

GSE Lining Technology, Inc.

Don Diguilio
167 Anderson Road
Cranberry Township PA 16066
US

Tel: 800/446-8216
Ext: 608
Fax: 724/452-3195

Email: ddiguilio@gseworld.com
Web: www.gseworld.com

Yrs in Business: 20
Employees: 1,200

GSE Lining Technology, Inc. provides geosynthetic products and installation services to the agriculture industry. GSE's experienced staff assists customers in selecting the right materials to line livestock ponds to prevent contamination.

AgSTAR Industry Directory

Equipment Suppliers/Distributors: Covers

Industrial & Environmental Concepts, Inc.

Mike Morgan
6009 Chapel Drive
Minneapolis MN 55439
US

Tel: 952/829-0731
Ext:
Fax: 952/829-9770

Email: mmorgan@ieccovers.com
Web: www.ieccovers.com

Yrs in Business: 10
Employees: 5 to 25

IEC produces and installs five types of floating modular covers for ponds and tanks. IEC's patented systems utilize a variety of geomembranes to provide a cost-effective solutions to control problems with heat loss, odor, algae growth, and gas production in basins, ponds, lagoons, or tanks.

MPC Containment

Edward Reicin
4834 South Oakley
Chicago IL 60609
US

Tel: 773/927-4120
Ext:
Fax: 773/650-6028

Email: ereic@aol.com
Web: www.mpccontainment.com

Yrs in Business: 80
Employees: 50

Design, fabricate, and install floating membrane liner systems as well as other primary and secondary containment systems. Manufacture collapsible storage/pillow tanks for fuel, water, and waste.

Equipment Suppliers/Distributors: Engines

California Power Partners, Inc.

Tom Moore
3944 Murphy Canyon Road; Suite C20
San Diego CA 92123
US

Tel: 858/277-8585
Ext:
Fax: 858/277-8514

Email: tomm@calpwr.com
Web: www.calpwr.com

Yrs in Business: 3
Employees: 18

California Power Partners, Inc. is a turn-key provider of services to the distributed generation and cogeneration industry. Its services include financial and technical analysis, engineering, equipment supply, project management, construction, financing, O&M, etc.

AgSTAR Industry Directory

Equipment Suppliers/Distributors: Engines

Capstone Turbine Corporation

George Wiltsee
21211 Nordhoff Street
Chatsworth CA 91311
US

Tel: 818/734-5300
Ext:
Fax: 818/734-5320

Email: gwiltsee@capstoneturbine.com
Web: www.microturbine.com

Yrs in Business: 14
Employees: 275

Capstone manufactures microturbines that can burn biogas with as little as 35 percent methane content. The currently available biogas model is a 30 kW microturbine that was initially offered for natural gas, propane, oil field waste gas, and diesel. During early 2000, a demonstration test program was conducted with Los Angeles County Sanitation Districts at Puente Hills landfill and at Palmdale wastewater treatment plant. Successful testing during the year 2000 led to commercial operations at 20 biogas facilities as of March 2002, using a total of 117 Capstone microturbines. The Capstone microturbine achieves a combustion efficiency of 99.999 percent. The patented premix combustion system is uniquely designed to reduce emissions of NOx, CO, and hydrocarbons to extremely low levels.

Caterpillar, Inc.

Rob Schueffner
PO Box 610; AC6109
Mossville IL 61525
US

Tel: 309/578-6376
Ext:
Fax:

Email: schuerd@Cat.com
Web:

Yrs in Business:
Employees:

Charles Equipment Company

PO Box 388
Addison IL 60101
US

Tel: 800/842-4279
Ext:
Fax: 630/543-4174

Email: cec@charlesequipment.com
Web: www.charlesequipment.com

Yrs in Business: 40
Employees: 35

Charles Equipment Company has specialized in reciprocating engine power systems for businesses, homes and municipalities for more than 43 years. Charles Equipment Company has three offices located across the Midwest, providing full service in Illinois, Indiana, Michigan, Wisconsin and Northwest Ohio.

DTE Energy Technologies, Inc. Power Partner of Waukesha Engines

John Macgowan
1715 Lake Drive West
Chanhassen MN 55317
US

Tel: 800/472-3585
Ext:
Fax: 952/448-9302

Email: macgowanj@dteenergy.com
Web: www.dtech.com

Yrs in Business: 90
Employees: 1000+

Waukesha Engine is a leading manufacturer of stationary natural gas, methane, and biogas powered engines. DTE Energy provides comprehensive application engineering services to help ensure systems are configured to each customer's specific requirements and energy objectives.

AgSTAR Industry Directory

Equipment Suppliers/Distributors: Engines

FlexEnergy, Inc.

Edan Prabhu
22922 Tiagua
Mission Viejo CA 92692
US

Tel: 949/380-4899
Ext:
Fax: 949/380-8407

Email: edanprabhu@cox.net
Web:

Yrs in Business: 6
Employees: 2

FlexEnergy is developing a Flex-Microturbine® that will greatly expand the range of biomass-derived gases that can be converted to electricity. Proof-of-concept testing was successful, and several prototype units are currently being built for testing on dairy digester gas, landfill gas, and producer gas from wood and nutshell gasification. Flex-Microturbine accepts gases at atmospheric pressure. This technology will be available commercially in two years.

Ingersoll-Rand

Holly Emerson
800A Beaty Street
Davidson NC 28036
US

Tel: 704/896-4051
Ext:
Fax: 704/896-4327

Email: holly_emerson@irco.com
Web: www.irenergysystems.com

Yrs in Business: 130
Employees:

Ingersoll-Rand (IR)'s EcoWorks microturbine systems turn digester gas into electricity and hot water. IR offers compact, integrated cogeneration packages that reduce NOx emissions and odors associated with flaring. IR's solution includes a fuel conditioner to compress and clean the biogas for reliable long-term operation at low O&M costs.

Martin Machinery LLC

Harlan Martin
39425 Excelsior Drive
Latham MO 65050
US

Tel: 660/458-7000
Ext:
Fax: 660/458-7100

Email: sales@martinmachinery.com
Web:

Yrs in Business: 26
Employees: 20

Martin Machinery first entered the biogas industry in 1982, at which time they designed and built an 850 kW paralleling switch gear to parallel an induction generator to the utility. Additionally, the company supplied four 350 kW, one 100 kW, and one 50 kW biogas electric generator systems. Since the 1980s, the company has continued work on its Custom Designed Paralleling Switch Gear, making several updates as new technology became available. The company currently custom designs new and rebuilt electric generator systems to operate using biogas and services biogas units powered with engines from 460 cubic inch to 7,040 cubic inch engine blocks.

MCX Environmental Energy Corp.

Rasheed Mustakeem
110 East Andrews Drive -- Suite 309
Atlanta GA 30305
US

Tel: 404/816-2892
Ext:
Fax: 404/237-7160

Email: rasheed@mcxeec.com
Web: www.mcxeec.com

Yrs in Business: 10
Employees: 7

Global distributor of the Capstone microturbine.

AgSTAR Industry Directory

Equipment Suppliers/Distributors: Engines

Stewart & Stevenson, Distributed Energy Solutions

Jim Jodice
10750 Telge Road
Houston TX 77095
US

Tel: 253/931-0138
Ext:
Fax: 253/931-1175

Email: j.jodice@ssss.com
Web: www.ssss.com

Yrs in Business: 100
Employees: 3000+

Stewart & Stevenson, Distributed Energy Solutions packages engine/generator sets for prime power and biogas applications. Stewart & Stevenson provides engineering, equipment, and construction services as well as operation and maintenance of power generation equipment.

STM Power

Randy Thomas
275 Metty Drive
Ann Arbor MI 48103
US

Tel: 610/323-4519
Ext:
Fax: 610/323-4870

Email: thomas.randy@stmpower.com
Web: www.stmpower.com

Yrs in Business: 13
Employees: 65

STM Power is a designer and developer of commercial-scale external combustion (Stirling cycle) engines.

Equipment Suppliers/Distributors: System Components

Canada Composting Inc.

Kevin Matthews
390 Davis Drive, Suite 301
Newmarket Ontario L3Y 7T8
Canada

Tel: 905/830-1160
Ext:
Fax: 905-830-0416

Email: ccikevin@attglobal.net
Web: www.canadacomposting.com

Yrs in Business: 8
Employees: 8

Canada Composting Inc. is a private company that holds the exclusive rights for the BTA-Process throughout Canada and the United States. The BTA-Process technology employs anaerobic digestion for the production of biogas and compost from organic waste.

Dresser ROOTS

John Parrish
2135 Hwy 6 South
Houston TX 77077
US

Tel: 281/966-4700
Ext:
Fax: 281/966-4309

Email: roots@dresser.com
Web: www.rootsblower.com

Yrs in Business: 148
Employees:

Dresser ROOTS Blowers and Compressors manufactures and sells positive displacement rotary lobe blowers and vacuum pumps as well as a complete line of centrifugal compressors. The company's product line covers from 5 to 300,000 cfm with differential pressures up to 30 PSI and vacuum levels to 28" Hg.

AgSTAR Industry Directory

Equipment Suppliers/Distributors: System Components

Kompogas AG

W. Schmid
Rohrstrasse 36
Glattbrugg CH-8152
Switzerland

Tel: 41 1 809 71 00
Ext:
Fax: 41 1 809 71 10

Email: info@kompogas.ch
Web: www.kompogas.ch

Yrs in Business: 12
Employees: 50

Kompogas AG has developed an anaerobic process for the fermentation of biogenous yard and kitchen waste combined with energy production. Waste recycling using the Kompogas process offers numerous advantages. The end products obtained from the process include CO₂-neutral, renewable energy (biogas), as well as high-quality compost and liquid fertilizer. The biogas recovered provides energy in the form of heat, electric power, and vehicle fuel.

MWH Energy Solutions

Stephen Chippas
27755 Diehl Road
Warrenville IL 60555
US

Tel: 630/836-8977
Ext:
Fax: 630/836-8959

Email: EnergySolutions@mwhglobal.com
Web: www.mwhglobal.com

Yrs in Business: 2
Employees: 6

MWH Energy Solutions has extensive experience in the recovery, cleaning, and combustion of biogas. This expertise includes wastewater treatment plants, landfills, and agricultural applications. MWH can provide complete turnkey services including planning, design, procurement, construction, financing, and O&M services.

Norton Environmental Equipment, Ltd.

Steven Viny
6200 Rockside Woods Blvd.
Independence OH 44131
US

Tel: 216/447-0070
Ext: 148
Fax: NA

Email: sviny@daladgroup.com
Web:

Yrs in Business: 3
Employees: 6

Norton Environmental Equipment Company, Ltd. is the exclusive distributor for Komptech composting equipment in North America. Komptech offers its BFSC system for digesting on-farm waste, including compost production and gas recovery. Several such systems have been installed and are operating successfully in Europe.

Vaughan Company, Inc.

Mike Panther
364 Monte-Elma Road
Montesano WA 98563
US

Tel: 360/249-4042
Ext:
Fax: 360/249-6155

Email: mpanther@chopperpumps.com
Web: www.chopperpumps.com

Yrs in Business: 42
Employees: 57

Vaughan Company, Inc. designs and builds complete hydraulic mixing systems for methane digesters and sludge storage tanks. Each digester mixing system is supplied with a mixing guarantee. Vaughan Company, Inc. also manufactures a complete line of heavy-duty chopper pumps for sludge and manure with high concentrations of solids. The company has been the leader in solids handling technology for over 40 years. Each pump is backed with a non-clog performance guarantee.

AgSTAR Industry Directory

Equipment Suppliers/Distributors: Tanks

Engineered Storage Products Company

Dave Friederick
345 Harvestore Drive
Dekalb IL 60115
US

Tel: 815/756-1551
Ext:
Fax: 815/756-1659

Email: dfriederick@engstorage.com
Web: www.slurrystore.com

Yrs in Business: 52
Employees: 143

Engineered Storage Products Company (E.S.P.C.) performs feasibility assessments and designs and installs biogas systems. E.S.P.C. has designed biogas systems for seven farms in the U.S. and 10 farms in Europe. Representative projects include: 1) Huntington Dairy, a 600-cow dairy in Cooperstown, NY; and 2) University of Florida, a 500-cow dairy in Gainesville, FL.

General Energy Services

Alliant Energy

Duane Hanusa
2777 Columbia Drive
Portage WI 53901-9483
US

Tel: 608/742-0888
Ext:
Fax: 608/742-0890

Email: duanehanusa@alliantenergy.com
Web: www.alliantenergy.com

Yrs in Business: 5
Employees: 7,200

Headquartered in Madison, WI, Alliant Energy Corporation is a growing energy-service provider with operations in both the U.S. and abroad. The company provides electric, natural gas, water, and steam services to nearly three million customers worldwide.

Chevron Energy Solutions

Felix Lopez; Dennis Potter
345 California Street
San Francisco CA 94104
US

Tel: 415/733-4531
Ext:
Fax: 415-733-4954

Email: lofe@chevrontexaco.com
Web: www.chevronenergy.com

Yrs in Business: 3
Employees: 150

Chevron Energy Solutions' initial focus is on large dairies and waste treatment plants in California's Central Valley. Chevron Energy Solutions also supplies fuel cells, cogeneration, and microturbines, combined with other energy services.

AgSTAR Industry Directory

General Energy Services

Prime Power, Inc.

Guy Hallgren; Joel Moore
535 South Madison Avenue
Watkins Glen NY 14891
US

Tel: 607/535-5407

Ext:

Fax: 607/535-8048

Email: GQHallgren@Primepwr.com

Web: primepwr.com

Yrs in Business: 4

Employees: 3

Prime Power, Inc. provides complete service in the design development and construction of anaerobic digester systems and other alternative energy solutions. Prime Power is headquartered in Watkins Glen, NY, and is owned and operated by Joel Moore, P.E. and Guy Hallgren. They have over 35 years combined experience in electric & gas engineering and construction.

Publishers

BioCycle Magazine

Jerry Goldstein
419 State Avenue
Emmaus PA 18049
US

Tel: 610/967-4135

Ext: 25

Fax: 610/967-1345

Email: biocycle@jgpress.com

Web: www.biocycle.net

Yrs in Business: 25

Employees: 10

Published since 1960, BioCycle, Journal of Composting & Organics Recycling, is recognized as the foremost magazine on using organic residuals to maximum advantage - from improving the health of soils and crops to producing renewable energy in the form of methane and alcohol fuels. In addition, the editors of BioCycle have published two special reports on renewable energy - The BioCycle Guide to Anaerobic Digestion and Renewable Energy from Organics Recycling - both available from The JG Press, Inc., publisher of BioCycle. Publications can be ordered online at www.biocycle.net.

Universities

University of Florida, Soil and Water Science Department

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P.O. Box 110960 University of Florida
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US

Tel: 352/392-8699

Ext:

Fax: 352/392-8699

Email: acwilkie@mail.ifas.ufl.edu

Web: <http://soils.ifas.ufl.edu/>

Yrs in Business: NA

Employees: NA

Dr. Wilkie is an associate professor with the Soil and Water Science Department at the University of Florida and an environmental microbiologist. She investigates and develops bioremediation techniques for agricultural and industrial wastes, with emphasis on the microbial and environmental factors influencing biodegradation. Dr. Wilkie specializes in anaerobic microbiology and in the practical application of anaerobic digestion technologies for waste treatment, odor control, and biogas production.



Office of Air and Radiation

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www.epa.gov/agstar

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