HY-LINE into the future with confidence

ALTERNATIVE ENERGY SOLUTIONS HELP AVERT DOWNTIME AT HY-LINE INTERNATIONAL'S MANUFACTURING FACILITY IN SOUTH AFRICA.

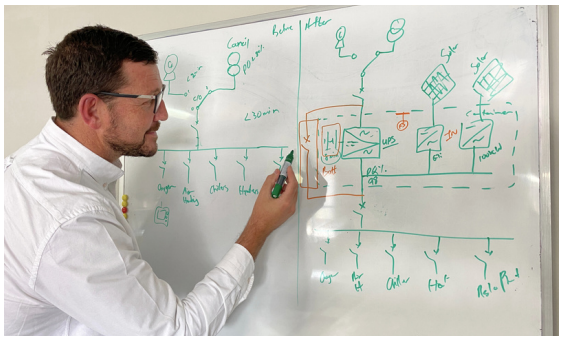
Free State– The pressure on South Africa's power grid is very much a reality, and during the constant varying load shedding schedules, many businesses who are dependent on a consistent power supply are adversely impacted and must bear the burden of massive financial losses when interruptions in power supply occur. The highly skilled Energy Gurus team, brought their extensive engineering expertise to the Hy-Line manufacturing plant in Parys to assist and provide solutions that had to be customised to the company's unique energy requirements to avoid any further downtime and losses at their plant.

The Energy Gurus were approached to tender for this project due to the complexities and stringent engineering requirements it presented. The team was the only firm to present an energy solution which included a containerised system. The engineered design and attention to detail warranted them a suitable fit to ensure that the plant's intricate energy specifications were met.

Hy-Line

Hy-Line is a chicken breeding farm selling poultry ranging from just one day old. The business is uniquely positioned, and through its research and development pillar of the organisation utilising the world's most extensive gene pools, including scientific and statistical methods, are able to produce poultry with high quality genetic breakthroughs.

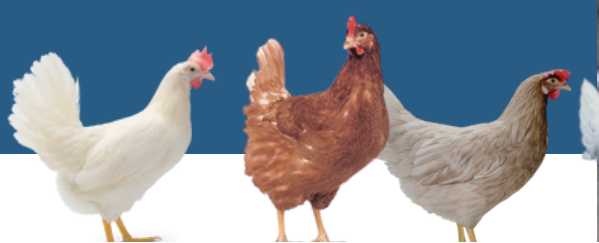
"The main concern for the plant in Parys was the downtime it was experiencing when load shedding kicked in and there was an interrupted supply of power to the plant. This meant that after 30 minutes we would sadly lose approximately 2.5 million chickens as continual power supply is a fundamental part of production. The plant requires a consistent electricity supply for oxygen and water, as well as keeping the air feeding stations operational. Although, the plant has a diesel generator, we still faced challenges as, when switched on, the generator caused a two-minute delay. During that time, the team needs to manually re-set the control systems, the air-conditioning system, the oxygen feeders and the instruments that measure and control the oxygen levels. As this is an integral part of our operations, load shedding was having a significantly negative impact on the financial sustainability of the organisation. We are extremely grateful to have met with The Energy Gurus team, who demonstrated that they are able to customise a solution to an organisation's unique energy needs. With our new system in place, the plant is no longer affected by interrupted power supply even during load shedding." said Martin Joubert, Head of Facilities at Hy-Line.



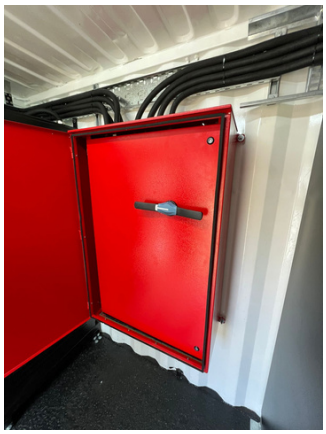
Some of the other challenges that Hy-Line experienced was a delay in the readiness of the chickens for the market, and that the company bought electricity from the municipality in Parys. The company paid excessive amounts for electricity which was sold at high tariff rates and Hy-Line not only wanted to reduce their extremely high utility bill, but they wanted to pursue a viable option whereby they could reduce their reliance on the power supply from the power grid and help prevent downtime at the plant. The plant in Parys is operational 24 hours a day and the option of alternate power solutions was a necessity for the organisation.

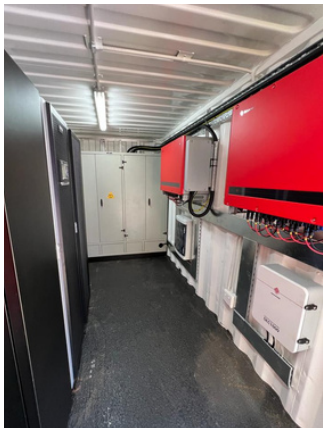
Alexis Barwise, head engineer of the project, designs the single line diagram showing the UPS / Solar power distribution (left).

The Energy Gurus team that worked on this project (right) .







Hy-Line were unsure that the installation of a UPS would be an option as they did not think that it could be built to the scale that they needed in order to provide power to the entire facility. When there are interruptions in the power supply, the reprogramming of the sensor required an enormous amount of man power, and the downside was that the plant had to run off the generator which then substantially increased diesel costs.

The Hy-Line team had an additional requirement for the project, and The Energy Gurus had to adapt the design processes to be able to meet this requirement. The installation process had to be completed in under 30 minutes to ensure the plant remained operational. This was the first project executed within such a stringent timeline, and it was a huge risk.

The Energy Gurus opted for a containerised solution which meant that this container had to firstly be built off-site and then once completed, the unit had to be delivered in Parys for the planned installation where a group of 18 diverse and knowledgeable individuals were on-site for the installation processes. Conceptually this would mean that the process would be as straight forward as disconnecting the plant's cables and connecting the cables from the container. The completed container unit comprised of **two 100kW GoodWe inverters**, a **400kW Eaton UPS**, a **Gem Switch Gear electrical board** and **80 x 100Ah batteries** for the UPS.

Under pressure and through expertise and skill, The Energy Gurus team managed to successfully complete the integration process within the 30 minute deadline before the plant took on any losses.

When we met with the team from Hy-Line, the original load profiling assessment had already been completed. We as a team had to apply our minds, based on the challenges that the company was facing, and to provide solutions that provided an uninterrupted supply of power especially during load shedding. Based on our assessment, we proposed an Uninterrupted Power Solution (UPS) instead of a hybrid solar system. The reasoning for the proposed solution was that the UPS takes power through to the AC, rectifies to the batteries of the DC, and then from the DC it inverts to the AC, and what this means is that power is fed through the battery all the time and then it discharges to the load. The amazing part of this process is that the power is purified into pure energy and thus resulting in a very good quality of power. When one looks at the hybrid inverter on the other hand, this does not achieve the same result especially when it relates to sensitive equipment that requires a very pure source of power, and hence the UPS idea worked the best." said Alexis Barwise Managing Director, The Energy Gurus

Hy-Line facilities manager, Martin Joubert, cuts the ribbon to his new PV plant. with Alexis Barwise (left) and JP Liebenberg (right) .

Solar is very much dependent on warmer weather conditions to be able to provide an ongoing supply of power. In cases where there is a lack of sunny weather for a period (e.g a week) and solar power is not an option, Hy-Line still has the option of making use of power supply from the local municipality as well as their on-site generator. Despite this possible scenario, Hy-Line is still in a favourable position as the installed UPS will provide power to the plant and when the generator needs to take over the load capacity, there is no interruption of power supply to the plant because power is always generated through the UPS.

Due to the customised container with items such as batteries, a UPS, and inverters with DC power, The Energy Gurus team had to take into consideration the risk of the possibility of a fire breaking out within the container. The risk to the Hy-Line plant was two-fold should a fire occur, and it firstly posed a safety threat to employees, and secondly the interruption of power supply to the plant.

"Our team identified the risk, and a fire detection/fire suppression system was built within the container. The team also fitted a very big air conditioning system and this ensured that the heat emitted by the UPS and inverters was extracted at the back of the container. This project was a good test of our theoretical and practical knowledge as well as our ability to think out of the box to create efficient solutions. The issue of the fire was a concern by the Hy-Line team, and we put their fears to rest by putting solid safety measures in place. In the unlikely case whereby the batteries in the container catch on fire, we have built a box outside the container where there is a bypass switch built through a wrap-around system. The entire container would power down and power will be generated via the outside box. This was a challenging yet very interesting project, and the team took the challenge in their stride and succeeded in installing a safe, effective, and efficient solution. The project took approximately six weeks to complete, four weeks for the commission of the container, and the installation and commissioning on site took 10 days. A total of 390 x Trina 550W panels were installed with 2 GoodWe inverters and integrated with both the UPS and generator." said Adriaan Ballack, Project Manager, The Energy Gurus.

The Energy Gurus

With over 10 years industry experience, The Energy Gurus are one of South Africa's leading engineering firms in the commercial, industrial, agricultural and residential energy sectors.The Energy Gurus directs their focus on the individual and unique requirements of each client, building bespoke, cost efficient and sustainable energy profiles.
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