Carbon footprinting – a farmer's perspective

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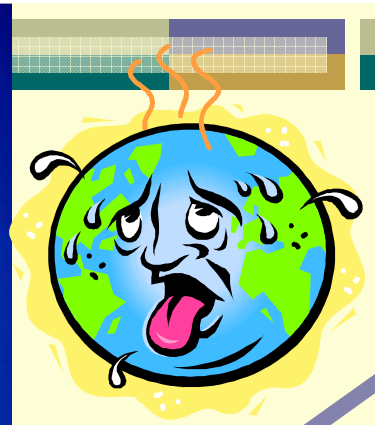
The Farm

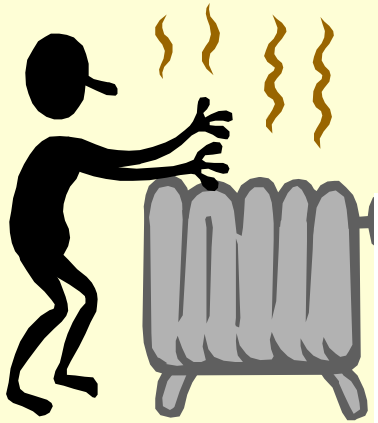
Aims

- Reduce energy consumption per unit of food produced
- Access new techniques
  - Plant High Sugar Grass varieties
  - 6 years carbon footprinting with discussion group
  - CALM Calculator
  - ERM Tesco exercise
- Early adoption of proven new technology
  - Solar OMSCo Demo Farm
  - PhotoVoltaic 4kWh system
  - Heat Recovery

How We Do It?

- Lower input farming
- Extended grazing, animals to suit
- Self loading forage wagon (10 litres/t)
- Soil aeration
- Water re-cycling
  - Plate-cooler
  - Roof-harvesting
- Off-peak electricity grain rolling





Varivac

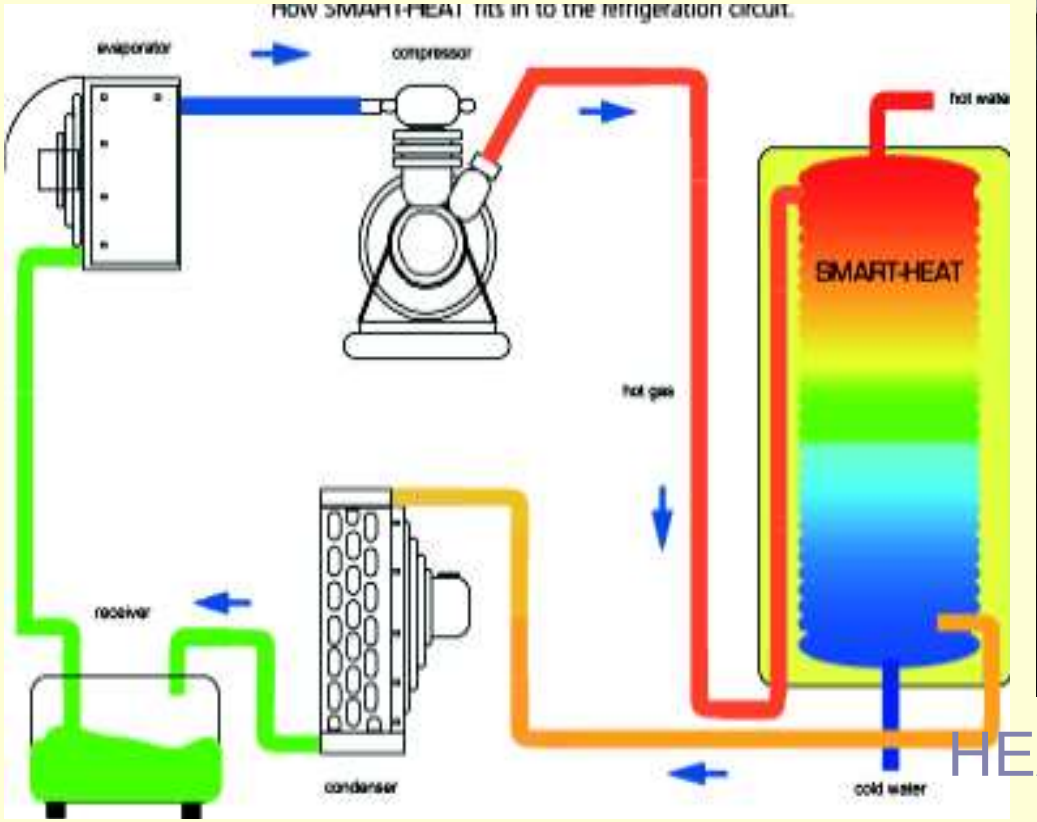
H E A T recovery farming system

Ensure capture sun’s energy

Allow maximum grass growth

Trial with saving 10% electricity Y.O.Y

Solar Energy + Heat Recovery



HEAT FROM MILK 35+degrees

Milk Production Carbon Foot Print Summary

652 gms (2007)

850 gms (2008)

755 gms (2009)

CO_2/litre FCM 4%

6.4 tonnes/hectare CO_{2e}(2010)

- NZ figures suggest 900 as UK av.
- Lower figures on organic farms
- Relates to profit

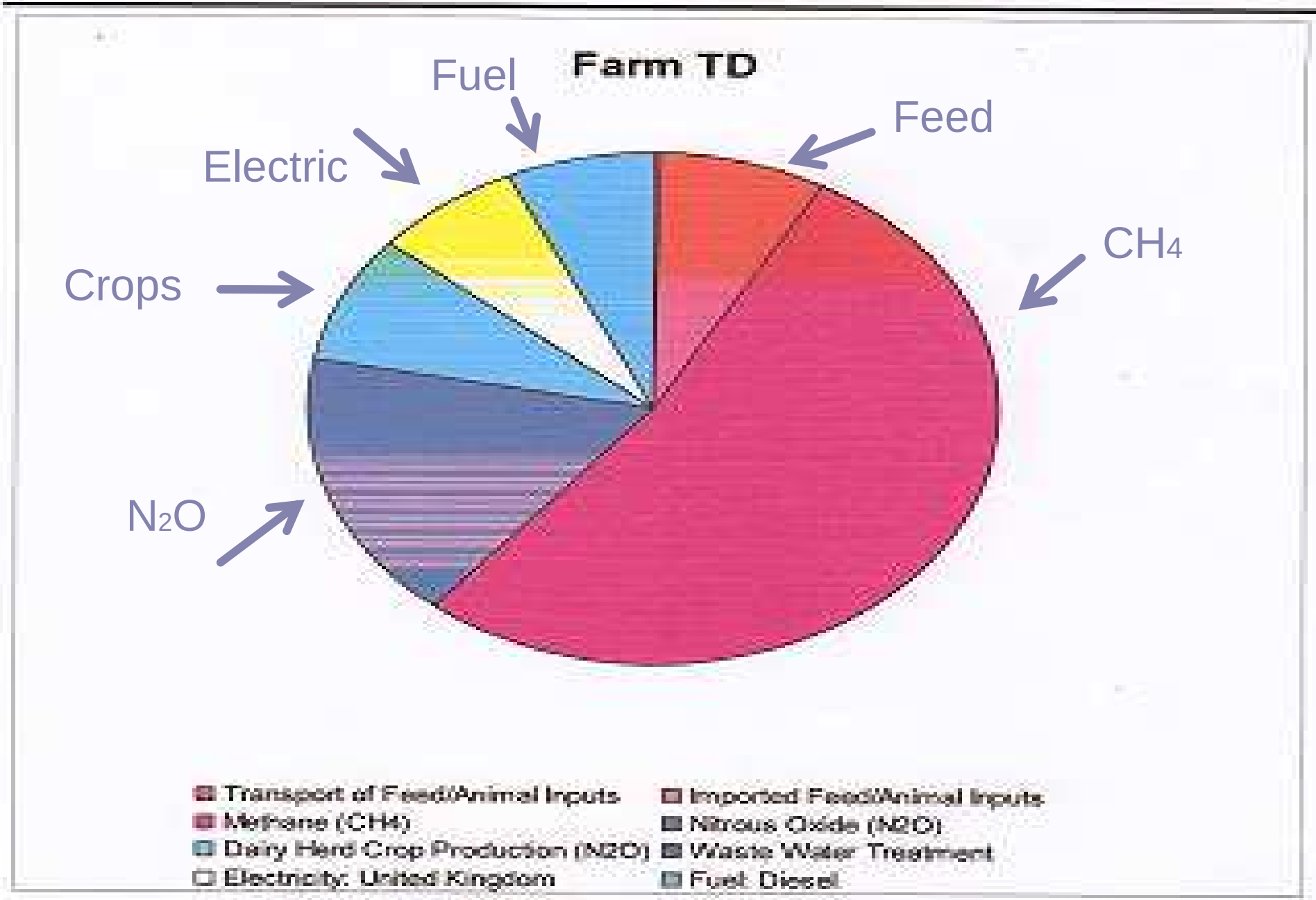
Detailed Results: Farm TD

The relative contribution of different sources to the carbon footprint (per pint of unprocessed milk) for Farm TD is presented in *Table* 4.2 and *Figure* 4.7.

Farm TD: Breakdown of Carbon Footprint by Source

Source	% Contribution to Footprint	Footprint per pint of unprocessed milk	Unit
Transport of Feed/ Animal Inputs	0.3%	0.001	kg CO_2e
Imported Feed/ Animal Inputs	7.7%	0.036	Kg CO_2e
Methane (CH_4)	52.9%	0.244	Kg CO_2e
Nitrous Oxide (N_2O)	17.2%	0.079	kg CO_2e
Dairy Herd Crop Production (N_2O)	7.9%	0.037	kg CO_2e
Waste Water Treatment	0.1%	0.000	kg CO_2e
Electricity: United Kingdom	6.8%	0.031	kg CO_2e
Fuel: Diesel	7.1%	0.033	kg CO_2e
Total Footprint	**100%**	0.462	kg CO_2e

Farm TD: % Breakdown of Carbon Footprint by Source



Key areas for profit and reducing footprint

- Original simple system with Stargrazers
- ERM Tesco with OMSCo (PAS 2050)
- CALM Calculator
- Longevity, replacement rate, milk yield, concentrate use, manure systems, animal health, calving index/fertility, feeding system

US Study (Conv. Holsteins v Organic Grazing)

- Live 1.5 to two years longer,
- Milk through 4 or 4.5 lactations, in contrast to < 2
- Milk through shorter lactations averaging 313 to 337 days, instead of 410 days,
- Lose only 10% to 16% of successful conceptions as a result of embryonic loss or spontaneous abortions, compared to 27%, and
- Require just 1.8 to 2.3 breeding attempts per calf carried to term, compared to 3.5 attempts

Optimisation of output more important

Capture heat energy?

Self loading forage wagon

Energy research project 2

energy research programme

So what's it all about?

Originally started in the 1980's, the Energy Research Programme, or as it was known previously, the Load Research Programme was a way of sampling energy usage at sites with low demand, and to prevent every household needing to install expensive half hourly meters. This programme is essential not only to the Electricity Industry but to you as energy users, as it creates a picture of energy usage across the UK, enabling accurate amounts of energy to be generated meeting, the national demand.

Energy Research Programme?

As a volunteer in this sample the information we collect from you will help us plan tomorrow's energy needs today. And that's not all, reducing energy and safeguarding the environment has never been as important as it is in the present day. More accurate energy information can lead to even more precise power generation leading to the prospect of cheaper energy bills and reduced environmental impacts. Just by taking part you can help reduce the carbon footprint on our world and feel good knowing that you're helping to conserve it for our future generations.

And all of this doesn't just stop in the home. Businesses can benefit too – not only can your business benefit from the prospect of cheaper energy bills and reduced environmental impacts but also by being acknowledged as a business who takes a serious approach to its corporate social responsibility. By taking part you can start leading a greener way of thinking for other businesses and even qualify for environmental recognition.

Welcome to the Energy Research Programme

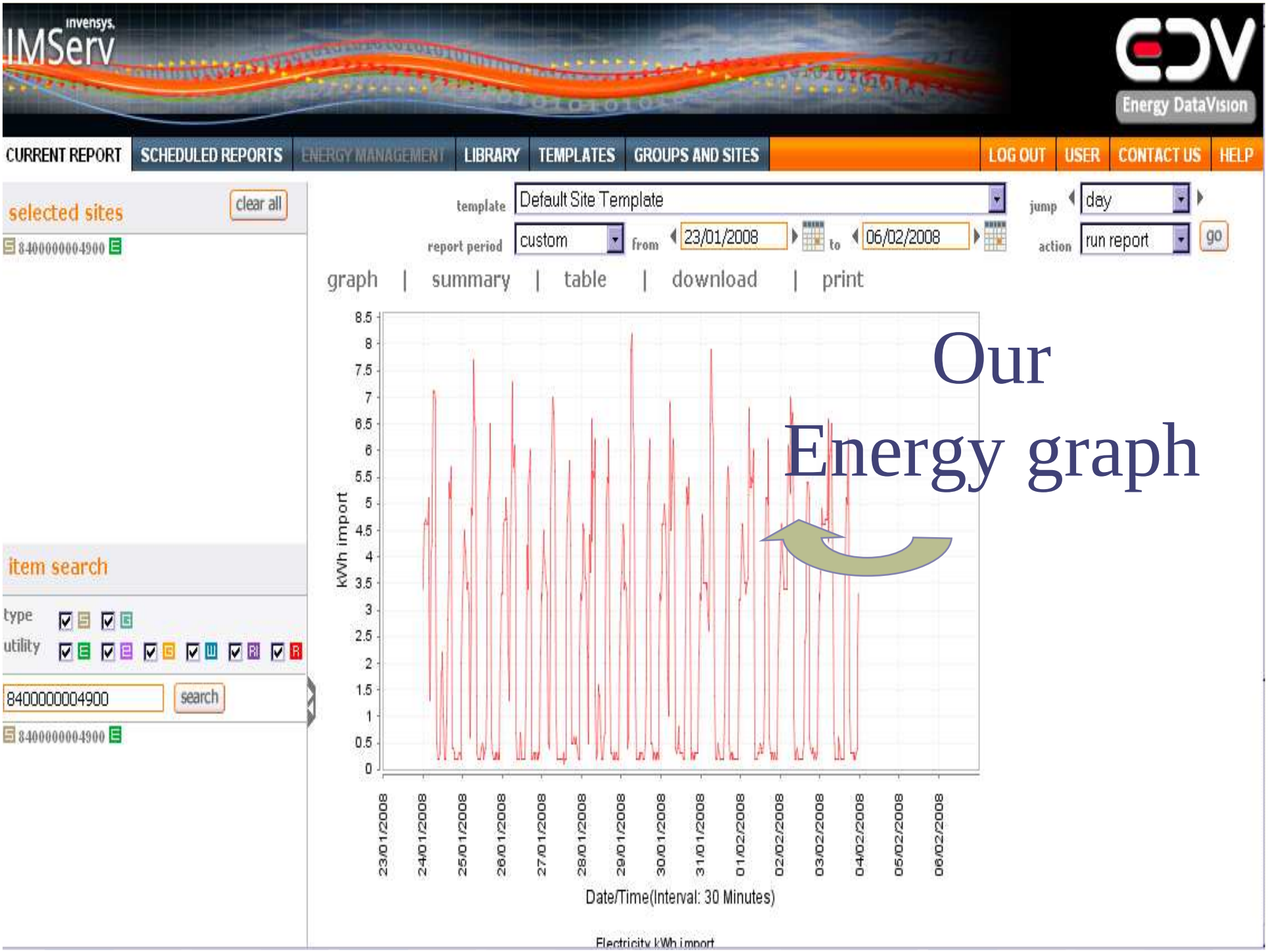
Who can take part?

Domestic consumers plus small and medium-sized businesses can all take part in the sample – to get the best results we want to get a good cross-section of the population.

So what exactly is being installed?

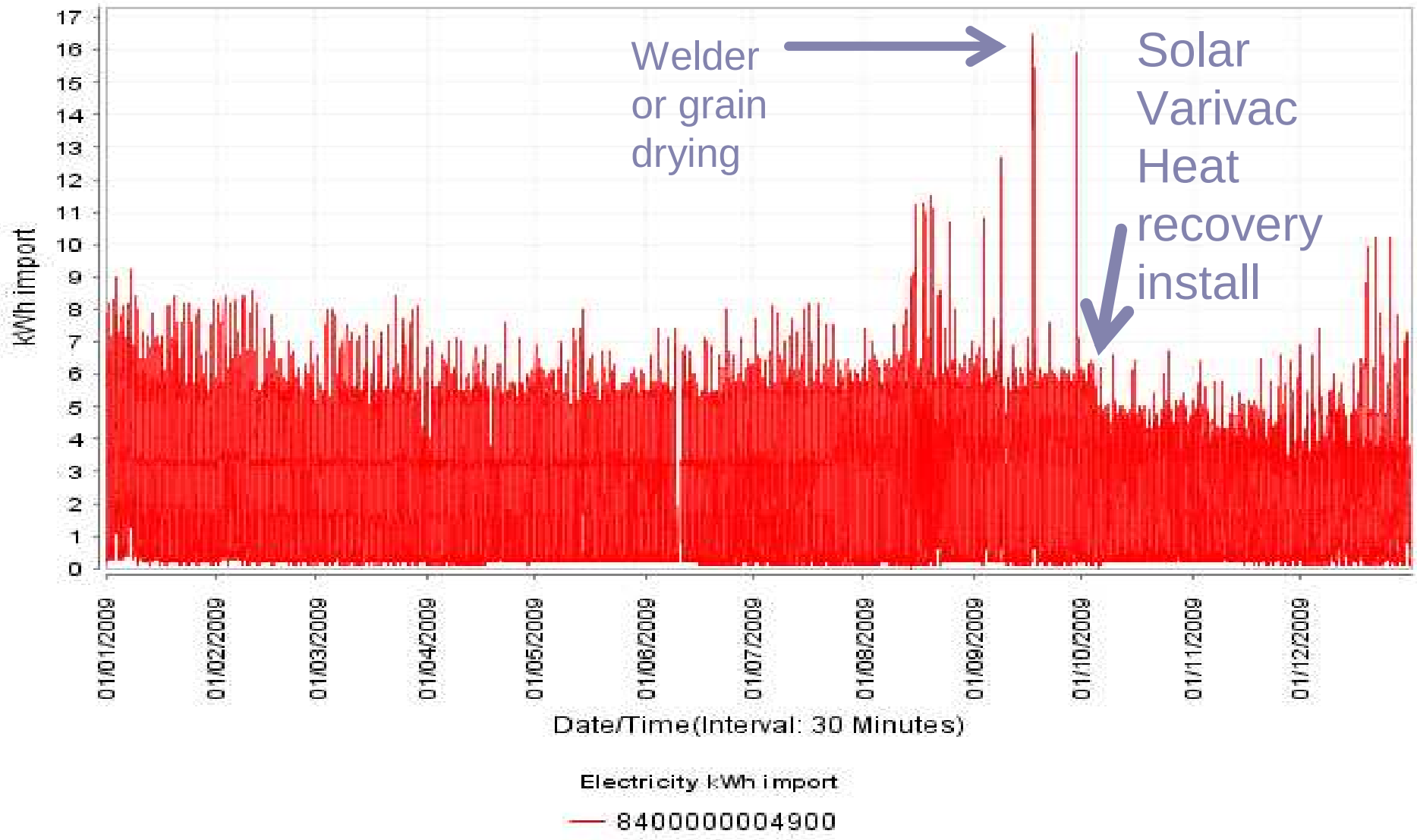
Technological advances have brought us a new type of metering, you may have heard it being called SMART metering, which provides even more accurate readings. This compact metering is so fast and reliable it's already being used in large industrial sites.

Installing the equipment is quick and easy. Once it is installed you can literally forget it's there. The energy data is simply recorded every half hour and automatically, using the latest technology, sent back to us. You don't need to do a thing. It's that simple!



Our Energy graph

Latest Smart meter data



Summary

- Carbon footprint know it
- Learn more about our electricity demands and ways to reduce use
- Use grass to turn sun’s energy into feed then milk
- Match tractor hp to machinery
- Use High sugar grasses to balance available N and Energy
- Target 10% reduction in electricity use
- Chinese proverb “Man who keep feet firmly on the ground have trouble putting on their pants”

FARMING FUTURES

FARM CARBON

Helping farmers get on track to a lower carbon future

FARM WALK

- Event on turning science into practice
- Date Wednesday 9th Feb
- Venue: The Farm Longnor
- Hog roast


Positive proof of global warming.
18th Century
1900
1950
1970
1980
1990