Sept 13, 2006
Rev. 1.0

EnerWorks

Case Study: Agricultural

About EnerWorks

EnerWorks designs and manufactures solar water heating appliances and solar collectors for both commercial and residential use. EnerWorks pre-engineered thermal solutions can be integrated into new construction or retrofitted to existing structures. EnerWorks solar water heating products are reliable year-round even in cold climates, and are designed for easy, hassle free installations. EnerWorks appliances not only save customers money, but also contribute to a healthier environment.

Solar Hot Water Applications

Solar energy can be used extensively in the agricultural industry. Solar is an effective and economical way to provide hot water and heat for many applications.

Solar Hot Water for:

- Dairy Farms
- Food Preparation
- Building Wash Down
- Equipment Cleaning
- Product Preparation

Solar Heat for:

- Greenhouse Heat
- Storage Warehouse Heat
- Poultry and Swine Barn Heat

EnerWorks Appliances in Agriculture

EnerWorks solar water heating solutions for any size of project. EnerWorks dealers and staff engineers work with customers input data on water and heat loads, frequency of use, site characteristics, displaced energy costs, etc. to prepare an appliance solution and economic analysis specific to the agricultural application.

Solar water heating displaces about 50 to 60% of the annual energy from existing heat sources. At today's energy prices the highest returns are achieved by displacing propane, heating oil, electricity and natural gas in that order.

Fossil fuel costs have experienced annual average cost increases of over 10%. Solar water heating delivers cost certainty and at less cost than conventional energy sources.

EnerWorks solar water heating solutions are scalable from 1 to 800 solar collectors. Energy Packs, pre-engineered to the application, incorporate fluid pumps, heat exchangers, expansion tanks, controllers, energy data, etc scaled to the size of the solar collector array.

EnerWorks dealers and/or the customers mechanical suppliers, add storage tanks, piping, mounting hardware and installation services to deliver money saving, reliable year round customer solutions.

SolarEM

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Case Study Agriculture — Veal Calf Milk Preparation

The Challenge

Hot water is used in veal farming for environmental control in the calving pens, cleanup, food preparation, etc.

The case study farm operator feeds 380 calves with a warm milk solution made with powdered milk at 6:00 am and 6:00 pm using 370 US Gals/1400 litres of hot water at 80° C each time.

The EnerWorks Solution - Solar Water Heating

For a veal calf feeding operation requiring 740 US Gals or 2800 litres per day of hot water, EnerWorks recommends an installation of 30 solar collectors set up in three, 10 collector modules with one larger Energy Pack. Collectors are shed mounted. Hot water is stored in a bulk dairy farm style tank.

The solar hot water would be in series with the existing propane hot water heat.

The installed cost is about $49,000. Before tax credits and/or grants, the EnerWorks equipment cost is about $35,000. The farm operator provides most of the installation services using a mechanical contractor for final hookup and system charging. The equipment cost is subject to site conditions, a free standing rack if required, bulk dairy storage tank and shipping are extra.

$AVING$!!

A typical veal calf farm in Eastern Pennsylvania, will save over $18,700 US a year in energy costs and payback the investment in the 3rd year (without Federal Grant, 1.8 years with grant) if the existing hot water is propane heated. The annual solar fraction is 77%; the summer solar fraction is 82%.

30% USA federal tax credits are available and many states may have further financial assistance.

A typical veal farm In Southern Ontario, will save over $9,500 CDA a year in energy costs and payback the investment in the 6th year (without REDI grant, 3.9 years with REDI) if the existing hot water is propane heated. The annual solar fraction is 40 %; the summer solar fraction is 52%.

25% Federal REDI grants are available. www.redi.gc.ca Provinces may have further assistance.

These estimates are based on solar displacing propane and a 5% propane cost inflation. For a copy of the simulation, and or assistance in developing your solar application please contact your dealer or send your request to info@enerworks.com or to the address below

Suggested Configuration for 740 US Gal/2800 L per day of hot water

Number of Collectors	30
Total Collector Area Dimension	Three rows - 8’ X 40’
Energy Packs	One
Collector Orientation	SE to SW
Solar Storage Tank	750 US Gals/3000 Litres—Bulk storage tank
Tank Set Temperature	80°C

This study was prepared with input and usage data from Dispaq. Distribution for Picard Farm of Wotton, Quebec.
http://www.dispaq.com **E&OE**

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Case Study Agricultural Application— Dairy Farms

The Challenge

Dairy Barns have significant hot water loads, making solar water heating extremely appealing to the dairy industry. Hot water is used to sanitize the milking equipment and wash the milking tanks. In addition, hot water aids in reducing the butterfat residue on the milk handling equipment.

The EnerWorks Solution - Solar Water Heating

For a dairy farm with a daily hot water load of 230 US Gals or 870 litres per day, and two large draws, EnerWorks recommends an installation of 12 solar collectors set up in three modules of four collectors with energy packs attached to three 119 US Gal/450 Litres storage tanks plumbed in parallel and feeding solar heated water to the auxiliary (existing) water heating system.

Before tax credits and grants, the installed cost, with roof mounted collectors is about $24,000. Costs are subject to site conditions, local labour rates, shipping, etc. The appliance cost is about $18,000.

$AVING$!!

A typical dairy farm in Eastern Pennsylvania, will save over $2,575 US a year in energy costs and payback the investment in the 5th year if the existing hot water is propane heated. The annual solar fraction is 63%; the summer solar fraction is 86%.

30% USA federal tax credits are available and many states may have further financial assistance.

A typical dairy farm In Southern Ontario, will save over $2,200 CDA a year in energy costs and payback the investment in the 6th year if the existing hot water is propane heated. The annual solar fraction is 72 %; the summer solar fraction is 90%.

25% Federal REDI grants are available. www.redi.gc.ca Provinces may have further assistance.

These estimates are based on solar displacing propane and a 5% propane cost inflation. For a copy of the simulation, and or assistance in developing your solar application please contact your dealer or send your request to info@enerworks.com or to the address below

Suggested Configuration for 230 US Gal/870 L per day of hot water

Number of Collectors	12
Total Collector Area Dimension	Three— 8′ X 17′
Energy Packs	Three
Collector Orientation	SE to SW
Solar Storage Tank	3—119 US Gals 1350 Litres
Tank Set Temperature	144°F / 62°C

This study was prepared with input and usage data from Stonecrest Engineering for Clefthaven Farms, Plattsville, Ontario
http://www.stonecrestengineering.com **E&OE**

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Case Study Agricultural—Swine Barn Heating

The Challenge

Hot water is used in pork farms for environmental control in the pig pens, feed, cleaning etc. After the piglets are weaned from the sow, they are put into larger pens. Pork farms use in-floor radiant heating to maintain the appropriate temperature for feeder piglets. Heat is required year round.

The EnerWorks Solution - Solar Water Heating

The EnerWorks solar collectors supply thermal energy for a variety of different uses included in-floor radiant heating. The size of the system can be scaled to match the number of sows and pig pens on the farm. EnerWorks offers Energy Packs to support from 1 to 800 solar collectors.

An initial solar array of 20 collectors (two modules of ten collectors) and a commercial Energy Pack to convert the freeze protected heat transfer fluid into stored heat. In the future up to 40 collectors can be supported by the Energy Pack.

The system will supply about 61,800 kWh/year in the US or 52,000 kWh/year in Canada or displace 2,900 US gals/11,100 liters in Pennsylvania or 2,500 US gals/9300 litres of propane in Ontario

The installed cost will be about $39,200. The equipment cost including an insulated concrete storage tank is about $28,000 with roof mounted collectors. The equipment cost is subject to site conditions, a free standing rack if needed and shipping are extra. The farm team provides most of the installation services using a mechanical contractor for final hook up and system charging.

$AVING$!!

A typical swine farm in Eastern Pennsylvania, will save over $7,300 a year in energy costs and payback the investment in the 5th year if the existing hot water is propane heated.

30% USA federal tax credits are available and many states may have further financial assistance.

A typical swine farm In Southern Ontario, will save over $6,000 a year in energy costs and payback the investment in the 6th year if the existing hot water is propane heated.

25% Federal REDI grants are available. www.redi.gc.ca Provinces may have further assistance.

These estimates are based on solar displacing propane and a 5% propane cost inflation. For a copy of the simulation, and or assistance in developing your solar application please contact your dealer or send your request to info@enerworks.com or to the address below

Suggested Configuration for Storage Heat

Number of Collectors	20
Total Collector Area Dimen-	Two rows 8′ X 43′
Energy Packs	One
Collector Orientation	SE to SW
Solar Storage Tank	5400 litres/ 1420 USGal Concrete Tank with 6″ exterior foam insulation
Tank Set Temperature	Open

This study was prepared with input and usage data from Green Grid Solutions for Lone Pine Farms, Moorefield, Ontario.
http://www.greengridsolutions.com **E&OE**

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replace them with non-infringing Goods, or modify same to become non-infringing, or grant a ENERWORKS credit for the depreciated value of such Goods and accept return of them. In the event of the foregoing, ENERWORKS may also, at its option, cancel the agreement as to future deliveries of such Goods, without liability.

INDEMNIFICATION:

Purchaser hereby promises and covenants to indemnify and hold harmless and defend ENERWORKS from and against all claims, losses, and liability of any kind whatsoever, brought by any person or entity, caused in whole or in part by the negligence or willful acts of Purchaser, its representatives, agents, or employees in connection with the Goods, and/or Services furnished hereunder, including, without limitation, erection, repair, adjustment, or operation thereof. The indemnification obligations under this section shall survive the termination or expiration of an order or contract between the parties for a period of five (5) years.

FORCE MAJEURE:

ENERWORKS shall not be liable for delays in performance or for non-performance due to acts of God, acts of Purchaser; war; fire; flood; weather; sabotage; strikes or labor disputes; civil disturbances or riots; governmental requests, restrictions, allocations, laws, regulations, orders or actions; unavailability of or delays in transportation; default of suppliers; or unforeseen circumstances or any events or causes beyond ENERWORKS's reasonable control. Deliveries or other performance may be suspended for an appropriate period of time or cancelled by ENERWORKS upon notice to Purchaser in the event of any of the foregoing, but the balance of the agreement shall otherwise remain unaffected as a result of the foregoing.

If ENERWORKS determines that its ability to supply the total demand for the Goods, or Services, or to obtain material used directly or indirectly in the manufacture of the Goods, is hindered, limited or made impracticable due to causes set forth above, ENERWORKS may allocate its available supply of the Goods, labor or such material (without obligation to acquire other supplies of any such Goods, labor or material) among its purchasers on such basis as ENERWORKS determines to be equitable without liability for any failure or performance which may result therefrom.

PURCHASER RESPONSIBILITIES:

Purchaser shall provide ENERWORKS ready access to the site where Services are to be performed and adequate workspace and facilities to perform same as provided in these ENERWORKS terms and conditions. This includes lifting equipment such as heavy cranes.

Purchaser will assist ENERWORKS with information when required by authorities for submission of documents for approvals, incentives, permits, inspections, etc.

Purchaser will assist with onsite storage and security of equipment, materials and tools.

Purchaser will coordinate with installer on timing for activities that may be disruptive to locations occupants and users. The installer will try to keep intrusive noise and other inconveniences to a minimum necessary.

Purchaser shall not require ENERWORKS or its employees, as a condition to site access or otherwise, to further agree or enter into any agreement which waives, releases, indemnifies or

otherwise limits or expands any rights or obligations whatsoever. Any such agreements shall be null and void.

Purchaser shall inform ENERWORKS, in writing, at the time of order placement, of any known hazardous substance or condition at the site, including, but not limited to, the presence of asbestos or asbestos containing materials, and shall provide ENERWORKS with any applicable Material Data Safety Sheets regarding same.

Purchaser shall appoint a representative familiar with the site and the nature of the Services to be performed by ENERWORKS to be accessible at all times that ENERWORKS personnel are at the site. Purchaser shall designate an operator/maintenance person to be trained in the use of the system.

ENERWORKS shall not be liable for any expenses incurred by Purchaser in removing, replacing or refurbishing any Purchaser equipment or any part of Purchaser's building structure that restricts ENERWORKS access.

Purchaser personnel shall co-operate with and provide all necessary assistance to ENERWORKS.

ENERWORKS shall not be liable or responsible for any work performed by Purchaser.

ENGINEERING REVIEW:

A civil engineering review of the building will be provided. If this review reveals that the building is unsuitable for accepting the system in any configuration, no further work will be performed and the Purchaser agrees to reimburse ENERWORKS for expenses incurred upon presenting proof of such expenses. Conversely, if the review determines that the configuration can be changed, or that extra reinforcements are required to the roof/wall of the building, work will stop and a supplemental price estimate will be presented to the Purchaser for approval.

CARBON CREDITS:

Unless otherwise agreed in writing, the carbon credits resulting from the use of the equipment subject to this contract are the property of ENERWORKS or its suppliers/agents.

DELAY IN PERFORMANCE OF SERVICES:

ENERWORKS shall not be liable or responsible for cost, expense, or damage due to a delay in performance of Services or other obligations when such delay is due to causes beyond ENERWORKS's reasonable control, including, but not limited to, natural disasters, acts of government, power failure, acts of God, labor disputes, acts of war, or material or transportation shortages.

ENERWORKS is not responsible for any additional costs or delays resulting from hidden flaws in the building, its equipment or any other difficulty or situation that cannot be foreseen at the beginning of work. When such a situation arises, BOPPG will promptly notify the Purchaser and a mutually acceptable solution shall be negotiated in good faith.

SOLICITATION OF ENERWORKS's EMPLOYEES:

Purchaser agrees not to solicit, hire or otherwise engage any employees of ENERWORKS that provide Services to the Purchaser for a term of six months beginning from the time the last Services were performed by that ENERWORKS employee. The parties agree that any resulting

damages from a violation of this provision would be difficult to calculate. Thus the parties have agreed that in the event of such a violation, ENERWORKS will be entitled to liquidated damages of thirteen (13) forty-hour weeks at that employee's billing rate to the Purchaser or C$50,000 , whichever is less.

WORKDAY DEFINED:

The above charges are for a standard eight (8) hour working day. Time and one-half will be charged for Saturdays and all time over eight (8) hours for a regular day. Service time will include all elapsed time worked from the time the representative leaves his headquarters, or another Purchaser's plant, until either his return to his headquarters, or departure for another Purchaser's plant.

Regular working hours are 8:00 a.m.-5:00 p.m., Monday through Friday with one hour for lunch unless twenty-four (24) hour coverage is in effect. Other starting and stopping times will be observed by ENERWORKS representatives upon request from the Purchaser as long as the total time does not exceed 8 hours per day.

Overtime considerations are not included in the quote and will be considered both requested and billable any time service work extends past eight (8) hours per day as long as the Purchaser does not stop the service session.

Time and one-half rate will be charged for all time-spent working or traveling in excess of eight hours per normal working day and anytime on Saturdays.

Double time rates will be charged for all time spent working or traveling on Sundays and designated public holidays, applicable in the country of service delivery.

CHARGES FOR SERVICE:

Charges for Service over and above the original purchase order are due and payable upon receipt of an invoice for same by the Purchaser. The applicable rate in effect at the time the Service is performed will be used for billing. ENERWORKS reserves the right to discontinue further Service until all such outstanding invoices are paid.

e) **Travel Considerations:**

ENERWORKS service personnel will travel to and from their respective offices to the job site during normal working hours only. Any request for a service technician to report on a job site at such time whereby travel outside normal working hours would be required must be made in writing prior to the departure of the service technician from Oakville, Ontario. Any such travel outside normal working hours shall be billed at the applicable overtime rate.

f) **Subsistence and Other Travel Expenses:**

Standard per diem rates are C$100 per day. International per diem rates are $150 per day. Some areas may exceed either standard or international per diem rates, as the case may be, and will be charged according to actual cost. Per Diem, transportation, lodging, and miscellaneous expenses are considered travel expenses and are billed at actual cost plus a ten percent (10%) administrative fee. Travel time is billable at $50/hour unless specifically waived or otherwise agreed to by ENERWORKS.

Travel and living quotes are not to exceed actual figures. Billing for travel and living expenses may vary from the quoted amount if it is not possible for the Purchaser to be flexible with scheduling so that local resources are available when needed. If time necessary to complete work is extended at the Purchaser's request, travel and living expenses will also increase. In addition, the cost of shipping supplies necessary for Service or other travel expenses are likewise charged at cost plus ten percent (10%).

MAXIMUM WORKWEEK:

No service representative shall be required to work over sixty (60) hours in any calendar week. If on-site conditions are such that additional coverage is required, ENERWORKS, at its option, may elect to supply additional manpower with the Purchaser's approval and at the Purchaser's expense, for such periods of time that both parties deem reasonable.

CALL-OUT TIME:

A minimum billing of four (4) hours at applicable overtime rate will be charged for items in excess of the regular working hours when the service representative has left the job site. After working a normal eight (8) hour day, reasonable requests for work outside the regular working hours will be honored, subject to personnel availability and adequate notice.

STANDBY TIME:

ENERWORKS reserves the right to levy a $45 per hour charge for standby time. Standby time is defined as that time a ENERWORKS representative is off the job site after normal working hours but is required to be available for call out if requested.

ENTIRE CONTRACT:

This writing constitutes the entire agreement and understanding between the parties as of the date of acceptance by ENERWORKS and shall not thereafter be modified in any way except in writing by an authorized ENERWORKS representative. No waiver of these terms and conditions shall be binding upon ENERWORKS unless made in writing and signed by ENERWORKS. No conditions, usage of trade, course of dealing or performance, understanding or agreement purporting to modify, vary, explain, or supplement these terms and conditions shall be binding unless hereafter made in writing and signed by the party to be bound, and no modification or additional terms shall be applicable to this agreement by ENERWORKS's receipt, acknowledgement or acceptance or purchase orders, shipping instruction forms, or other documentation containing terms at variance with or in addition to those set forth herein. No waiver by either party with respect to any breach or default or of any right or remedy, and no course of dealing, shall be deemed to constitute a continuing waiver of any other breach or default or of any other right or remedy, unless such waiver be expressed in writing and signed by the party to be bound.

APPLICABLE LAW:

The foregoing Statement of General Terms, Conditions, and Warranties, and the validity, interpretation, and enforcement hereof, will be governed by the substantive laws of the Province of Ontario. No action, regardless of form, arising out of transactions relating to this contract, may be brought by either party more than two (2) years after the cause of action has accrued. The Convention for the International Sales of Goods shall not apply to this Agreement