

# **RCM Proyectos de Biodigestion**



**RCM International, LLC**

**Berkeley, CA**

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**[www.RCMInternationalLLC.com](http://www.RCMInternationalLLC.com)**

# RCM Internacional

## - Quienes somos?

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- Biodigestores son nuestro unico negocio
  - + 20 anos en el rubro
  - + 60 digestores en operacion
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# Que hacemos?

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1. Estimados
  2. Estudios de Factibilidad
  3. Servicios completos
    - Diseno y especificacion
    - Procura de equipos
    - Fabricacion de equipos especiales
    - Aviso sobre constructors y construccion
    - Puesta en marcha
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# Filosofía de RCM

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- Biodigestores faciles de operar hechos a la medida
  - Precio valor
    - No equipos extra
    - No capacidad perdida
  - Flexibilidad
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# RCM Opciones en Biodigestion

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- Lagunas cubiertas
  - Tanques pre-mezclados y lagunas calentadas
  - Flujo piston
  - Multi-granja
  - Multi-desperdicios
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# Biodigestor de lagunas cubiertas

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- Tipico de granjas “flush” (alto uso de agua). Concentraciones de solidos >2%
  - Ideal para zonas de temperaturas altas
  - La produccion de gas varia con los cambios de temperatura
  - Ideal para climas calidos (latino america y el caribe)
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# RCM Laguna Cubierta

– Chile 90,000 engordas



31/15/02





# RCM Covered Lagoon Digester

Biogas - December 1996  
Electricity - March 1997

RCM Digesters  
[rcmdigesters.com](http://rcmdigesters.com)

Barham Farm  
Zebulon, NC  
4000 sow -  
farrow to wean



**Castelanelli Brothers Dairy Lodi, CA**

**Digestor de Laguna Cubierta**

**2,000 vacas, camas de arena, Flush**

**180 kW Generator a biogas**



RCM International, LLC

# CA Bullfrog Dairy

Laguna cubierta para 5,000 vacas




# Biodigestor Flujo Piston Para Bovina

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- Recoleccion de escrementos de vaca con rastrillo
  - Escrementos con concentraciones de 11-13% de solidos
  - Puede o no ser calentado para climas frios
  - Sin agitacion
  - Produccion de gas y electricidad continua
  - Sin limites de temperatura o clima
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Lechera Meadowbrook  
Phelan, CA  
1200 vacas drylot aspirado  
170 kW, solidos separados  
July 2004



Solidos digeridos  
Lechera Meadowbrook



# Por que residuos organicos?

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- Mas ganacia!
    - Mas produccion de gas y electiricidad
    - Pagos por cumplir leyes ambientalistas
    - Mas bonos de carbono (en algunos casos)
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# RCM Biodigestores de Mezcla Completa – tanque o laguna

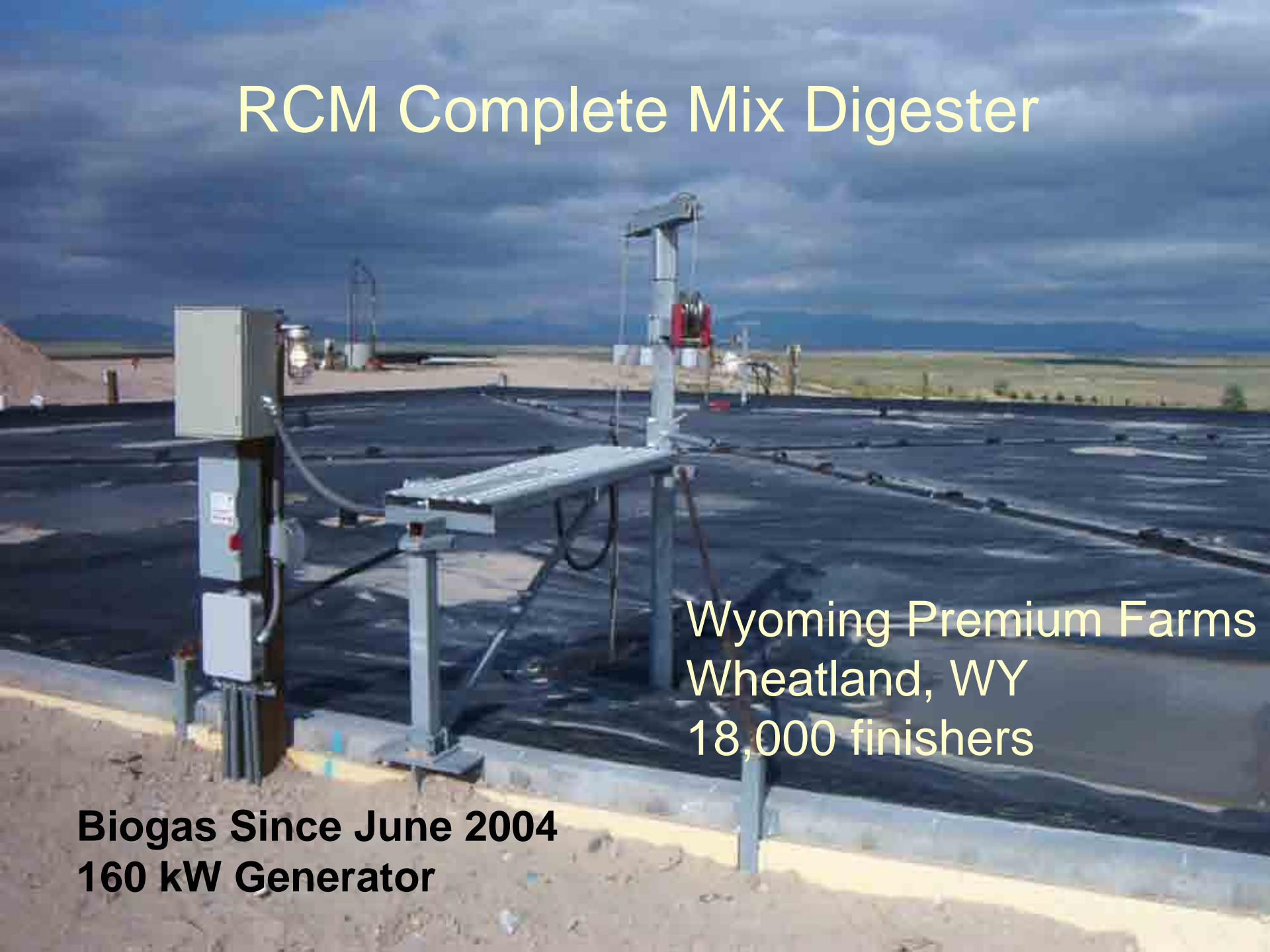
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- Sólidos orgánicos de 3-8% – Estiercol diluido, suero, residuos de comida.
  - Calentado a 37 C
  - Agitados para promover la fauna bacteriana
  - Producción continua de gas y electricidad
  - Todo clima
-

# RCM Complete Mix Digester

Wyoming Premium Farms  
Wheatland, WY  
18,000 finishers

**Biogas Since June 2004**  
**160 kW Generator**





# RCM Complete Mix Digester

Biogas and Electricity  
since October 1999

[rcmdigesters.com](http://rcmdigesters.com)

Colorado Pork LLC  
Lamar, CO

5,500 sows -  
farrow to wean

# Kluthe Farm– Dodge, NE, 2006

8,000 engordas, 80 kW,





Mt. Joy, PA

Brubaker Dairy 700 cows, 200 kW





# RCM Heated, Mixed, Covered Lagoon Digester

Biogas and Hot water  
Since February 2003  
RCM Digesters  
[rcmdigesters.com](http://rcmdigesters.com)

Pocillias, Chile  
238,000 Finish Hogs

# Mead, Nebraska – 28,000 ganado y vinasa de produccion de etanol

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# Equipo Fabricado por RCM

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- Digester heat exchangers
  - Filtre de acido sulfidrico
  - Skid de manejo de gas
  - CDM skid de manejo de gas
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# RCM Filtre de H<sub>2</sub>S

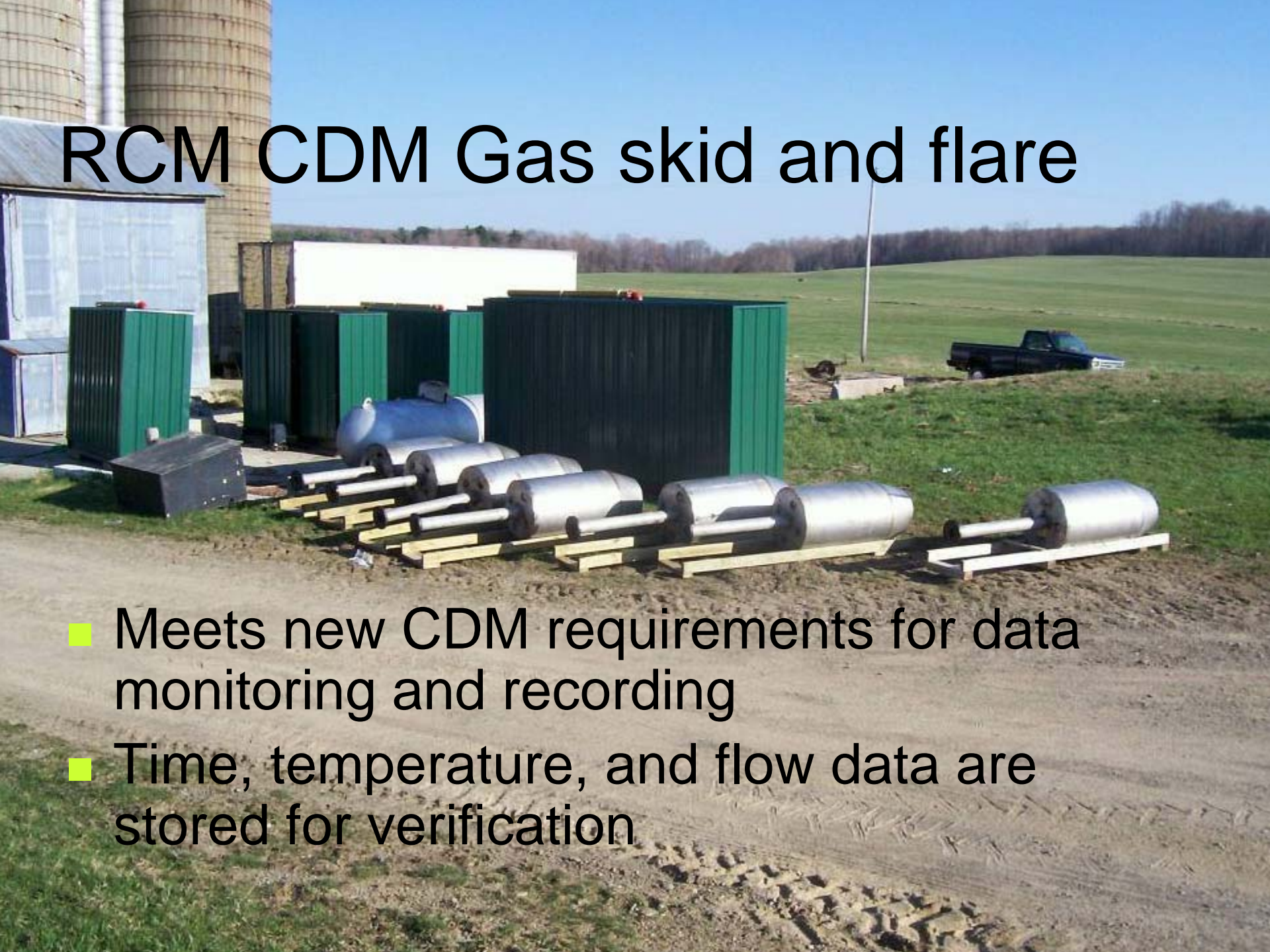






# RCM CDM Gas skid and flare

- Meets new CDM requirements for data monitoring and recording
- Time, temperature, and flow data are stored for verification





# RCM Uso de Biogas



# Enclosed 65 kW for covered lagoon



# Castelanelli Dairy – 180 kW





# Generador de Brubaker > 34 % eficiente !!

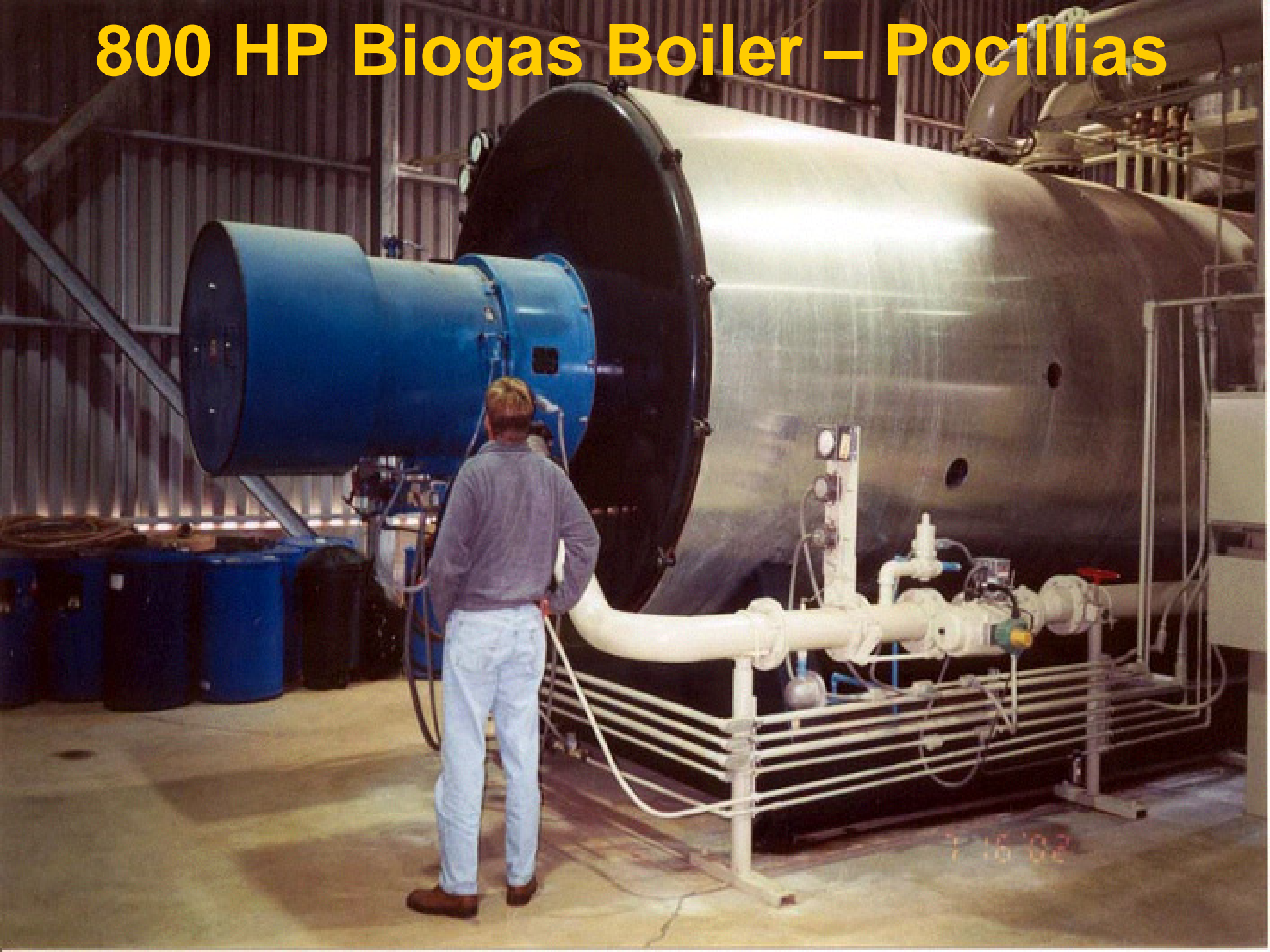




# Cat 3406 – 150 kW single phase, plus boiler – Barham Farm



# 800 HP Biogas Boiler – Pocillias



# Apex Pork - Flare

RCM Gas Use

Odor Control Flare

[rcmdigesters.com](http://rcmdigesters.com)





# M2M Project - Modular Covers at GCM lagoon - Perote, Vera Cruz



# RCM Cover on Lagoon Digester

Biogas for engine  
and flare since  
October 1993  
[rcmdigesters.com](http://rcmdigesters.com)

Martin Farms  
S. Boston, VA  
600 Sows  
farrow to feeder

# The Plan

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- Design and manufacture cover in sections
  - Premanufacture CDM flare skid
  - Order and deliver all components and advance
  - Arrive on site and install in one week
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# Day 1, roll out the modules





# Day 1 Field fit covers



# Day 1 Install flotation





# Day 1 Finish 2 Covers





# Day 2, Prepare to pull covers



# Day 2 - Launching the cover





# Day 2 - First cover on lagoon





# Day 2 - Launching the second cover



# Day 2 – 3 covers on lagoon



# Day 2, Foundation for gas skid





# Day 3, Gas pipe installed



2007 12 20

# Day 3, Secure covers in place



2007 12 20

# Day 3 Mounting the skid and flare





# Status

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- The system is functioning as designed
  - Day 4-60 Almost ready to start The system recovered and directed gas to the flare station immediately
  - Wiring installation and a bad PLC delayed the flare station startup
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# Preguntas?

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