Custom PC

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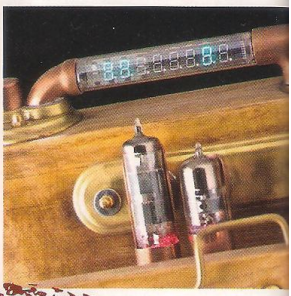
THE BEST INTEL MOTHERBOARDS ★ SANDY BRIDGE PCs ★ EXTREME OVERCLOCKING GUIDE

Readers' Drives

Steam & Current



meet thy maker

Name Tomasz Krawczyk

Age 34 years

Occupation IT related

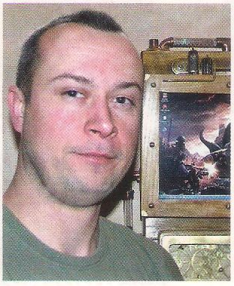
Location Lodz, Poland

Main uses for PC Web browsing, graphic design, web design

Likes Mountain walks, reading military and sci-fi books, computers, Top Gear

Dislikes Politicians, liver

Steampunk graces **CPC** again this month, as **bit-tech** forum user AwAdOn, aka Tomasz Krawczyk, shows us his amazing project. It's filled with brass and coppper, and looks out of this world



The inspiration for my project came from a Russian VFD IV-18 vacuum fluorescent display tube I acquired a year ago. It looked so unusual that I immediately started thinking about how I might include it in a future modding project. That project began in November last year and is called Steam & Current. My initial goal was to create a simple, low-power PC for web browsing and word processing. With this in mind, I decided to use the guts of an IBM R51 laptop. Its 1.6 GHz Intel Centrino CPU and 1GB RAM, combined with a new hard disk, aren't very powerful, but they're perfect for the tasks I'd be throwing at them. I also found that a docking station was available for the R51. This would allow me to attach additional PCI expansion cards and other drives – the R51's features as standard were a little lacking.

I'd never heard of steampunk before I started the project, but the fluorescent display tube seemed ideally suited to a project that looked old or retro. After some research, I found the style of steampunk – a combination of brass, glass, wood and electricity – was exactly what I was looking for. When I'd completed the initial sketches, the name Steam & Current seemed to fit – I wanted to combine 19th century-style mechanics with electrical components that emerged more than a hundred years later.

I hadn't used a laptop in a modding project before, so for this reason, I decided not to nail down all aspects of the design at the start. Some flexibility to change things as I went along would be important. The only aspect I would stick with would be to mount the laptop and dock vertically. After removing the unwanted shells of the laptop and docking station, I mounted the components on a plank of plywood. I estimated the minimum size of the exterior needed to house everything. Armed with accurate dimensions, I cut the back of the exterior panel and both side panels from ash tree boards, adding slots for the optical drives. I dismantled an old clock to scavenge some brass sprockets from inside, and these became the first steampunk-styled parts of the exterior.

To create a frame for the display, I milled the components out of wood, then shaped them

SEE MORE
of Thomasz's fantastic steampunk PC, head over to http://tinyurl.com/steampunkmod

FULL SYSTEM SPECS

CPU	1.6GHz Intel Centrino
GPU	AMD Mobility Radeon HD 7500
Storage	2.5in 160GB Samsung HM160HC
Memory	1GB IBM DDR
Motherboard	IBM Thinkpad R51 laptop motherboard
Sound card	On-board
PSU	Laptop adaptor
Cooling	Thermaltake fans

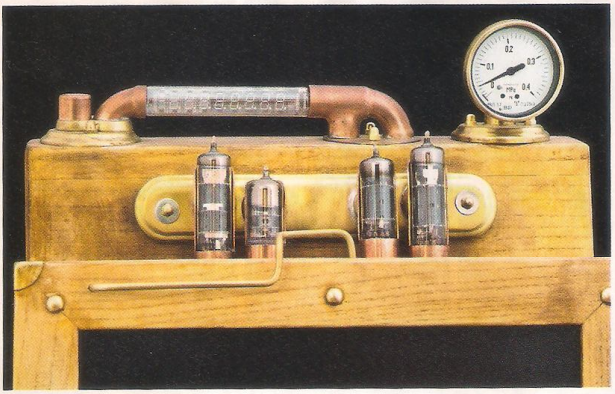
and glued them together. I also began working out how to make the fluorescent display tube a prominent feature. I gathered various brass and copper parts, including tubes and elbows typically used for central heating, keyhole covers, and other odds and ends I had lying around. One **bit-tech** forum user suggested making a metal mount for the fluorescent display tube on the top of the case – this was exactly what I wanted, so I set about making the mount.

The fluorescent display tube needed a power source, so I decided to use the various numeral displays to act as indicators for hard disk and network activity, which drew their power directly from the motherboard like a standard case. Other displays show the status of the laptop's battery, the power status, and whether the Num Lock and Caps Lock are enabled. I managed to successfully control all the numerals and their segments using CNY17 optocouplers, although the fluorescent display tubing wasn't as bright as I'd hoped.

Steampunk often favours form over function – many of the exterior ornaments are for decoration only, so I began sourcing other components. I found an old manometer and part of a door handle. Once connected, they became a gauge, which I then mounted on the top of the case.

I also added a liquid level indicator on the left side on the case – even though the PC isn't water-cooled, I think that steampunk usually revolves around the use of liquid and steam. Therefore, any project of this type should at least suggest some internal use of liquid. With this in mind, I filled the indicator tube with paraffin wax. This was easier said than done, however – the wax stained everything and wouldn't stay level in the tube. I eventually used another type of wax, pre-heating it and allowing it to settle evenly.

Connecting the display and main chassis was a particularly difficult task. I planned to make the display adjustable – or at least its pitch – so that it could be moved into a more comfortable position if necessary. Creating hinges for the pivot wasn't particularly difficult, but installing the electrical connection between the display and laptop



was quite hard. Once again, a forum member came to my aid and suggested that I use an elastic bellow, similar to those used in old large-format cameras, through which to route the signal cable. Incredibly, I had just such an object in my possession. Unfortunately, the cable proved to be too short, so I had to cut a small hole in the case to allow it to reach. The hole is masked with a piece of brass and a copper rod, which also supports the display.

I then added some vacuum tubes to the front of the display, which was looking rather bare. These had the effect of increasing the total power consumption by 60W – not ideal when I wanted the PC to be power-efficient – so I decided to light the tubes artificially with low-power red laser diodes. I positioned one diode under each tube and aimed them vertically so that the beams filled the tubes' entrails with a red light. It was tricky to position the diodes evenly across all the tubes – this was essential, as even slight differences resulted in vastly different lightning effects.

One suggestion from the forums was to darken the wooden surface of the case. To do this, I used walnut wax and shellac. This helped the metal to stand out and gave the case an authentic, aged and weathered look. After assembling the PC, I noticed that there were no external USB ports, so I created an external USB hub using brass and sleeved the USB cable in copper.

As finishing touches, I modified trays for the optical drives, and made some additional front panels and the power switch. Since the wooden chassis was slightly wider than the dismantled laptop, the optical drive bezels didn't sit flush with the case. The drive trays needed to be extended so that they weren't an eyesore. I used screws glued to the trays, which allowed me to adjust the distance between the panel and the main part of the tray. Making the power switch was a less elegant process. I drilled a hole directly through the case, above the laptop's power switch. I then built a simple mechanism using a short brass rod attached to a metal button, which powers on the PC when it's pressed. The project was finally complete and I hope everyone enjoys reading how I made it. CPC

BE A WINNER!

To enter for Reader's Drives, your mod needs to be fully working and, ideally, based in the UK. Simply log on to bit-tech at www.bit-tech.net and head over to the forums. Post a write-up of your mod, along with some pics, in the Project Logs forum. Make sure you read the relevant rules and advice sticky threads before you post. The best entrant each month will be featured here, and for UK-based projects we'll even send our roving photographer around to photograph you and your PC. Fame isn't the only prize; the write-up and pictures will also appear on bit-tech, and you'll be able to get your hands on a fabulous selection of prizes – see right.

Win all these prizes!

We've teamed up with some of the world's leading PC component manufacturers to offer this great range of prizes to each lucky Readers' Drives winner. The winner will walk away with all three prizes listed below, so get your entries in!

Fractal Design Newton R2 650W Modular Power Supply and Define R3 Case

Total value £190 inc VAT
Manufacturer
www.fractal-design.com
www.quietpc.com/manufacturers/fractaldesign
The Fractal Design Define R3 case reaches new heights in Swedish design and function. Its perfect partner is the Newton R2 650W power supply, which offers unrivalled reliability, 80-PLUS certification, effective cable management and a five-year warranty.

Biostar TA870+

Value £80 inc VAT
Manufacturer Biostar, www.biostar.com.tw
The Biostar TA870+ is packed with new technologies that support the AMD multi-core (4x and 2x), including the new Phenom II X6 core processor. With AMD 140W CPU support and a 100 per cent X.D.C Japanese capacitor, this board offers high-quality components and excellent performance. On-board 8-channel audio with Blu-ray support, a Bio-Remote utility for HTPC and AMD OverDriveTM with ACC all make the Biostar TA870+ a great choice for gamers and overclockers.

Corsair Dominator CMP4GX3M2A1600C8

Value £120 inc VAT
Manufacturer Corsair, www.corsairmemory.com
This 4GB matched set of two 2GB DDR3 memory modules comes from Corsair's high-performance Dominator family of memory, which includes Intel's Extreme Memory Profiles (XMP 1.2). Verified to run at 1,600MHz with latencies of 8-8-8-24, it's a robust, profile-based, high-performance DDR3 memory kit.