



BATTERY STORAGE FOR

Agriculture on stored sun.

A rural feeder trips when the farm can least afford it, and Ruraflex pays well for storage only three months a year. AMPROTEQ puts solar on the battery's own DC bus, so the sun pays the evening peak all year, and the critical loads run on when the line goes down.

THE SYSTEM

APEX battery
HELIOS solar
PULSE transfer
Solaris™ EMS

7.40 R/kWh

HIGH-SEASON PEAK
Ruraflex ≤ 22 kV, 2026/27, ex VAT

2.5×

OFF-SEASON SPREAD
Sep–May; 6× in winter

≤ 10 ms

TRANSFER ON A TRIP
PULSE P500 / P1000

1 503 kWh/kWp

SOLAR A YEAR, TZANEEN
PVGIS, 24° tilt, after losses

CHEMISTRY

Liquid-cooled LFP · ≥ 88 % RTE

CONNECTION

400 V AC · onto your LV board

SA GRID CODE · PCS MODULE

NRS 097-2-1

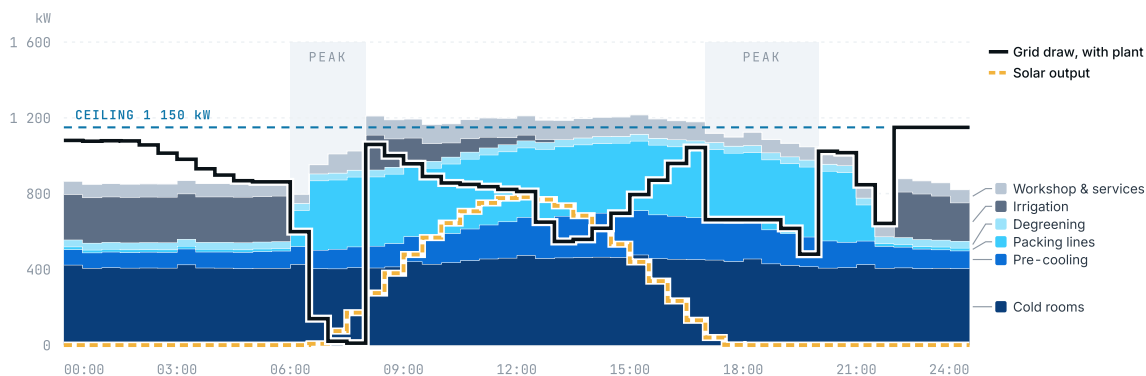
02 · WHERE THE MONEY IS

Winter pays the peak. The sun pays the rest.

On Ruraflex a June-to-August peak kilowatt-hour costs six times an off-peak one. From September to May the gap is 2.5 times, thin for storage on its own. Midday sun, stored for the evening, closes it.

FIG 02-1 · AVERAGE HIGH-SEASON WEEKDAY, CITRUS PACK-HOUSE

MODELLED · KW



The case-study pack-house. The black line is grid draw with one APEX A2000 and a 600 kWp HELIOS array: near zero through both peak windows, under the 1 150 kW ceiling all day and refilled off-peak. The dashed gold line is all the solar on site, roof and ground.

RURAFLEX 2026/27 · ≤ 22 KV

C/KWH EX VAT

High-season peak		740 c
High-season standard		185 c
Off-peak, all year		123 c
Low-season peak		307 c
Low-season standard		173 c

Active energy, transmission zone 1. Landrate, the flat rural tariff for smaller supplies, has no peak at all: there the battery earns on outages and on stored sun.

WHO IT IS FOR

RURAFLEX AND LANDRATE

OPERATION	WHAT DRIVES THE BILL	BATTERY ROLE
Pack-houses	Cold rooms in the winter peak	PEAK SHIFTING
Dairies	Milk cooling in both peaks	PEAK SHIFTING
Poultry houses	Fans that cannot stop	RIDE-THROUGH
Grain drying	Weeks of heavy fan load	DEMAND CEILING
Irrigation	Long runs, mostly off-peak	SUN BY DAY
Landrate supplies	Flat rate, no peak	SUN AND OUTAGES

FIVE JOBS, ONE BATTERY

SOLARIS RUNS THEM AGAINST ONE STATE OF CHARGE



01

Solar into storage

HELIOS puts a new array straight onto the battery, so midday sun pays the evening peak, all year.



02

Peak shifting

Charges on sun and off-peak power, then carries the farm through both peak windows.



03

Ride-through

PULSE moves the critical board onto the battery in half a cycle when the feeder trips.



04

Demand ceiling

Holds the half-hour draw under a set limit through harvest, so the notified demand can come down.



05

Genset last

Battery and sun carry the outage first; the genset starts only when they run low.

WHAT IT DOES FOR THE MODELLED PACK-HOUSE

FROM THE AGRICULTURE CASE STUDY

3.5 R m

GROSS SAVING, YEAR ONE
At FY2027/28 prices

53 %

ENERGY SAVING FROM SUN
902 MWh a year through HELIOS

75 %

LESS ENERGY BOUGHT IN PEAK
514 MWh a year moved out

<5 years

SIMPLE PAYBACK
On an indicative turnkey cost

03 · THE SYSTEM

Low voltage, on your own board.

One container on the farm's critical board, a solar converter beside it and a transfer cabinet in front of it. Solaris™ EMS runs all three, under one point of responsibility.

BATTERY · APEX

A2000

Battery, PCS, cooling and fire protection in one 20 ft high-cube, delivering 400 V straight onto the LV board.

ENERGY	2 088 kWh · 8 strings
POWER	1 000 kW · 1 100 max
OUTPUT	400 V, 3W + PE
THERMAL	Liquid · ≤ 3 °C cell spread
ENCLOSURE	IP54 · -25 ... +60 °C

SOLAR · HELIOS

H500

PV strings straight onto the battery's DC bus, one conversion, no PV inverter. Sold only with an APEX A1000 or A2000.

POWER	500 kW DC bus
MPPT	10 channels · 160 A each
BATTERY PORT	600 – 950 V DC
STAGES	1 · DC/DC, no AC leg
ENCLOSURE	IP55 outdoor · IP21 indoor

TRANSFER · PULSE

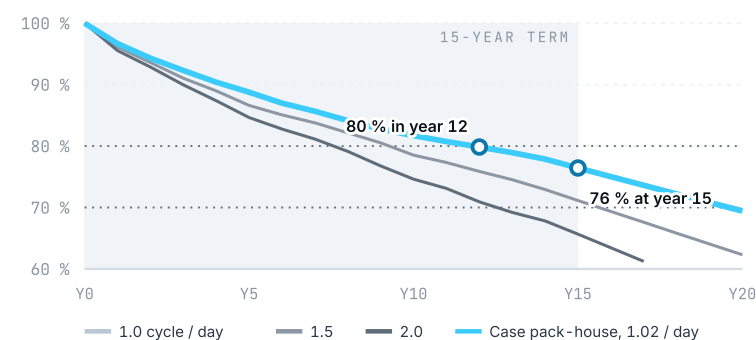
P1000

Grid and genset ahead of a thyristor switch; the critical bus, the battery and up to 2 MW of solar behind it.

POWER	1 000 kW · 1 100 max
TRANSFER	≤ 10 ms, half a cycle
BUS	400 V, 3W + N + PE
MODES	Grid · island · genset · bypass
ENCLOSURE	IP55 · -35 ... +50 °C

FIG 03-1 · CAPACITY RETENTION, MEASURED

% OF DAY ONE



The cell maker's tabulated 20-year test set at 90 % depth, by cycles a day. The cyan line is the case pack-house's duty.

AGEING YOU CAN BANK ON

APEX DATASHEET

≈ 7 000

FULL CYCLES

To 70 % state of health at one cycle a day and 98 % depth. Measured on the cell, not assumed.

76 %

HEALTH AT YEAR 15

At the case pack-house's duty of 1.02 cycles a day and 90 % depth. No augmentation in the term.

≥ 88 %

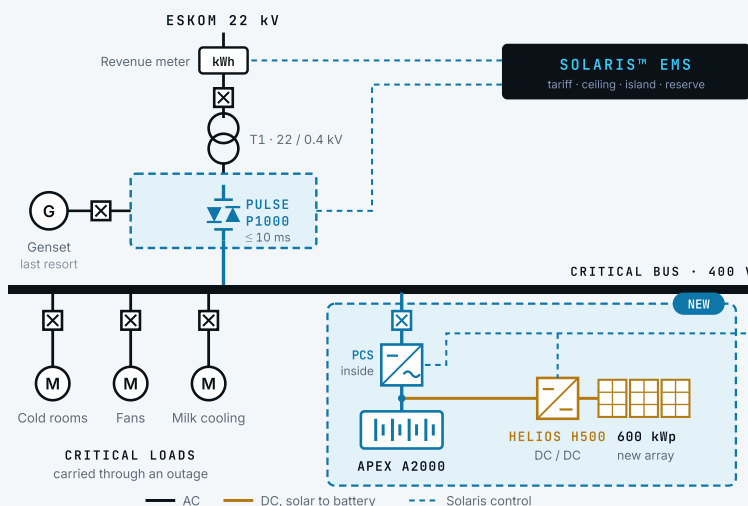
ROUND TRIP

AC to AC, through the PCS. 94 % DC at the battery, beginning of life.

Solaris keeps 400 kWh in the battery at all times for the critical loads. It is never spent on the tariff.

FEEDER DOWN? THE FARM RUNS AS ITS OWN ISLAND.

PULSE · A2000 · HELIOS ON THE CRITICAL BUS



The critical loads never see the trip

PULSE opens in half a cycle and the A2000 takes the voltage. Cold rooms, poultry fans and milk cooling run on.

Sun keeps charging off-grid

HELIOS sits on the battery's DC bus, so the array keeps charging while the farm runs on its own.

Genset last, at a good load

Solaris starts it only when the battery runs low. In the case study its hours fall from 64 to 14 a year.

Back in phase

When Eskom returns, the PCS steers the island onto the grid; PULSE closes when both sides match.

04 · THE RETURN

An asset that pays for itself in less than five years.

<5 years

SIMPLE PAYBACK

on an indicative turnkey cost

30 %

PROJECT IRR, 15 YEARS

after O&M, no augmentation

5.9 ×

THE INVESTMENT, RETURNED

net cash over the term

THREE WAYS TO BUY

Purchase · MOST FARMS

Turnkey supply, install and commissioning. You own the plant; we run it under a 15-year O&M and availability agreement.

Service agreement

We own and run the plant for a fixed monthly fee, for operations that keep storage off the balance sheet.

Phased

Start with the critical board and the array; add a second A2000 when the next season's plan allows.

LOAD STUDY TO POWER IN 26 WEEKS · ORDER IN THE SUMMER, LIVE FOR THE HARVEST



WEEK 1

Load study

your data, our model



WEEK 5

Proposal

sizing, price, terms



WEEK 10

Studies and order

Eskom application, protection



WEEK 20

On site

slab, array, cable



WEEK 26

Power

live for the harvest

YOUR NEXT STEP

A free load study for your farm, in five working days.

Send twelve months of half-hour data or bills, your tariff, your NMD, your genset hours and your solar yield if you have a roof array. You get the sizing, the dispatch, the bill before and after, and the payback.

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