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Victor Xavier / supervisor of engineering, Brudden



Movement treadmills by Brudden are developed for gyms across the globe.

CASE STUDY

A Winning Pace

BRUDDEN PERFECTS GYM EQUIPMENT USING 3D PRINTER

Brudden manufactures its Movement line of gym products guided by its chief philosophy: help users achieve their beauty, fitness and health goals while enjoying their workout.

By doggedly pursuing this goal, Brudden has risen to lead the market in gym products in Brazil. Its gym equipment meets European regulations and are currently sold in Latin America, Europe and Africa. In the Movement line – which includes dozens of models for each family of products (treadmills, spinning bicycles, weight training stations and elliptical machines) – the combined aesthetics and functionality stand out.

In addition to its Movement line, Brudden also offers the brand Perform. “While Movement is focused on the professional market, being offered in gyms across Brazil and the world, the Perform line focuses on domestic use,” says Victor Xavier, supervisor of Brudden’s engineering department. Both brands are constantly evolving, keeping up with local and global trends.

3D Printing 90 Percent of Prototypes

“The market is heated and the demand for new exercise models is high,” says Xavier. To keep up with market demand, Brudden’s engineering and design team is working in overdrive to create new products. Xavier estimates that the team will have worked on 27 new projects by the end of 2014. Ten of those projects turned into new products that were launched in September at the 15th annual International Health, Racquet and Sportsclub Association (IHRSA), the largest fitness and well-being exhibit in Latin America.

The company’s daily search for product perfection has been aided by its Objet30™ 3D Printer. “Today, 90 percent of the prototypes of new equipment are printed in-house,” says Xavier. Outsourcing only happens when a piece of equipment is too cost-prohibitive to print due to its size. In the case of large parts, Brudden hires contractors to create machined prototypes, which takes around 10 days. 3D printing a small or medium sized functional prototype capable of withstanding various tests in-house only takes around two days. Adds Xavier, “The prototype generated by the 3D printer is a lot cheaper than the one produced by machining.”

The variety of materials the 3D printer offers enables the prototypes to look just like the final products. “The prototypes printed with the Stratasys® photopolymers also make it possible to test the assembly. For example, in one of our designs, two pieces were expected to snap together. When the mockup produces a click sound, it indicates everything is correct,” says Xavier. If this click doesn’t occur during assembly, it’s a sign that the design must be corrected.

Rigorous Testing and Quality Checks

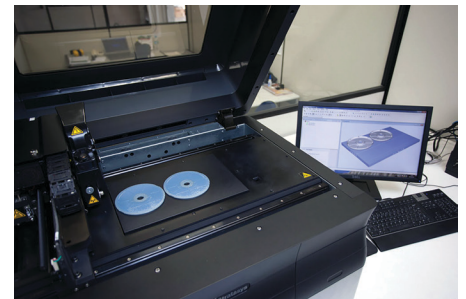
The extreme close proximity between the users and the equipment presents another challenge for designers at Brudden. “During the development phase of a new product, we must check the level of friction between the human body and the equipment to verify whether to add any lubricants or protective materials,” describes Xavier.

The prototypes can also withstand the economy tests, which aid the engineering and design team in perfecting a new product. Such attention to detail is what keeps the Movement and Perform product lines compliant with the European BS EM 956 norm, which regulates the global market of gymnastic equipment and ensures the health and safety of the people who use Brudden’s products.

Complying with the regulations also means temperature resistance tests and testing flow of liquids that might be spilled over the products. The liquid test simulates how the equipment performs when coming in contact with sweat. Picture water being spilled over a spinning stationary bicycle. The water must run through a predetermined path to correctly simulate the areas that would naturally



Victor Xavier, supervisor of the engineering department of Brudden, next to the Objet30 3D Printer.



At Brudden, 90 percent of Movement prototypes are printed with the Objet30 3D Printer.

be impacted and avoid becoming trapped in places that may generate unpleasant smells or oxidize the equipment. The 3D printed prototypes are tough enough to withstand both water and temperature testing.

ROI Reached in One Year

Purchasing a 3D printer provided more agility and autonomy in the testing phase of new products. Xavier says the Objet30 3D Printer's office-friendly size was a key selling point, as well as its cost-efficiency. "We planned the purchase of the 3D printer to achieve return on investment in only one year, which in fact happened."

Brudden's new design process must be working: it's won them the prestigious Brazilian Home Museum design award and the coveted FIBO innovation award.

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