



<https://youtu.be/zBb1lIFx9Z8>

The NEW Energy Efficient Chicken Farm

SmartConsult's Sustainable Energy Solution for a Broiler Chicken Farm in Langhorne Creek S.A. Designed to reduce the power usage by 66% PA.

Executive Summary

A Major Grower in Langhorne Creeks grows broiler chickens for Ingham's Chickens. Energy costs are a significant input cost of broiler farm production at the Siddall 12 shed site with power kWh reduced by 36% per annum and overall peak demand reduced by 42%. The Power Factor Correction system alone will reduce demand by approximately 18%.

The innovative energy efficient design includes re-integration of the original split switchboard, installation of a 200 kVar Power Factor Correction system, 200 kW of solar and integration with the already installed generators to limit KVA usage to a max peak 200 KVA over the year.

Client Overview

This Grower has several sites in both South Australia and NSW, growing chickens for Ingham's Chickens. This site was built 4 years ago to a standard 12 shed design with a split switchboard one for each set of 6 sheds. The switchboard had a central main switch to isolate the power from the mains with 2 x 191kW Welling's and Crossley diesel generators, one for each 6 sheds as backup.

The Grower is committed to both sustainable farming enabling it to maximise profitability over the long term.

Site Location:
Langhorne Creek S.A.
 200 kW Solar, Power Factor Correction, Generator Controls and Integration.

Business Drivers

The Major Grower is committed to reducing the environmental impact of its operations and promoting the importance of environmental sustainability as a permanent and accountable part of working life across its production facilities.

System Installation Outcomes

- Reduction of overall energy costs by 66% or approximately \$100,00 PA.
- Reduction in peak demand from 350 KVA to 200 kVA
- 36% reduction in kWh usage
- Correct Power Factor from .8 to .99
- Allow use of 1 generator only during power outages.
- Auto balancing of generator hourly usage over time.
- Synchronous use of solar & diesel generators during power outages.
- Synchronous use of solar, diesel generators and grid to shave kVA peaks.
- Comprehensive remote monitoring facilities for all critical components.

Project Principal
SmartConsult
 See our YouTube video link above

Technical Overview

Using a BrainChild Solar & Load Controller to manage three ComAp controllers for the, Mains plus Generator 1 & 2.



Together with a 200 kVar ABB Power Factor Correction unit.



The Power Factor Correction unit is configured with 2 x 25 + 3 x 50 kVar modules.

The Solution

Revised Switchboard Layout



Switch Room Installation



East West Solar Configuration 200kW Solar



Fronius 20 kW Inverters x 8



Summary

The site is a typical broiler chicken farm setup, demonstrating that with clever use of technology, you can cap the ongoing energy costs and reduce the monthly peak demand to a fixed maximum from the grid. New chicken shed developments can now be constructed requiring a smaller capacity grid transformer saving tens of thousands of dollars in potential grid connection costs. This opens the possibility of building sheds where the power supply is poor and cannot be expanded due to location.

This smart technology combination if designed and constructed in a new built site will pay for itself in less than 3-4 years.

Project Principal

Controls & Switchboard

Solar & PFC Installation



About SmartConsult

SmartConsult are energy consultants for large, medium and small businesses working to deliver best of breed solutions for their customers ongoing energy requirements. Our specialty is complex tailor-made solutions for SMEs, agribusinesses, embedded networks and property developers.

Energy costs are now a substantial part of any company's operating budget. Allow energy specialists SmartConsult to mitigate and hedge your energy costs with the introduction of smart technology, energy reduction solutions and electricity procurement.

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