Case Study:
Pinturas Tropical Adds
Precision to Paint Production

*RMS Industrial Tech creates dosing and
batching solution using
Opto 22's groov EPIC*

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CASE STUDY: PINTURAS TROPICAL ADDS PRECISION TO PAINT PRODUCTION

RMS Industrial Tech creates dosing and batching solution using Opto 22's groov EPIC

When it comes to coatings and finishes—acrylic and enamel paints, thinners and solvents, even waterproofing sealants—the Dominican Republic (DR) has counted on Pinturas Tropical to deliver durable products for over three decades. A leading paint and coating producer, Pinturas Tropical operates in Santo Domingo, the capital city and main industrial hub of the Dominican Republic.

DOSING DIFFICULTIES AND BATCHING BLUNDERS

In acrylic paint production, batching is the critical process of mixing various components in precise proportions to achieve a specific formula. Dosing is the accurate measurement and addition of these components during a batching process. Inaccurate dosing leads to bad batches, and that's exactly what Pinturas Tropical was dealing with.

The existing PLC-controlled dosing and batching system lacked precision, often resulting in large discrepancies between the requested and delivered amounts of additives. A typical request for 30 pounds of additive could result in anywhere from 20 to 40 pounds, which led to out-of-spec batches and waste.

> **Fortunately, just down the road from Pinturas Tropical is RMS Industrial Tech, a renowned system integrator and certified OptoPartner...**

At Pinturas Tropical, operators had to navigate this inadequate system. To avoid costly errors, they would request just a fraction of the required amount of each additive and add the remainder manually, increasing labor costs and time for the production process, not to mention introducing the possibility of human error.

The existing batching process also lacked automated reporting, another key feature. The absence of historical data, combined with manual operator intervention outside of the automation process, made it impossible to analyze production efficiency and identify areas for improvement.

SUPERIOR SOLUTIONS FOR BETTER BATCHES

Fortunately, just down the road from Pinturas Tropical is RMS Industrial Tech, a renowned system integrator and certified OptoPartner for automation manufacturer Opto 22. RMS specializes in process control and automation projects, with a strong focus on batch control systems.

Dosing hopper at Pinturas Tropical

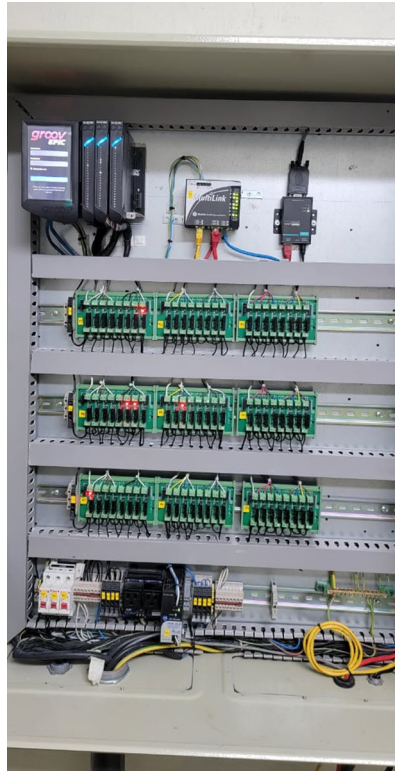# Case Study: Pinturas Tropical Adds Precision to Paint Production

Operating for the past 23 years under the leadership of Maximo Lugo, RMS implements solutions the DR's industrial players can count on to enhance efficiency and precision.

Pinturas Tropical contacted Maximo Lugo for a better batching system. Lugo proposed a solution using Opto 22's *groov* EPIC system. His past experience with Opto 22 products was a factor in his decision, but key features on *groov* EPIC made it ideal for Pintura Tropical's batching operation:

Pulsing for pumping precision— The new system was designed to address precision issues head-on, using Time Proportional Output (TPO) to control dosing valves. TPO is a form of Pulse Width Modulation (PWM) that works by controlling the duration that a dosing valve is open and using fixed timing cycles to precisely control flow rate from the dosing pump.

TPO was enabled using *groov* EPIC's GRV-ODCSRC-24 discrete DC output module and Opto 22's

groov EPIC control panel

PAC Control flowchart-based programming software.

Modbus® for measurement— Lugo made use of the free Modbus/TCP integration kit provided with PAC Control to communicate in real time to custom-built weight scales. Each scale had a Modbus/TCP enabled transmitter outfitted with 4 load cells. Using high-speed Ethernet communication provided real-time feedback on the amount of additives delivered.

groov View for visualizations— Each *groov* EPIC comes with a web-based visualization software called *groov* View, which allows any user on the network with the appropriate credentials to see current and historical status of the system.

Lugo also utilized *groov* View as a way for operators to enter batch parameters and signal the system to start or stop batching operations.

Node-RED® for record keeping— Since each *groov* EPIC also comes preloaded with Node-RED, a

Batching page in groov View

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idbatch	fecha	hora	lote	materiaprima	tanquefuente	tanquedestino	cantidadrequerida	cantidadentregada	eventos
					Consulta Base d datos				
3146	Tue Mar 19 2024 00:00:00 GMT-0400 (Atlantic Standard Time)	17:11:19		agua	linea de agua	TANQ-6	21	21	TV2_Despacho,BajoFlujo,Cancelado
3145	Tue Mar 19 2024 00:00:00 GMT-0400 (Atlantic Standard Time)	17:10:51	0	agua	linea de agua	TANQ-6	21	21	TV2_Descarga
3144	Tue Mar 19 2024 00:00:00 GMT-0400 (Atlantic Standard Time)	17:01:44	349592	agua	linea de agua	TANQ-5	200	200	TV1_Despacho
3143	Tue Mar 19 2024 00:00:00 GMT-0400 (Atlantic Standard Time)	16:57:37	349592	AT13025	ADI-4	TANQ-5	120	120	TV1_Despacho
	Tue Mar 19 2024								

PostgreSQL database records using Node-RED

flowchart-based programming environment for IIoT applications, RMS made use of the open-source platform to write batch data to a PostgreSQL® database. Lugo recalls, "At the end of each batch, a PAC Control variable is toggled true, which signals Node-RED to read a string table that contains all the batch information: batch number, requested amounts, delivered amounts, target time, date/time, etc. From there, we use a Node-RED PostgreSQL node to move those values into a database."

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RMS's approach ensured the exact amount of additives being injected into the paint batches, eliminating waste and maintaining the stringent quality standards of Pinturas Tropical. Better visualization and record keeping meant tighter control over their system and better ability to analyze production and any issues that may arise.

BATCHING BREAKTHROUGH AND FUTURE FORMULATION

RMS Industrial Tech's custom paint batching system was a hands-down success at Pinturas Tropical. The paint producer's operations team is happy to report a "zero error" paint batching system.

Encouraged by the success of the project, Pinturas Tropical is already exploring their next project, a resin dosing system for batching oil-based paints. The scalability and flexibility of the *groov* EPIC system make it an ideal choice for future expansions and projects.

ABOUT RMS INDUSTRIAL TECH

RMS Industrial Tech, founded in 2008 by Maximo Lugo, is a key player in the industrial solutions sector in the Dominican Republic. The company is known for its focus on automation, equipment maintenance, and system integration, tailored specifically to meet the needs of the manufacturing industry.

Maximo Lugo's expertise and hands-on approach have positioned RMS Industrial Tech as a reliable resource for businesses seeking to enhance their operational processes. By leveraging the latest technologies and a pragmatic approach to problem-solving, RMS provides solutions that are both practical and effective in the face of evolving

industrial requirements. For more information, visit https://www.opto22.com/community/opto-partners/rms-industrial-tech.

ABOUT PINTURAS TROPICAL

Pinturas Tropical is a leading manufacturer of paint and coatings in the Dominican Republic. The company offers a diverse range of high-quality paint products suitable for various applications, from residential to commercial and industrial settings. Pinturas Tropical's product lineup is designed to meet the rigorous demands of both aesthetics and durability, ensuring that every offering stands up to the tropical climate's unique challenges.

As the industry evolves, Pinturas Tropical stays ahead by continuously adapting its products and services to meet the latest standards and customer expectations, making it a trusted name in the Dominican Republic's paint and coatings market. Learn more at https://www.pinturastropical.com.do/site.

ABOUT OPTO 22

Opto 22 was started in 1974 by a co-inventor of the solid-state relay (SSR), who discovered a way to make SSRs more reliable.

Opto 22 has consistently built products on open standards rather than on proprietary technologies. The company developed the red-white-yellow-black color-coding system for input/output (I/O) modules and the open Optomux® protocol, and pioneered Ethernet-based I/O.

Famous worldwide for its reliable industrial I/O, the company in 2018 introduced *groov* EPIC® (edge programmable industrial controller). EPIC has an open-source Linux® OS and provides connectivity to PLCs, software, and online services, plus data handling and visualization, in addition to real-time control.

groov RIO Ethernet-based edge I/O modules, introduced in 2020, include I/O and IIoT software in a compact industrial package that goes anywhere.

All Opto 22 products are manufactured and supported in the U.S.A. Most solid-state SSRs and I/O modules are guaranteed for life.

The company is especially trusted for its continuing policy of providing free product support, free online training, and free pre-sales engineering assistance.

For more information, visit opto22.com or contact **Opto 22 Pre-Sales Engineering**:

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