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Royal Interpack • Riverside, Calif.

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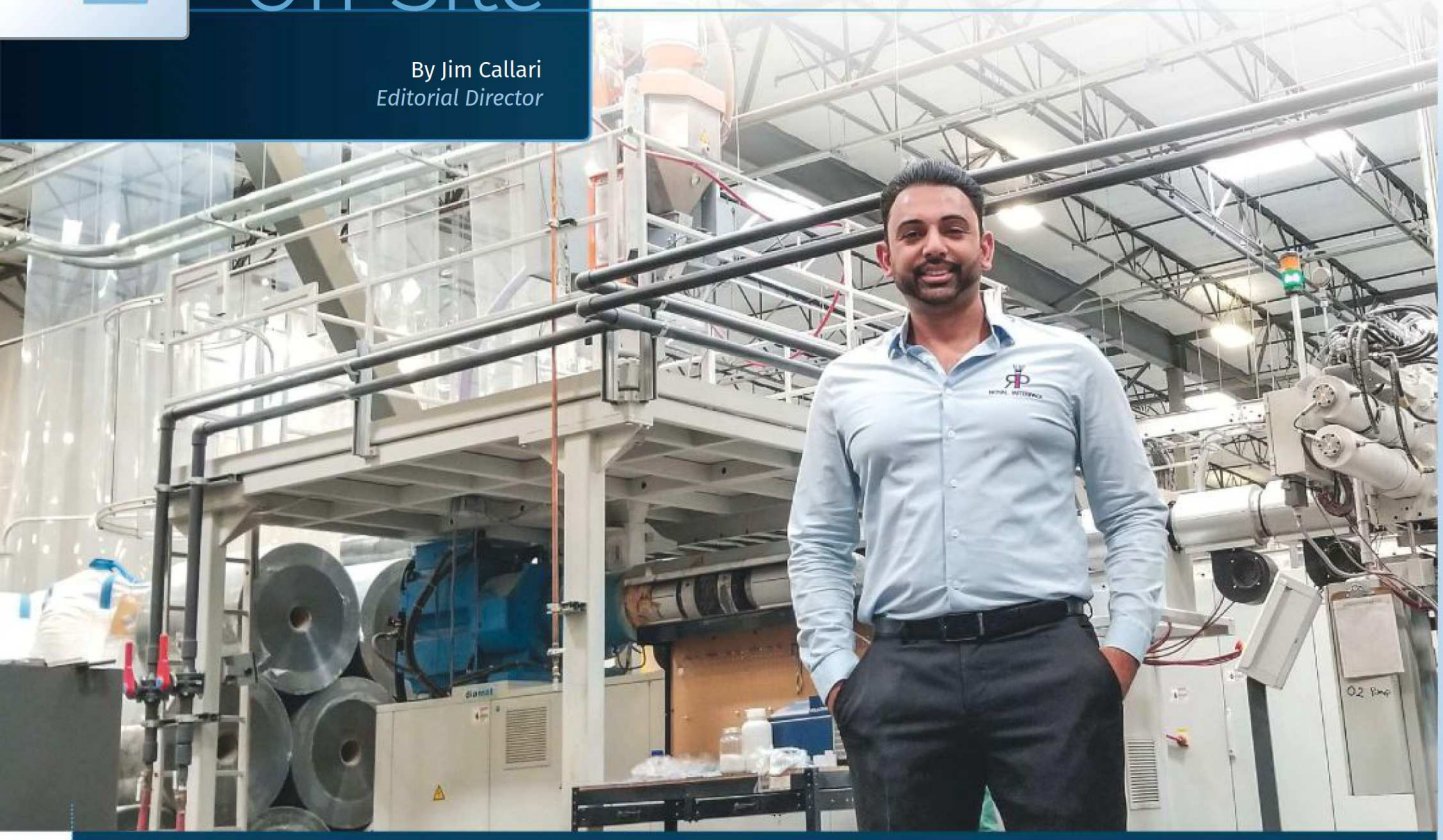


Giving the 'Royal' Treatment in PET Packaging

In the U.S. for just seven years, Royal Interpack is emerging as a growing, innovative, customer-centric supplier of food packaging.

Kunal Sidhpura, director of operations for Royal Interpack's North American business, says the company's decisions on where to locate production plants are driven by a need to be "where the customer needs us."

Royal Interpack Group certainly has accomplished a lot in a relatively short period of time. A member of Royal Holdings in Thailand, the family-owned-and-operated business launched in 2000, in a small plant with two vacuum-forming machines and a handful of employees making PET clamshells for fruit and produce.

Just eight years later, it moved to a 35-acre site in Chonburi, Thailand, an operation that brings under one roof post-consumer PET recycling, PET sheet extrusion and thermoforming of rigid packaging for produce, bakery, food-processing, fast-food, and deli markets. Today, the Thailand operation employs more than 100 people and reprocesses post-consumer PET bottles collected from Asia, Australia, and other regions at a rate of about 20 million lb/yr.

In 2012, When Royal set its sights on the North American market, it opened a 150,000 ft² plant in Riverside, Calif. Initially, this plant was divided between manufacturing and warehousing. Now it's entirely production, with another 100,000 ft² in a nearby warehouse. And just three years after the Riverside startup, Royal expanded into the Midwest, investing nearly $12 million in a 40,000 ft² plant leased in Anderson, Ind., which produces more than 20 million lb a year of clamshell containers for fruits, vegetables, bakery, deli and other food-service items that are sold to processors, packers and distributors. And just a month ago, Royal opened a brand-new 130,000 ft² plant in Whitestown, Ind.

States Kunal Sidhpura, director of operations for the company's North American business. "Initially we were exporting packages from Thailand before we opened the California plant. Our core values are to provide products

made to extremely high quality standards, to focus on the needs of the customer, and to respond quickly. So, we decided we needed a footprint in the U.S., because that's where our customers needed us to be."

The Riverside operation houses four sheet lines furnished by German machine builder Diamat Maschinenbau (*diamat.com*), with a fifth one planned. The machines have 125-mm single screws that run primarily PET at rates above 2600 lb/hr. Diamat supplies these lines on a turnkey basis, equipping them with its own sheet dies and Nordson backflush screen changers, as well as drying, crystallizing, and conveying systems from Motan. Sheet is run at widths from 20 to 62 in. at thicknesses from 10 to 40 mil. Royal runs reclaimed PET sourced from its Thailand operation in an A-B-A coex structure.

In California, Royal has 13 thermoforming lines that consist of seven "Asian-style," smaller-format presses—advantageous because they permit utilization of more economical tooling—along with six faster-cycling thermoformers from Europe. One of these is equipped with a robot, which erects the packing box, fills it with products, tapes it, and loads on it on a pallet,

On the way to Riverside is a 52-in.-wide Lyle thermoformer, and Royal is adding extra extrusion capacity to accommodate it—set up in a rather innovative way. Two 125-mm extruders will *share* a single-layer die to create a line capable of running more than 4400 lb/hr.

A key strategy at Royal Interpack is to replicate technology from plant to plant. In North America, Frigel is the processor's partner for process cooling. Pictured here is Juan Alvarez, Royal's technology director.

needs and when." Royal runs its extrusion and thermoforming lines on a 24/7 basis.

There is currently one 125-mm Diamat coextrusion line running in Indiana, with two more on order, as well as five Asian thermoformers, also equipped with economical tooling. Ultimately, Royal expects to add robotics to its Indiana thermoforming operation. States Sidhpura, "We utilize technology to improve efficiency and to minimize waste. In the long run, we feel that the best way to remain competitive is to automate." Royal is also investigating an investment in larger-width thermoforming technology in the Hoosier state.

In terms of its overall production capacity in the U.S., Sidhpura considers Royal to be "mid-size." Yet the firm's business strategy to be nimble and responsive resembles more closely the mindset of a smaller company. "Over the year, we have picked up small projects, and these have led to large projects because of the way we have served the customer."

Sidhpura continues, "We pick up small projects that lead to large projects. Larger competitors often won't consider a project unless there is a minimum commitment. Consolidation in the industry can lead to an erosion in customer service. We've acquired business from big players. We've had customers come to us, stating, 'We're in a bind, we need something quickly, can you help us out?' And we do."

Royal Interpack runs 13 thermoformers in California, including small-format machines from Asia that utilize a more economical tooling package.

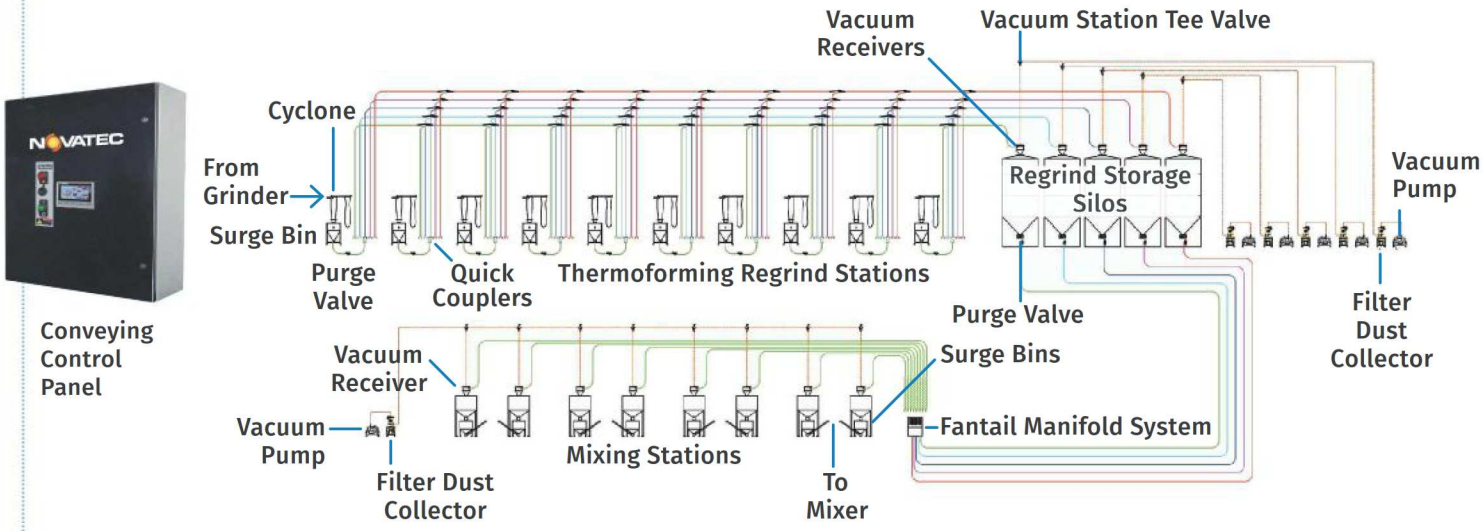
The new plant in Indiana is another reflection of Royal's credo to "be where the customer needs us." Royal quickly outgrew its original 40,00 ft² plant in Anderson, necessitating the need for bigger digs. "A location in the Midwest where we can produce our entire product line is a vital part of our strategy to be fast and responsive," says Sidhpura. "From Indiana, you can reach 70% of the U.S. in one-day's highway travel," he notes.

Royal's model is to have the same equipment set up in all its facilities, including extrusion, thermoforming and auxiliary equipment, according to Sidhpura. "This allows us to ship tools around all of our facilities depending on what the customer

BIG ON COLLABORATION

Royal Interpack's ability to replicate technology platforms across plants around the world requires it to align closely with a select group of suppliers. On the extrusion side, as noted, it relies on Diamat for turnkey lines that include some auxiliaries. For cooling, it has been working with Frigel to provide advanced process-cooling methods, first in California, then replicated in Indiana.

When Royal started out in California, recalls Juan Alvarez, the firm's technology director, it was relying on air-cooled chillers as the only process-cooling source in the plant. This proved ineffective, so the company began working with Frigel to come up ►



Central conveying system engineered by Novatec will automate Royal Interpack's process for moving sheet and thermoforming scrap around the plant and eliminate the need to use sacks.

with a system that would achieve optimal control of water temperatures and flows to achieve a three-pronged objective: effortlessly match water temperature and flow to the characteristics of any given process and product; increase throughput of extruded sheet for thermoforming; and reduce the amount of energy consumed in extrusion and thermoforming, consistent with Royal Interpack's commitment to sustainability.

Frigel began with an extensive analysis of the extrusion and forming processes and associated cooling temperatures and requirements. From there it designed and implemented an integrated cooling system that eliminated the air-cooled chillers altogether. The new system features components tailored to each process. Each sheet extrusion line, for example, uses one dual-zone Microgel RCD and one single-zone Microgel RCM unit; both are chiller/temperature-control unit (TCU) combinations. Positioned next to each line to cool the roll stack, the Microgel units supply the precise temperatures, turbulent water flow, and pressure needed for each production run.

Each of the 13 thermoforming lines in California uses a single-zone Microgel unit to deliver the same level of control as that achieved on the extrusion lines. Plantwide, three closed-loop Ecodry central adiabatic coolers deliver process-cooling water to the machine-side Microgel units used in both processes. Frigel monitors each microprocessor controlled Ecodry unit to ensure optimal efficiency and ease of routine maintenance.

Alvarez says the Frigel system provides control over process cooling—including temperatures and flows—where none existed before. As a result, he says, the processor has been able to leverage ►