

Irrigators Energy Savers Program

targets significant energy savings for a
Central Queensland horticulture farm

PROPOSED SOLUTION 

Potential energy savings 

Key facts

Farm / Industry

Horticulture (hydroponics and orchards)

Product

Tomatoes, figs and avocados

Location

Bundaberg

Irrigation

Drip and micro irrigation

Pumps

Centrifugal

Solution

Proposed:
Filter and pipework modification

Farm profile

The farm, located south of Bundaberg, comprises a number of greenhouses for hydroponic tomato production as well as orchards growing fig and avocado trees. Farm areas are served by pumping stations that are generally located adjacent to each lot.

The greenhouses and orchards are irrigated regularly all year round via micro sprinklers and drip irrigation. In consultation with the farmer, the audit investigation focused on one selected pump station only.

Current irrigation

The audit investigation selected the following irrigation system for review:

- One 11kW centrifugal pump fitted with a filter that supplies water from an irrigation channel to a network of micro sprinklers in the surrounding avocado orchards.

Action

An energy audit for the pumping system evaluated:

- modifying the pipework
- upgrading the filter.

Results

Of the energy-saving opportunities evaluated, one initiative was identified for the centrifugal pump with savings of 12% and a payback period of 4.8 years (approx).

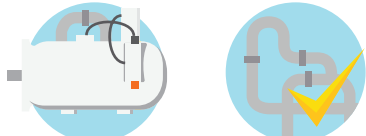
Upgrading the existing filter and simplification of the pipework would save approximately 50kPa in head losses and reduce energy consumption by 12%.

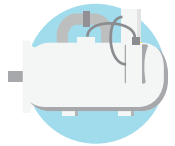
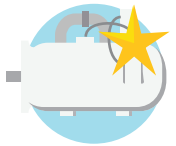

The Irrigators Energy Savers Program is funded by the Queensland Department of Agriculture and Fisheries



Recommendations

The energy audit recommendations are summarised below:

Solution	 Filter and pipework modifications
Est. energy savings (kWh/annum)	1,673
Est. operating cost saving	\$418
Est. cost to implement	\$2,000
Payback period (years)	4.8
Est. demand reduction (kW)	11
Est. energy savings	12%

Forecast savings in pump operating costs	 Existing system	 Upgraded system	 Reduction in operating costs
Annual pump operating cost	\$3,636	\$3,218	-
Cost to implement	-	\$2,000	-
Operating costs for first 5 years	\$18,180	\$18,090	\$90
Annual pump operating cost for years 6 to 10	\$3,636	\$3,218	\$418
Total pumping costs for 10 years	\$36,360	\$34,180	\$2,180

Farmer feedback

The farm owner has not yet started implementation of the audit recommendation due to current farm expansion and planning associated with the construction of a new water storage dam. However, there are plans to implement the recommendation following construction of the dam, due for completion in mid-2017.