

A Long History of Digesters that Work

RCM Digesters has designed and built over 40 successful anaerobic digester systems since 1982. We develop the right digester for each project. We supply proprietary digester technology through system design and specialized equipment. RCM is the national leader in livestock anaerobic digesters. Our technology is proven at:

- ✍✍40+ digesters in operation - covered lagoons, complete mix, and plug flow
- ✍✍Single feedstock digesters – for dairy and pork producers in operation
- ✍✍Multi-waste digesters – animal waste plus other organics in operation
- ✍✍Multi-farm digesters – regional plants in operation

RCM Products and Services

For farm and industry waste treatment:

- ✍✍Complete anaerobic digester design, construction management, startup and troubleshooting
- ✍✍Specialized digester equipment, skid mounted and wired for ease of installation
- ✍✍Anaerobic digestion feasibility studies – system layout, sizing, costs and benefits
- ✍✍Nutrient recovery
- ✍✍Nutrient management
- ✍✍Electricity and by-product market development
- ✍✍Regulatory compliance and expert witness services

Digester Technology Options

Owners succeed with 4 different types of RCM digesters:

- ✍✍**RCM Covered Lagoons:** For flush collected pig or dairy wastes in warm climates
- ✍✍**RCM Complete Mix Digesters:** For scraped or pull plug pig or dairy wastes in cold climates
- ✍✍**RCM Heated, Mixed Covered Lagoon:** For scraped or pull plug pig or dairy wastes in moderate climates where the goal is odor control rather than optimum gas production
- ✍✍**RCM Plug Flow Dairy Digester:** For scrape-collected dairy manure in any climate.

Digester Gas Use Options

Owners trust RCM to provide safe, durable, operable equipment:

- ✍✍**Internal Combustion Engines to produce electricity:** Reliable engine generators with easy to understand controls that can be serviced locally
- ✍✍**Boilers for heat:** Durable biogas fired boilers that can be equipped to burn alternate fuels
- ✍✍**Flares for safe odor control:** Stainless steel for farm use

International Experience

RCM has provided consulting services in Armenia, Australia, Belize, Canada, Chile, China, Colombia, Costa Rica, Ireland, Italy, Japan, Korea, Mexico, the Philippines, Spain, and Taiwan.

Digester Cogeneration Systems

Dairy

Plug Flow

- ✍ ✍ Fall 2004 – Van Ommering Dairy, Lakeside, CA, 600 cows, 85 kW generator, separator
- ✍ ✍ June 2004 – Meadowbrook Dairy, El Mirage, CA, 1,400 cows digester, 180 kW generator, separator
- ✍ ✍ October 2003 – Port of Tillamook Bay, Tillamook, OR, 8 farms combined at 2,000 cow regional digester, 240 kW, building heat, separators
- ✍ ✍ September 2003 – Northern Plains Dairy, Saint Peter, MN, 3,000 Jersey cow digester, 270 kW, building heat, separators
- ✍ ✍ October 2002 – New Horizons Dairy, Elmwood, IL, 2,000 cow digester, 240 kW, building heat, separators
- ✍ ✍ May 2002 – Stencil Dairy, Denmark, WI, 1200 cows, 160 kW, building heat, separator
- ✍ ✍ January 2002 – Rebuild, update and expand non-RCM digester, Koetsier Dairy, Visalia, CA 1500 cows, 210 kW, building heat, separator
- ✍ ✍ October 2001 – DDI, Homer, NY, 1000 cows, boiler, experimental gas turbine, building heat, separator
- ✍ ✍ September 1999 - ICF, Inc./AgSTAR, Haubenschild Dairy, Princeton, MN - 1000 cows, 135 kW engine, building heat, separator
- ✍ ✍ September 1997 - ICF, Inc./AgSTAR, Freund Dairy, E. Canaan, CT, - 250 cows, boiler, building heat, separator
- ✍ ✍ September 1997 - ICF, Inc./AgSTAR, AA Dairy, Candor, NY - 1000 cows, 120 kW engine, boiler, building heat, separator
- ✍ ✍ December 1996 - Craven Dairy, Cloverdale, OR - 1000 cows, 120 kW, separator
- ✍ ✍ December 1985 - Luiz Dairy, Lodi, CA - Rebuild non-RCM 900 cows, 140 kW,
- ✍ ✍ February, 1985 - M&M Dairy, Gonzales, CA - 400 cows, 60 kW, separator
- ✍ ✍ June, 1983 - Frey Dairy, Conestoga, PA - 600 cows, 100 kW, separator
- ✍ ✍ December, 1982 - Langerwerf Dairy, Durham, CA - 500 cows, 85 kW, building heat, separator

Complete Mix

- ✍ ✍ November 2001 – Matlink Dairy, Clymer, NY, 900 cows, organic wastes, 135 kW, generator, building heat, separator

Covered Lagoon

- ✍ ✍ July 1995 - 1998- Cal Poly Dairy, San Luis Obispo, CA – Process design, 400 cow capacity
- ✍ ✍ August 2004 - Castelanelli Dairy, Lodi, CA, 1,400 cows plus replacements, 180 kW generator

Swine

Complete Mix

- ✂ September 2004 - Wheatland, WY, Wyoming Premium Farms - 18,000 finishers, 180 kW
- ✂ December 2003 - Wheatland, WY, Wyoming Premium Farms - 5,000 sow farrow to wean, 80 kW
- ✂ October 2000 - Rebuild, update and expand non-RCM digester, Rocky Knoll Farms, Lancaster, PA, 4,000 pigs and organic waste, 120 kW generator
- ✂ September 1999 - ICF, Inc./AgSTAR, Colorado Pork, Lamar, CO - 5,000 sow farrow to wean, 80 kW generator
- ✂ July 1999 - ICF, Inc./AgSTAR SWUSA, Thayer, IA, - 5,000 sow farrow to wean, 80 kW generator
- ✂ October 1997 - Seoul National Technical University, 5 m³ - research digester
- ✂ October 1989 - NMP, Tokyo, Japan - Kazuno Farm - 2 digesters - 925 sow farrow to finish (21,000 hogs), 80 kW
- ✂ January 1989 - NMP, Tokyo, Japan, Yokohama Farm, Aomori - 2 digesters, 1250 sow farrow to finish (30,000 hogs), 120 kW, building heat
- ✂ November 1988 - Sugar Creek Hog Farm, Crawfordsville, IN - 3000 sow farrow to finish (36,000 hogs), 400 kW
- ✂ August 1988 - Ireland, Private Client - Complete mix digester, 250 sow farrow to finish
- ✂ March 1986 - DJ Acres, Seven Valleys, PA - 1800 sow farrow to finish (18,000 hogs), 150 kW, building heat

Covered Lagoon

- ✂ Winter 2004 - 5 - Agricola Ltda., Santiago, Chile, 13,500 sows farrow to wean flare
- ✂ Winter 2004 - 5 - Agricola Ltda., Santiago, Chile, 18,000 sows farrow to wean, flare
- ✂ April 2003 - Agricola Ltda., Santiago, Chile, 20,000 sows farrow to feeder, flare
- ✂ July 2002 - Agricola Ltda., Santiago, Chile, 90,000 finish hogs, flare
- ✂ September 1998 - ICF, Inc./AgSTAR, Piney Woods School, Rankin County, MS, 120 pigs, flare
- ✂ June 1998 - ICF, Inc./AgSTAR, Boland Farm, Williamsburg, IA, 2,700 nursery pigs, flare
- ✂ April 1997 - Martin Hog Farm, S. Boston, VA - 600 sow, farrow to feeder, flare
- ✂ December 1996 - ICF, Inc./ AgSTAR, Barham Farm, Zebulon, NC - 4000 sows, farrow-wean, 120 kW, building heat
- ✂ October 1992 - Palmer Farm, Yell County, AR - 300 sow, farrow to feeder, flare

Heated Mixed Covered Lagoon

- ✂ March 2003 - Agricola Ltda., Santiago, Chile, 120,000 finish hogs, boiler
- ✂ February 2003 - Agricola Ltda., Santiago, Chile, 207,000 finish hogs, boiler
- ✂ December 2000 - Agricola Ltda., Santiago, Chile, 120,000 finish hogs, boiler
- ✂ June 1998 - Apex Pork, Rio, IL, 8,900 finish hogs, boiler

Laying Hens

Complete Mix

- ✂ December 1985 - Nunes Farms, Burson, CA - 175,000 hens, 105 kW

Representative Non-Farm Clients

Electrical Generation Service

☞ January 1986 - Salinas STP #1, Monterey Co., CA - 150 kW generator with heat recovery

Government

USEPA, USDA-NRCS, USDOE - AgSTAR Program
Mojave Tribe - Arizona
Ak-Chin Tribal Utility - Arizona
Tulalip Tribe - Washington
California Energy Commission
Minnesota Department of Agriculture

University

Washington State University
California State University, San Luis Obispo
State University of New York, Morrisville
E. Kentucky State University
South Dakota State University
Cornell University Vet School

Engineers

Tetra Tech, Virginia
ICF, Inc, Burbank, CA
Water and Waste Engineering - Denver, CO

Commercial -Industrial

MEAD Project, Tillamook Co., OR
Tillamook Cooperative Creamery
Alliant Energy

International

Carandini Dairy, Torre im Pietra, Rome, Italy
Ainia, Valencia, Spain
Sustainable Energy Authority of Victoria, Australia
Ontario Hydro, Toronto, Canada
Metz Farms, New Bruswick, Canada
Canadian Pork Council, Ottawa, Canda
Nippon Meat Packers, Japan
Silk Roads, Ltd. Philippines
Del Sur Hog Farm, Lipa City, Philippines
Agricola Super, Ltda., Santiago, Chile
Poricultores de Jalisco, Mexico
Poricultores de Colombia, Bogota
Consejo Mexicano de Porcicultora - Mexico

Mark A. Moser

President and Agricultural Engineer

Years of Professional Experience: 26

Expertise - Methane Digester Systems, Manure and Nutrient Management

Site Specific Feasibility and Engineering Work

Technical and Analytical Work

Analytical Modeling

Outreach

Education

1979 MS, Agricultural Engineering, Cornell University

1975 BS, with Honors, Environmental Science, University of California, Riverside

Languages - Spanish

Employment History

1982- present Resource Conservation Management, Inc, RCM Digesters, Inc.

1995 - 1999 ICF Consulting Associates, Senior AgSTAR Technical Advisor

1981-82 Independent Agricultural Engineer

1979-81 Sheaffer and Roland, Inc., Staff Engineer

1976-78 Metcalf and Eddy, Inc., Soil Scientist / Engineer

1976 Office of the Chief Engineer, US Army Corps of Engineers, Intern

1974-75 US EPA, Industrial Effluent Guidelines Division, Intern

Work History

Mr. Moser is one of the founders and President of the Company. He was trained as an agricultural engineer with special emphasis on livestock manure management. Over the past 21 years Mr. Moser has focused on methane production and recovery and nutrient management. He is responsible for development, design and completion of projects including: 40+ anaerobic digesters for methane and on-farm electricity and heat production; 30+ farm waste storage and nutrient management plans; consulting services to public and private clients for waste management and/or methane digesters in Armenia, Belize, Chile, Colombia, Costa Rica, Ireland, Japan, Korea, Mexico, the Philippines, the United States and Taiwan. He has performed consulting tasks for the USEPA, the AgSTAR program, and USDOE on pollution potential from farm waste, farm waste management and potential recovery of energy and fertilizer from farm waste. He has designed portions of several farms including a 500 cow dairy and a 36,000 head swine facility. Other work has included environmental regulatory compliance consulting for farms and industries and expert witness services.