

Concept Center International (CCi)

LIKE PHOTOS ONLY BETTER, RENDERED GLAMOUR SHOTS SEAL PRESSURE WASHER DEAL WITH HOME DEPOT



Rendering: Ridgid pressure washer

- It's difficult to sell a product to a nationwide retailer – especially a product claiming superior consumer appeal – without an example to showcase.
- Instead of a prototype, CCi offered Home Depot photorealistic renderings.
- CCi used Maxwell Render software to create stunning photorealistic images of the product concept, as if it were already built.
- The new Ridgid pressure washers are now sold exclusively through Home Depot.

If you're introducing a big-ticket home and garden product, it had better be on the store shelves well before Memorial Day, when the ground is still hard and the days are still short.

That was the deadline for Concept Center International (CCi), the Anderson, S.C., design team that successfully developed a new line of Ridgid® heavy-duty pressure washers in February 2008. Consumers need plenty of time before warm weather hits to choose the right weapon to conquer dirty driveways, homes, boats, and patios. And Ridgid does conquer, using Subaru® engines to propel a beam of water with 3,000 pounds of pressure or more.

Differentiating a basic work tool

CCi's story began in late 2007 when it proposed a new equipment concept to Home Depot®. Since the retailer had been selling pressure washers for years, CCi needed to make the case that the new Ridgids would be different. And the difference would be in the design.

Although power washing devices are generally rated by the pressure they deliver, the Ridgid – like a cell phone, car or music device – would differentiate on subtleties (i.e., do the same stuff but with much cooler gear). Dynamic, professional design could produce a big toy that a weekend warrior could love and his neighbor might envy. It would utilize orange powder-coated steel, a textured aluminum faceplate, easy-stow handle, dual-tank cleanser intake, "mag"-style wheels, an ergonomic trigger gun, and an optimized "neutral gravity" center of balance. Look, feel, form, brand.



“Maxwell Render can fully capture all light interactions between all elements in a scene no matter how complex they are. It’s the difference between a cartoon and true photorealism.”

Eric Lagman,
Industrial Designer, CCI



This is not a photograph. It's a photorealistic rendering of a product that was not built at the time.

In late 2007, CCI had an initial CAD design for Home Depot to consider but no prototypes – a significant problem for a product being sold largely on form impression over specs. For many companies, this is a chicken-and-egg moment in the product development cycle. Should we spend money making prototypes without having a deal? Or should we try for a deal with little more than a CAD screenshot to work with? “Screenshots,” says CCI industrial designer Eric Lagman, “were not going to convince the nation’s largest home improvement retailer to give up its coveted floor space.”

Who needs a camera – or subject, for that matter?

Lagman found a way to solve the chicken-and-egg problem and provide, before the end of 2007, high-resolution, studio-quality images representing the proposed Ridgid pressure washers in their “finished state.” Despite appearances, these were *images*, not photographs – an important distinction because the products had yet to be made. They existed only as designs in SolidWorks® 3D CAD software.

The images look like professionally lit studio photographs with multiple light sources and shimmering surfaces, reminiscent of glamour shots of new sports cars. Yet these were *renderings* – images created entirely by computers and complex mathematical algorithms, not light and silver halide. Even so, they were real enough. Home Depot signed the order. CCI developed the designs and rapidly proceeded through engineering, manufacturing, and production.

Lagman used Maxwell Render™ software to develop the images. Maxwell Render is a physically correct, unbiased rendering engine from Next Limit Technologies that accurately simulates light in the real world without resorting to shortcuts, tricks, and “cheats” that ruin image quality. “Maxwell Render can fully capture all light interactions between all elements in a scene no matter how complex they are,” says Lagman. “It’s the difference between a cartoon and true photorealism.”

The Maxwell Render difference

In addition to its stunning accuracy, Maxwell Render is well-known for its enormous and fast-growing library of open source virtual materials – 3,000 to date. Maxwell Render was the first render software to promote the shared use of materials within its user community this way. A key strength of the software is its ease in creating new virtual materials and its plain-language interface (using terms like *rough/smooth vs. specularity*).

A virtual camera employs a familiar photographic metaphor for setting a scene with tools like *focal length*, *film speed*, *f-stop*, and *shutter speed*. Perhaps the software’s most impressive feature is its ability to handle multiple lighting sources in a single rendering – and letting the user activate, deactivate, and adjust light sources in the rendering at will. This is a far cry from traditional rendering software, which requires a new rendering cycle for each lighting combination, potentially adding days or weeks to a job.

A kitchen design, for example, can be rendered in Maxwell Render depicting any combination of lights that are actually in the design – e.g., ceiling lights, floor lamps, table lamps – plus ambient light from a skylight, or from unexpected sources like a TV or flashlight. A sports car can be rendered speeding by a street lamp at dusk, headlights aglow, with all light sources and motion-blurring utterly convincing.



A SolidWorks 3D CAD model of the power washer.

The new Ridgid pressure washers are sold exclusively through Home Depot. "The renderings were a prime factor in winning the program," says Lagman. "Maxwell renderings convey the truth of your concept, the degree you've thought it through, and your overall technical prowess, which predicts your ability to manage the manufacturing process. The only downside is that customers usually mistake a Maxwell image for a photograph and assume the design and manufacturing work is complete," he laughs. "I guess that's a good problem to have."

SolidWorks and Dell complete the equation

CCi's renderings start with SolidWorks 3D CAD models. SolidWorks and Next Limit Technologies are Solution Partners with Maxwell Render easily utilizing SolidWorks data as the foundation for its renderings. "The integration is seamless," says Lagman. "We're using SolidWorks in the first place because it's friendly enough for a designer and powerful enough for a mechanical engineer. Unlike industrial design tools that create only surfaces, the SolidWorks feature tree makes it easy for users to make frequent improvements to a file and have all affected parts automatically fall in line. SolidWorks was essential, for example, in our modification of the pressure washer handle design. It required a few minor tweaks so it would nest elegantly against the faceplate in the stow position. SolidWorks handled them with ease."

CCi executes renderings on a Dell Precision™ workstation equipped with two Intel® Xeon® 5160 processors, whose speed has neutralized any additional processing demand in rendering superior images. "We now render fast enough that we no longer worry whether it's worth the wait to use Maxwell on a project," Lagman says. "We just use Maxwell on most every job and reap the benefits." Maxwell Render also has a unique networking ability that lets a user enlist idle machines for rendering jobs. "At the end of the work day, we link up eight other Dell Precision multi-core systems and pump out half a dozen multilighted renderings overnight," says Lagman. "Like everything else in Maxwell, it's great. We're happy we use it, and our business is better for it."

For more information....

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