Case Study: String Fault Detection & Increased Energy Yield with Tigo Retrofitting

A Santo Domingo company retrofits its solar system and becomes Tigo's largest project in the Caribbean and Dominican Republic's first optimized, NEC 2017 compliant with Rapid Shutdown, retrofitted solar system.

Location:	Santo Domingo, Dominican Republic
System Size:	132.4kW, Commercial
Tigo Products:	420 TS4-R-O's (Optimization)
Modules:	63 Hyundai 345W (new) 357 Hyundai 310W (original)
Inverter:	2 SMA STP 60-US-10
Commissioning:	1 Year before Tigo Retrofit
Installer:	ENCOS – Caribbean Distributor

A rooftop view of the 132.4kW PV system with 420 retrofitted modules in Dominican Republic.

Summary

Materiales Industriales installed a 110.67kW commercial PV system on its roof with 357 units of 310W dumb modules. A year after commissioning, Materiales sought more energy generation and installed 63 units of 345W modules, upgrading the system power to 132.41kW. ENCOS then recommended Tigo's TS4-R-O's (Optimization) be retrofitted on all 420 modules to compensate for the mismatched module wattage and roof shading.

The Challenge

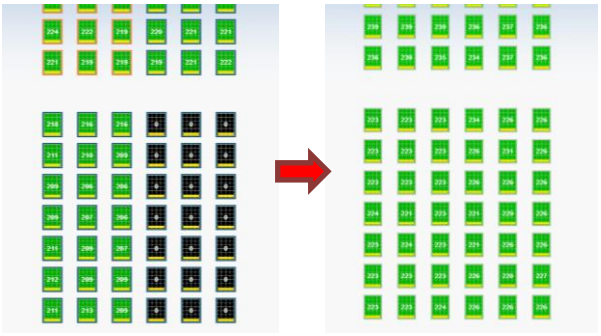
First, Materiales wanted a precise string- and module-level monitoring solution because mismatch was evident and only 1 MPPT was available for the 20 strings. Second, 4 strings were shaded for 4 hours a day: 2 hours in the morning and 2 more in the afternoon. Third, the newer 63 345W modules were operating as 310W modules instead of at their peak power.

Tigo TS4-R-O units are installed on the back of each module for shade and mismatch mitigation.

The Solution

With Tigo's retrofit solution, the system is now generating an additional **516.02 kWh/month**. The system has delivered an additional **3.31%** energy per month due to optimization and a **1.69% yield increase** by optimizing the newly added modules' full generation capacities. Overall, Materiales expects to save an estimated **$3,028 USD a year**! Additionally, the system is now **NEC 2017 compliant with Rapid Shutdown.**

Thanks to Tigo's monitoring, a string fault that caused the system to generate **5% less energy** was detected immediately. (This fault could have caused an estimated **$1,674 USD in losses in 1 year**!) Tigo alerted Materiales of the fault, and now the system is back to full generation.



Tigo TS4-R-O units identified a disconnected string (*left*) on Tigo's SMART online monitoring platform and ensured functionality (*right*)after the issue was fixed.

Testimonial

"Thanks to the Tigo technology, we were able to identify and troubleshoot issues we didn't know we had. Now, we can track the performance in much better detail and get more out of the system. I am glad to have made this decision and highly recommend Tigo to anyone with a PV system." - José Oscar García, Corporate VP, Materiales Industriales