

‘Virtual’ New Plant

—3-D Visual Planning Service Aids Design Process

Technology lets operators see and fix design problems in the planning stage; also offers dynamic sales tool

By Meeraj Mehta

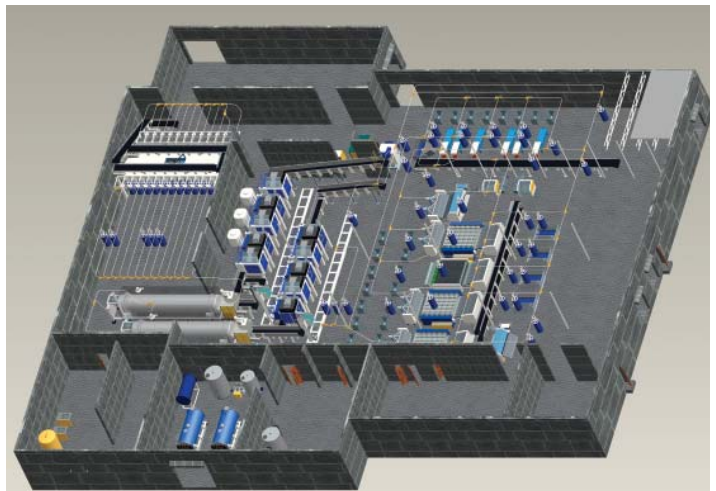
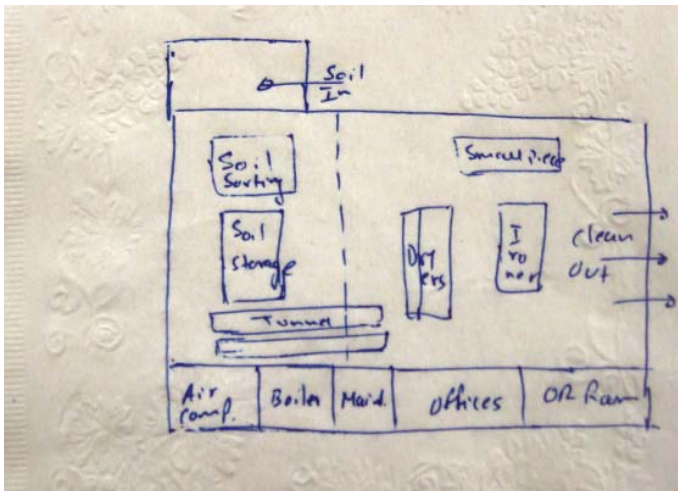
Every one of us (operators, engineers, sales, general managers, etc.) has seen the “laundry plant design,” which looks like nothing more than bunch of scribbles (squares and rectangles) on a piece of paper. Some of the more fortunate among us have seen actual AutoCAD drawings with nicely labeled equipment and overhead piping infrastructure. Imagine that a 600 lb. washer would be placed (set, grout, installed) at a location where the chief engineer or the operator “thinks” is the best location. They don’t think about what will happen when their plant grows and there are five additional machines with an overhead rail/sling system, dryers, shuttles, carts, etc. Suddenly the “best location” becomes your worst nightmare. Imagine the fix you’d be in if the rest of the plant is designed around that one machine which, by then, is on its last legs.

score the importance of investing in a superior workflow design.

Why use 3-D VPS?

Investing in the workflow design of the plant has the shortest ROI of all the investments you can do in a laundry plant. This is simply because labor is still the biggest element of the operating cost/revenue. Anything you can do to reduce labor costs will directly increase the overall profit. A good recipe for optimal workflow design includes three ingredients—the right equipment, the proper placement of equipment (in relation to workflow) and use of the ‘cube,’ i.e., maximizing the use of available cubic feet, as opposed to floor-level ‘square feet.’ In other words, consider building mezzanine levels or around ceiling areas to make the most of your space when planning a new plant.

Operators should measure the performance of the equipment not



Which of the two views shown above could give you a better idea of how to avoid problems that can lead to change orders, or later remodeling to accommodate changing needs? 3-D VPS images, like the one at right, can produce prompt ROI because labor is the biggest element of cost/operating revenue. If you can reduce labor costs in the planning stage of a new or refitted plant, you'll be miles ahead.

What is 3-D Visualization Planning Service?

3-Dimensional Visualization Planning Service (3-D VPS) is something that each and every plant operator has dreamed about. One can see the actual plant where he is going to spend rest of his life working, even before any equipment or services are purchased. With the added animation service, the plant operator can do a ‘walk through’ of his future facility with a 3-D viewpoint. Before going into the advantages of 3-D VPS and talking about how it can serve as an invaluable planning and marketing tool, let me first under-

only in terms of how many pounds it can process per hour, or what savings in utility use it can deliver per lb. of laundry processed, but also by how many FTEs (Full Time Equivalent, i.e., employees) each machine can eliminate, or how many FTEs are required to operate the machine. You should address this issue during the RFP/Planning phase of the project. A well-written RFP will ask each vendor to provide a breakout of FTEs required by their proposed equipment. A properly laid-out drawing will show the location of each FTE in the plant and will list them on the side in the informa-

tion sheet.

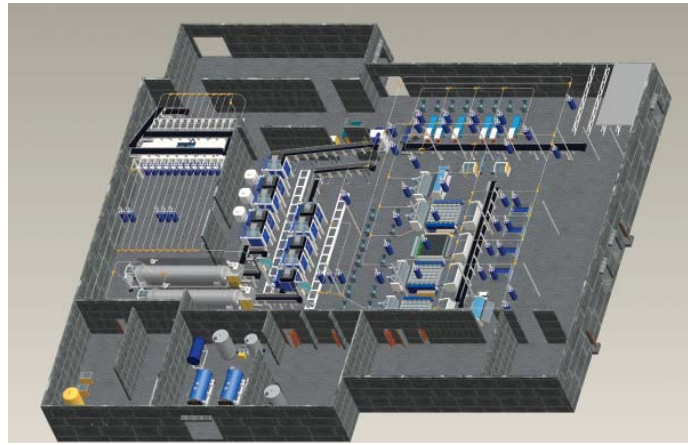
Too often, we see plant operators buying a piece of equipment or an entire system based on the cost. They don't adequately consider the importance of how many people they'll need to run it at the optimum performance level. For example, consider two manufacturers (A & B), offering their "state of the art" system in response to a finishing department's RFP. The overall cost of the system offered by manufacturer A is \$220,000 more than the overall cost of the system offered by manufacturer B. The system consists of five ironing lines each consisting of a feeder, ironer and a folder/stacker. Manufacturer A needs a total of 15 FTEs, while manufacturer B needs 20 FTEs. This is critical information that operators should weigh carefully, when selecting a vendor. The difference of five FTEs at approximately \$30,000 each per year will cost the plant operator an additional \$150,000 per year. Considering this, the system offered by manufacturer A will break even with manufacturer B after 1.5 years. After that, it will start *saving* \$150,000 per year, with all that money going to the bottom line.

The second aspect of workflow design is optimum location of each and every piece of equipment in the plant. This includes heavily used machinery such as washers and dryers to lightly used equipment such as a mending stations/tie-ins, etc. Every time the linen (soil or clean) is touched or handled, it costs money. Improper location of any one piece of equipment will disrupt the entire workflow design. That means an increase in the overall labor costs, while reducing plant efficiency/production. For example, if not placed properly in the plant, a small piece of equipment such as a cart washer can significantly increase the cart processing and delivery time to each work station and thereby reduce the overall production/profit.

The third aspect of a proper workflow design is use of the cube, as noted above. Everyone talks about this, but people rarely invest time and effort to consider the options of using the cube of the plant. One reason stems from the fact that many plant operators haven't kept up with the new generation of material handling equipment that's designed based on the cube concept. Most of this equipment uses cutting-edge technologies in the field of motion sensors, robotics and pneumatics. Another reason for a slower response to implementing these technologies is the relatively cheaper cost of labor in the United States (especially when compared to European countries). However, the tide is shifting, and labor costs are rising in the United States. This is forcing plant operators to incorporate the cube concept into new plant designs.

3-D VPS ensures that all of the above aspects that are required for an optimal workflow design are considered at the planning phase of the project (new plant or retrofit). A typical project consists of three phases: planning (design/engineering), installation (construction) and commissioning (start-up).

Any mistakes, miscalculations, engineering errors, etc. must be caught as early as possible. Any and all mistakes grow exponentially (money/time/effort) as they pass from planning to installation to the commissioning phase. More time, money and labor are required to rectify the error. This makes the planning/engineering phase critical to the overall success of the project.



In the four images shown above, you see the 3-D VPS image at top that enables operators to envision just what they want and need in a new plant. Next comes construction, then the installation of equipment and wiring. Finally, you end up with a scale image of the finished facility.

New Plant Design

Key engineering aid

The most important benefit of the 3-D planning service is that it eliminates guesswork. Regular CAD drawings are 2-D. They don't give information about the height or depth of the object. One has to imagine or guess how the end product/system will look.

On bigger projects, especially those involving a plant retrofit, there are close to 40 different systems that form the project scope of work. Working with 2-D drawings can create doubts or confusion that can lead to errors and mistakes.

Most laundry plant decision makers such as general managers, CEOs and presidents aren't engineers. It's usually tedious and perplexing for them to view multiple CAD drawings showing the "plan view," "elevation view," "section side view," etc. These types of presentations also make them uncomfortable about investing their hard-earned money. By contrast, 3-D VPS offers textile service executives a clear picture of how the plant will look, how all the systems are tied in and placed in the plant, how the work/goods will flow, how much overhead space is available, and how many people will work in what locations, all by looking at just one 3-D drawing.

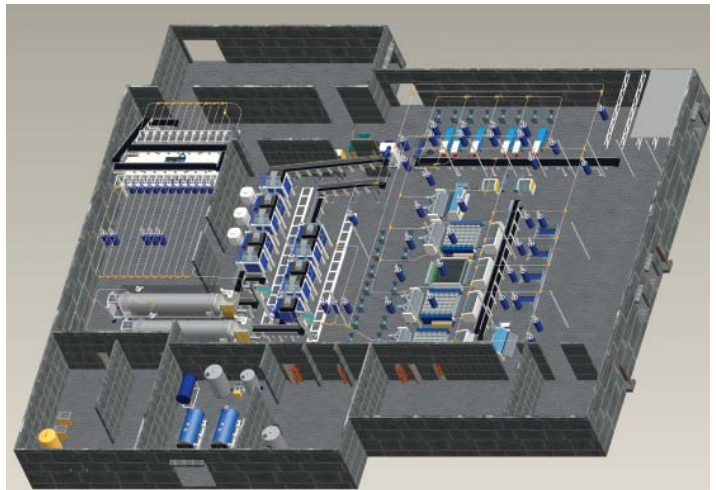
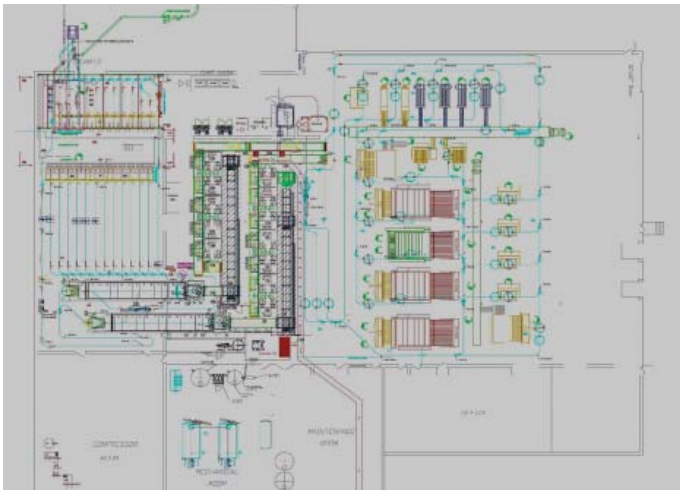
Generally, equipment manufacturers don't consider how their system/equipment will impact the rest of the project/plant. For

pipework and instrumentation diagrams (P&ID), can help the city/county inspector understand the scope of the project. That, in turn, helps expedite the permitting/legalization process. 3-D VPS also acts as an excellent tool downstream in the project. After the completion of a successful project, 3-D VPS acts as an "as built drawing" and can be used as a baseline for future expansion projects.

Effective marketing tool

Here's a scenario that most operators will find familiar. Let's say you're an owner, or a regional sales director of a large laundry plant. You're waiting for your turn to present your laundry services to the Board of Directors of a major healthcare group that operates 20 major hospitals/nursing homes in the area. This Board includes nearly 10 people, whose combined hourly rates are more than an engineer's weekly salary. Your competition's laundry sales group just presented their proposal. You see them walking out with a couple of tubes of plant CAD drawings and a thick folder of laundry photographs. After all their efforts, the Board of Directors didn't buy their proposal. Instead, they arranged for an on-site plant visit to check out the plant for quality, hygiene and safety.

Now you walk in with just one 3-D drawing of the plant showing all of your equipment, including boiler room, washroom, material



Standard 2-D schematic drawings like the one at left don't give operators a very realistic a view of how the finished plant will look. By contrast, a 3-D VPS image like the one at right, makes it much easier to see how you could use the "cube" of the building to take advantage of all available space in the facility.

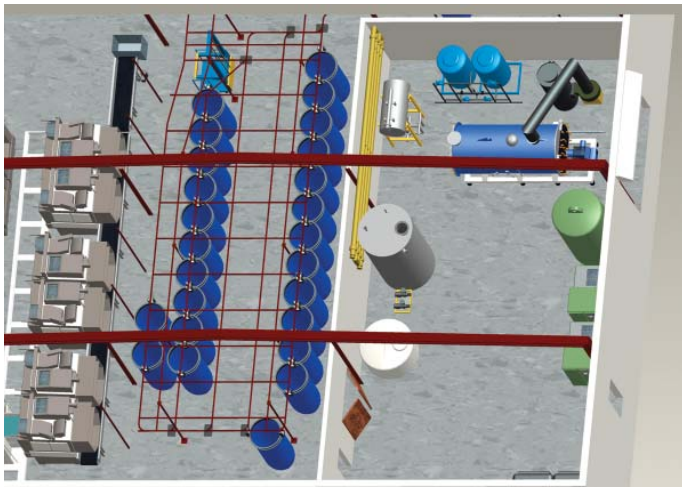
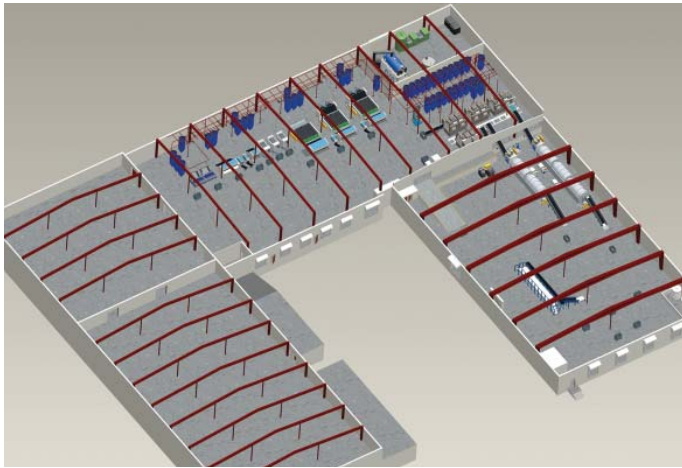
example, a washroom equipment manufacturer won't think how the height of his equipment will affect or interfere with the monorail system. The building/general contractor won't consider how the bar joist orientation will affect the process piping/dryer ductwork. The list goes on. 3-D VPS brings all these systems under one roof (i.e., in a drawing), and any and all intrasystem interferences/bottlenecks in production/construction modifications/potential change-order conditions, etc. are addressed during the initial planning phase.

Due to the current slowdown in the economy, city and county administrations are actively pursuing every opportunity they can to collect permit fees. Many times, the project comes to a dead stop due to permitting issues such as improper drawings. Perhaps they were not provided, or the city/county authority (inspector) wasn't given a clear vision of the project. 3-D VPS, along with the proper

handling, dryers, safety fence, finishing department, cart make-up area, chemical room, building structural steel, etc. You do your sales pitch, and without wasting anyone's time you jump onto your 3-D animation presentation of the plant. The animation shows how the soiled linen will come into the plant, how it's handled at the soil-sorting platform, how it's washed, dried, processed and packed. The animation also shows the cart make-up process and shipping procedure. All this can be shown in a three-minute video/animation that provides a concise yet detailed representation of the actual process. The reaction? Everyone in room is overwhelmed by this high-tech approach. Everything about your laundry is right on the table for all to see. Nothing's left to the imagination. No engineering or plant-operating skills are required to understand how your laundry operates and how it will process linen. Needless to say, if both compa-

nies' bids are competitive, which do you think will get the nod from the Board?

Once again 3-D VPS has proven its merit. In addition to helping engineer efficiency and seamless workflow in new plants, 3-D VPS also serves as an excellent marketing/presentation tool for prospects. You can incorporate the 3-D drawing into a marketing/sales brochure as well. The bottom line is 3-D VPS helps differentiate your



If you're presenting your company to a prospective client, 3-D VPS drawings can offer you a competitive advantage by giving prospects a clearer view of what your plant can do without them having to see it in person.

plant from the rest of the herd.

3-D VPS incorporates all the latest cutting-edge technology in the field of 3-D drafting and animation. Other industries such as aerospace, automotive, general construction, public transportation and entertainment (Hollywood!) are already using this technology. It's



about time the laundry industry started taking advantage of 3-D VPS to increase productivity and efficiency, while at the same time enhancing workflow *and* the marketability of your textile services plant. TR

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