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## Applied Medical creates custom space for its manufacturing

By Roger Renstrom

LAKE FOREST, CALIF. — Applied Medical Resources Corp. has moved its horizontal injection molding and mold and maintenance operations to a fully remodeled state-of-the-art facility.

“Nothing is standard in this facility,” Steve Davis, vice president of infrastructure operations, said during a plant tour in Lake Forest. “The whole thing is innovative.”

Key suppliers Arburg Inc. and Novatec Inc. acknowledge the achievements of the vertically integrated medical product designer and manufacturer.

The Lake Forest installation “reflects what you can do if you go about things in the right way,” said Arburg’s Juergen Giesow. “It shows that you can manufacture not only in the U.S. but in California with all of its issues.”

Novatec’s Tim Noggle said, “Applied Medical embodies the term ‘world class’ in everything they do. All of their facilities are as impressive and well organized as any in the global market today.”

As Arburg worked with Applied Medical, “we got a good understanding of their needs and requirements and the uniqueness they desired,” Giesow said via email. “We gave them the machines and options they wanted to be competitive.” Giesow was Arburg regional manager in the U.S. West and is now director of technology and engineering in Rocky Hill, Conn., at the U.S. unit headquarters of equipment manufacturer Arburg GmbH + Co. KG.

The Lake Forest site uses Arburg, Toshiba, Sumitomo and Krauss Maffei machines among its presses with clamping forces of 55-375 tons and has one 6.2-ton Babyplast.

Applied Medical moved most of the presses from a nearby Rancho Santa Margarita facility and, from Arburg, acquired three new injection molding machines and three three-axis robots. Yushin robots are used as needed.

Novatec provided 12 preprogrammed 17,000-pound-capacity surge bins for the high-



Applied Medical Resources Corp.

**Applied Medical developed custom work cells at its new operation.**

est volume resins such as polycarbonate and polyester; two Auto-ID connection-verification manifold cells with vacuum pumps; and a central drying system with individual heaters and blowers capable of processing 12 different materials concurrently.

In addition, Novatec supplied 11 VPDB Series vacuum pumps with cyclone dust collectors; 35 four-component gravimetric blenders; and FXS expandable conveying controls with remote panels.

The construction services arm of Dallas-based Dancar Industrial Group Inc. installed the Novatec systems.

Each automated surge bin reads an operator’s thumb print and scans a barcode before confirming a connection, said Noggle, senior vice president of sales for Baltimore-based Novatec.

The Lake Forest plant has room for two more surge bins and a third manifold cell.

Applied Medical uses traditional manual

methods in feeding small-quantity resins to molding machines.

### Evolution of new site

Applied Medical acquired two Lake Forest industrial buildings in 2012, gutted the interiors and completed extensive improvements before the site reached operational status in January 2015. An open house for all team members was March 26.

The improvements included a second story 12,667-square-foot bridge that links the two buildings and provides a location for utility systems including a cogeneration system now being installed.

Now, the Lake Forest buildings occupy 146,026 square feet — up from 107,000 square feet at acquisition.

The site is about 4 miles from Applied Medical’s corporate headquarters in Rancho Santa Margarita, where the firm occupies more than

a dozen buildings. Other operations are in nearby Irvine.

In moving certain operations to Lake Forest from Rancho Santa Margarita, the company quadrupled its space for horizontal injection molding to 64,895 square feet and for mold and machine maintenance to 20,500 square feet.

Currently, Applied Medical operates injection molding presses in two of three molding cells. Measured positive-air-pressure atmospheric controls are in place. The firm anticipates fully utilizing the third molding cell and reaching the site's maximum capacity of 70 presses within five years.

Meanwhile, the firm uses a portion of that room for pad printing logos onto products, and research and development trials with a metal injection molding unit. The system from Elnik Systems LLC of Cedar Grove, N.J., can perform first-stage resin-removal debinding of MIM parts and second-stage debinding and furnace sintering.

"Currently for metal parts, Applied Medical machines or stamps the material," Samer Tall, process engineer, said during the tour.

On a second floor above the future molding cell is an area that Applied Medical uses for company and community-oriented functions usually with catered-food service and entertainment. Eventually, business activities will expand into that space.

### Fine-tuning design

As feasible, designers ran vacuum and material lines under floors or behind walls to avoid having ledges or exposed horizontal surfaces that might attract dust or other pollutants potentially contaminating a process.

Resin blending and conveying equipment is located outside of the molding room. Remote wall panels with fittings and sealed pass-through ports guide material and vacuum lines, control wiring and process cooling lines through the walls and into the production area.

Applied Medical technicians can maintain the equipment without having to enter the room.

The design incorporated air-gap segments to absorb possible earthquake shocks reaching the buildings.

In converting a former warehouse into the mold and maintenance facility, Applied Medical removed existing concrete and poured 16-inch-thick floors that can support mold-storage cabinets, Tall said. About 950 active molds are stored on site.

Applied Medical began making molds in-house in 2007 and, internally, has built 775 molds.

An in-house team built custom-designed tables with easy-access storage drawers that open



Applied Medical Resources Corp.

### Applied Medical Resources Corp.'s new Lake Forest, Calif., campus.

on both sides of each table.

CraneVeyor Corp. of South El Monte, Calif., installed two top-riding single-girder 5-ton-capacity TSR cranes in the maintenance building and two top-riding double-girder 5-ton-capacity TDR cranes in the molding cells.

Self-supporting structures give the cranes the capability to operate back to back at full capacity, said Bob Norland, CraneVeyor manager of operations and head of crane sales.

Contractors for Applied Medical are installing the cogeneration system including three natural gas powered microturbines with an absorption chiller.

The system from FlexEnergy Inc. of Portsmouth, N.H., will generate 900 kilowatts of on-site energy and is projected for operation during the first quarter of 2016.

The absorption system will capture and utilize heat emanating from Advanced Medical's cogeneration/flex energy system in Lake Forest.

Applied Medical believes the installation will provide about 90 percent over the next five years of its power requirements and also operate as a backup system in the event of a grid outage.

The Lake Forest location employs 172 over three shifts. The firm expects to have more than 200 team members there eventually. The County of Orange lists an assessed value of near \$17 million for the two properties.

### Other operations

The firm's Rancho Santa Margarita facilities, in addition to headquarters functions, house three ISO class 8 clean rooms, vertical insert injection molding, extrusion, metal machining, rubber processing, progressive stamping, mold

making and automation and end-of-arm systems development.

Applied Medical began operation of an e-beam sterilization system in Irvine in late 2013 and, currently, is implementing a 33 percent expansion of that location's capacity to store finished goods along with raw materials.

Applied Medical has regional distribution centers in Middletown, N.Y.; Duluth, Ga.; Brisbane, Australia; and Amersfoort, the Netherlands.

The company's products include surgical trocars, wound protectors and retractors, advanced access platforms and a range of instruments. Annually, the company processes about 2 million pounds of resin — mostly engineering thermoplastics, silicone and rubber — and molds more than 100 million parts.

Globally, the company utilizes cross-team communication and coordination procedures and employs more than 3,000 of whom about 2,300 are in southern California. Since its founding in 1987, the privately held company said it has never experienced a layoff. Applied Medical withholds sales details.



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