

High Voltage Hot Rods makes classic hot rods go electric.



High Voltage Hot Rods CEO Andrew McClary holds an aluminum adapter plate he designed, and built with the ShopBot, to mount his high-energy electric motor to a 1966 Corvair's original Powerglide transmission.



High Voltage Hot Rods can take a classic Corvair, Mustang, Thunderbird and the like, basically any car that you may have a hankering for, and refurbish it as an all-electric hot rod — for a price tag around \$50,000 (for car and new motor). The company rebuilds original classic cars, replacing the gasoline engines with state-of-the-art electric motors, and also collaborates with car replica manufacturers.

They recently completed a project using a 1966 Corvair. The project is called the Electrovair III, because back in the 1960's, the original car manufacturer tinkered with developing two electric versions of the Corvair.

WHY SHOPBOT? Company CEO Andrew McClary explains, "I needed a manufacturing tool that would be precise, easy to reconfigure, and not take up too much room in the shop — every square foot is prime. We already were familiar with the power and precision of ShopBots, as we'd used a ShopBot in a wood furniture business. Our new ShopBot Buddy takes up very little space. We chose the optional casters so we can move it around easily as needed — nice wheels!"

WHERE Boca Raton, FL

BUSINESS HighVoltageHotRods.com

SHOPBOT 52" Buddy PRSalpha

NEXT UP Look for High Voltage Hot Rods upcoming TV show.

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READ ME Always check makezine.com/34 before you get started on projects. There may be important updates or corrections.

PROJECTS

➔ **88: Skill Builder: Finishing and Post-Processing Your 3D Printed Objects**

Simple tools and techniques to take your desktop 3D printer to the next level.

100: MonoBox Powered Speaker

It's little but it's loud!

110: Japanese Toolbox

Build this strong wood box with a clever lift-out lid.

116: Electronics: Fun & Fundamentals

Make easy, efficient LED photography lights.

120: The Dryer Messenger

Get your dryer on Twitter and never forget your laundry.

124: Hand-Crank Geiger Counter

Charge a high voltage tube using a simple mechanical oscillator.

➔ **129: 1+2+3: Rear-View Power Socket**

🚩 **HOIST IT:**

Remake the construction crane of the ancients — the gin pole.

➔ **130: Door-Top Stash**

Make a sneaky compartment that's easy to reach but hard to find.

132: Country Scientist

How to document what you make or discover.

➔ **135: 1+2+3: Work Jeans Tool Wrap**

➔ **136: Puzzle Treasure Box**

It's easy to open this pad-locked box, once you know the secret.

➔ **138: Remaking History**

Heron of Alexandria and the gin pole.

142: Homebrew

Audio console fusion.

➔ **144: Danger!**

Make a rope swing.

➔ **146: Howtoons: Gami-Bot**

148: Toolbox

Dental tools, steadicams, bolt cutters, and quadcopters.

➔ **160: Toy Inventor's Notebook**

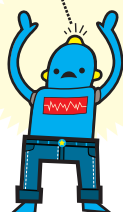
Edible optics.



🚩 **WHEN TOWELS TALK:** The Dryer Messenger tweets and texts you when clothes are done.



WHAT CAN I DO WITH THESE OLD JEANS???



100

MINI BOOM:

Build a clever amp to rock your tunes.

135

TOOL WRAP:

Unroll your wrenches in blue denim.

Bay Area:
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New York:
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"A robot may not injure humanity, or, through inaction, allow humanity to come to harm."

—Isaac Asimov's so-called "Zeroth Law of Robotics"

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Nate Van Dyke (robot illustrations) currently drinks and draws in San Francisco. He's worked in video games as a concept artist but has been focusing on freelance illustration and gallery shows as of late. Some of his clients include *Wired* magazine, Burton, Island Def Jam, Sony, Scion, Sega, Activision, Levi Strauss, Gap, MSN, Upper Playground, Slayer, *Heavy Metal* magazine, and so on. In 2012 he made a dream come true by being a part of a Metallica-themed gallery show, which opened with the band in attendance. Van Dyke has also been doing a lot of live painting for major music festivals in recent years, even though he hates crowds of people staring at him.



Syuzi Pakhchyan (*Tracking Our Bodies*) is a fashion technologist and author with a passion for beautiful code and conductive cloth. Her playful tinkering at Art Center College of Design inspired her to write *Fashioning Technology*, the first DIY book on interactive fashion. She continues to chronicle the constantly evolving developments in wearable technology on her blog, fashioningtech.com, while running her research-based design practice focused on bringing crazy ideas for next-generation wearables to market. Currently she is tapping into her childlike curiosity while working on a fun line of wearable tech products for kids.



The first time **David Lang** (*The Accidental Maker*) water-tested his OpenROV with co-creator Eric Stackpole, it sank to the bottom of the pool. Lang admits, "I was heartbroken, while Eric was excited to learn what went wrong. I learned that part of the maker mentality is never seeing a project as complete. Every failure is a great learning opportunity." He lives on a sailboat in the Berkeley, Calif., marina. "It gives me a cool feeling that every little improvement we make has the potential to tell us a little bit more about the ocean. It keeps the stories of tool use close to the tool making."



Paloma Fautley (MAKE engineering intern) is a student at the Santa Rosa Junior College currently pursuing a degree in robotics engineering. Her interests range from origami crafts to costume makeup to building robots. Her passion lies in combining art and technology in new and interesting ways. When she's not working in the MAKE Labs providing comic relief and her unsolicited opinions, she's at home working on her own personal projects.



Michael Overstreet (*DARwin-OP*) is a computer programmer by day and an amateur roboticist by night. Overstreet and his humanoid robot Boomer have competed in the last six RoboGames and have won multiple bronze, silver, and gold medals. For the past three years he has been experimenting with 3D-printed robot designs at his local hackerspace (CCCKC), of which he's a founding member. He's active in the 3D printer community and is working on his own 3D printer design. He's also been a grassroots supporter of the Kansas City Maker Faire as well as attending all of the national Maker Faires. He blogs his robotic adventures on "I, Bioloid".



Judy Aime' Castro (*CoffeeBots*) is a San Francisco artist and designer working with textiles, metal, industrial materials, and electronics. She learned tinkering from her machinist father and sewing from her mother as a family trade. The concept for CoffeeBots came to her while reading a call for artists for a robot art show. "As a joke I said, 'How difficult can it be to make a robot? It's a couple of wheels and a bunch of wires.' I wanted my robot to have a personality ... and I wanted hundreds of them running around." Her concept was accepted, the programming "started at the show, by the audience," and she's now working on CoffeeBot 2.0 kits.