



## The Challenge

Grid connection or grid independence? Today, as new residential areas develop outside the existing national grid network it is an important question to ask. The owner of this private residence, comprising four buildings for both residential and industrial use, choose energy independence over a costly grid connection.



Rubicon

One of the main challenges for this off-grid system was the location of its solar array. The area with maximal solar radiation was located 60 meters from the buildings with the power-electronics.

## Why Studer

The **VarioString** high-voltage MPPT solar charge controller that provides balance of system advantages not available from any other suppliers.

The **Xtender** inverter/charger with a surge capacity that can handle three times its nominal power which is a great benefit in systems that has to cope with the start-up of large water pumps. No other device on the market in South Africa has this kind of capacity.

## System components

<b>Inverter/Chargers:</b>	9 x STUDER XTH 8000-48
<b>Solar charge controllers:</b>	12 x VarioString VS-120
<b>Batteries:</b>	GEL – 8000 Ah 48V battery bank
<b>Solar moduls:</b>	Bluesun Solar 84kWp solar array
<b>Raking:</b>	Ground Mount solar
<b>Remote communication:</b>	Xcom-LAN remote control
<b>Other:</b>	50 kVA back-up generator automatic start integrated

## The Solution

The residence is situated in the Cradle of Humankind north-west of Johannesburg, a known anthropological site where 40% of the worlds discovered human ancestor fossils have been found. This off-grid system has an 84 kW solar array, 72 kVA power-electronics, a large battery bank for extended autonomy and a 50kVA generator for back-up. It supplies independent power to four buildings and several pumps for water supply. The generator is used for energy backup and has been automatically programmed to start at a certain state of charge (SOC) level. The long distance between PV panels and power-electronics could have become costly for this off-grid system. By using VarioString MPPT solar charge controllers with high input PV voltage it was possible to use small diameter cables with low voltage drop providing an effective and economical solution. The PV panels was mounted on high frames providing a well appreciated shaded parking underneath for the offices.

## Project outcome

Choosing an independent energy solution has created a big change in energy consumption. Since its installation this robust and reliable system has made it possible to minimize the use of the generator resulting in massive diesel savings. The generator has only been used in case of emergencies or to charge the battery bank.

## The Company

Rubicon is South Africa's largest supplier of top quality complete solar energy solutions. The company sells solar panels, power electronics and all balance of system components.

## For more information please contact:

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