Kook's Custom Headers, Get Kookin' with Kooks

By Billy Johnson, photos by Brian Humphries

Kook's Custom Headers might not be a household name in the tuner market, but they pride themselves as the pioneers in the stainless steel header revolution. Their headers are trusted in some of the most demanding environments in the world, where every last horsepower matters. Championship-winning NASCAR, NHRA, ADRL, IHRA, NMCA, NMRA, SCCA, and NASA teams go to Kook's Headers for their decades of experience and their high quality state-of-the-art products.

Kook's Headers are used for a competitive advantage in everything from club racers to top levels of motorsport. From header exhaust tip, Kook's has a vast product line for domestic cars and trucks, with Mustang, Camaro, SRT and Chrysler being some of their most popular applications. While domestics and off-the-shelf headers for various engine swaps are their bread and butter, Kook's is starting to venture into import brands as well.

Kook's Custom Headers air conditioned 50,000sq-ft state of the art facility is located in Statesville, NC.

While Kooks was doing some exhaust work for **Project E90 M3**, we were given an all-access behind the scenes tour by none other than George "Papa" Kook himself. Kook's Custom Headers started in 1962 when George Kook Sr. was building headers himself for his personal drag car. This experience has turned into decades of knowledge of how to make power in some of the most demanding and highest horsepower cars on the planet. With the help of his son George Kook Jr., what started out as a personal competitive advantage, grew into a successful business of manufacturing high quality race headers and exhaust systems. Like many companies that MotoIQ associates with, Kooks Headers is a race company that make products for street cars, rather than a retail company that throws their products on racecars for marketing.

Kooks designs and manufactures everything exhaust related for your car, from stainless steel headers and mufflers to complete exhaust systems. Check out their Header and Exhaust for the new C7 Corvette. They also have their own 49-state EPA certified and legal “Green” Catalytic Converters which are the only aftermarket racing cats that will officially make your car pass emissions, not throw a CEL, and will work on applications up to 800hp.

Inside the Kooks R&D (“Racing & Development”) shop is where a lot of magic happens. This is where racecars ranging from Legends cars on up to NASCAR and NHRA Pro Modifieds go to have their exhausts made. It is also where their 6-Axis CAD Roamer Arm is located. Every OEM production car comes here to be scanned and digitized as the first step to producing an exhaust system. Here you can see project E90 M3 as well as the hood of the #61 Roush Performance GS Mustang that I raced.

Inside the R&D building was this inconspicuous Mustang, which houses an Armageddon Twin Turbo system fabricated by Kooks Headers. Depending on the turbo specified, this kit makes anywhere from 700-1,600whp. Everything is properly designed, from the use of the flex joints to the beautifully executed welds; it even comes with a complete step-by-step DIY video installation. This is a really nice turbo system.

As an innovator in the exhaust industry Kooks not only prides themselves on delivering a competitive advantage with their high quality products, but great customer service is their number one priority both before and after a purchase. Every decision Kook’s makes as a company has a purpose, even when it comes to the location of their facility. They moved from New York to be closer to their Stainless Steel supplier in North Carolina in order to cut down on shipping costs to be able to offer the best products at the best prices to both consumer and racer alike.

Kooks started in drag racing and continue to push the boundaries of exhaust technology in some of the most demanding applications on the planet. Chris Rini's Camaro SS is the NMCA Pro-Street and Extreme Outlaw Pro-Mod Champion and runs a set of custom Kooks Fenderwell Headers. Don Fezzell's Mustang runs Kook's Cobra Jet Headers and is the current NHRA Stock Eliminator Record Holder.

While Kooks primarily focuses on late model domestic cars, they are starting to branch out to imported brands as well. With their state of the art facility, they have the ability to design, test, and manufacture race grade "Custom" headers and exhausts for any car. They already have a full C7 Corvette header and exhaust package on the shelf. There is no other header company in the country that can offer you a header for your gas engine truck, while still building handmade custom race headers that are used in applications making over 3,000 horsepower. If you have an early or late model domestic car or truck, they have parts on the shelf ready to ship.

Everywhere you look you see exhaust systems varying stages of assembly. Here you can see racks full of pre- bent tubes for both the new C7 Corvette and a 2009 Cadillac CTS-V ready to be welded to become complete systems.

Kook's is truly the one stop shop for every header or exhaust component you need. They have some of the best MIG and TIG welders out there. NC is one of the biggest hot spots for talented fabricators since it's the home state to almost every NASCAR Sprint Cup Team. Kooks has not rested on their laurels and have a modernized facility wit robotic MIG welders, CNC Mandrel benders, CAD design work, Precise digital scanning with their CMM 6-Axis Arm, Vector Coordinate Measuring Machine, laser cutters, and laser-cut precision made fixtures. They make everything in-house from mandrel bending their own tubes, burning custom flanges, High Flow Race Cats, producing specialty collectors and they even have our own line of racing mufflers and tips.


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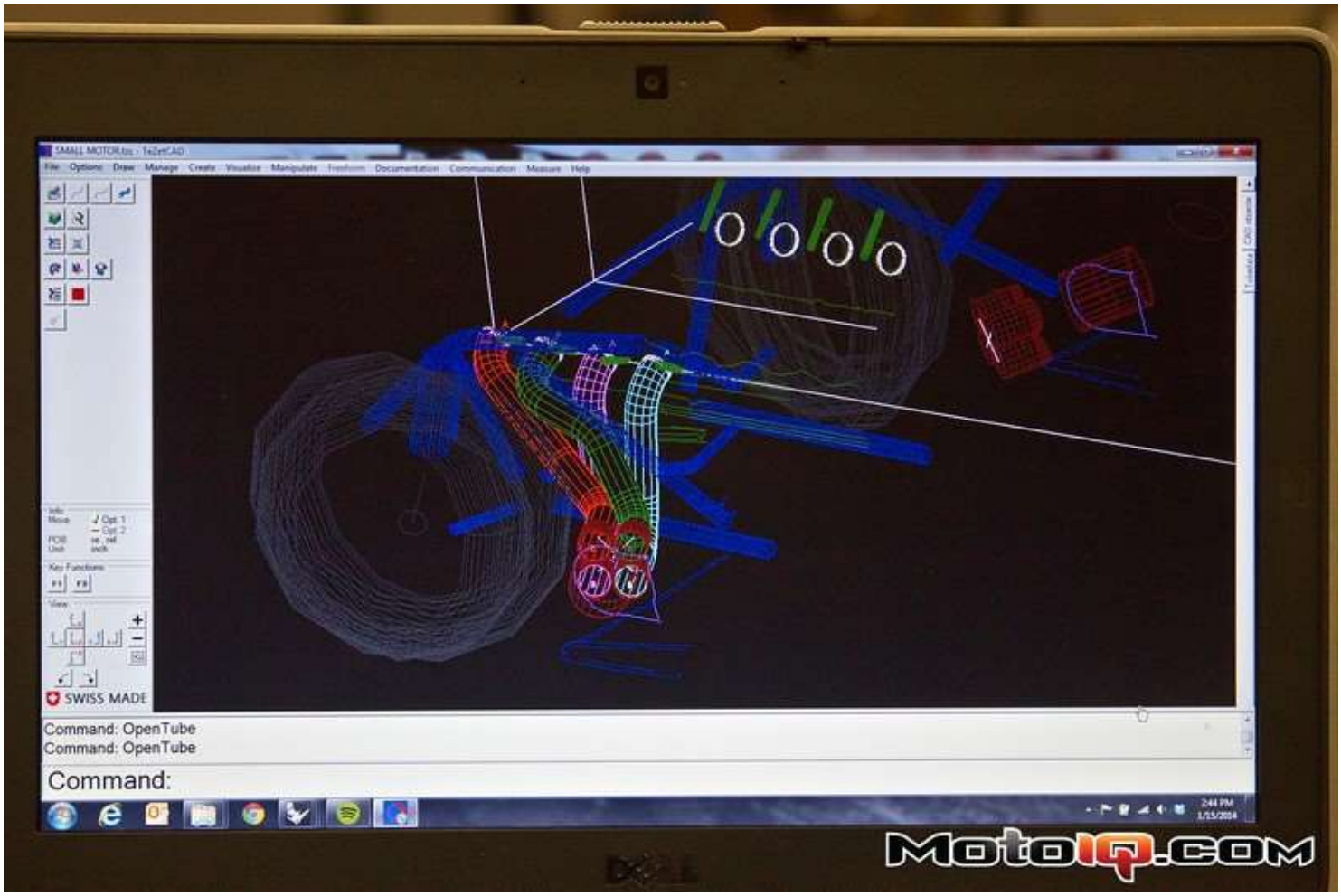
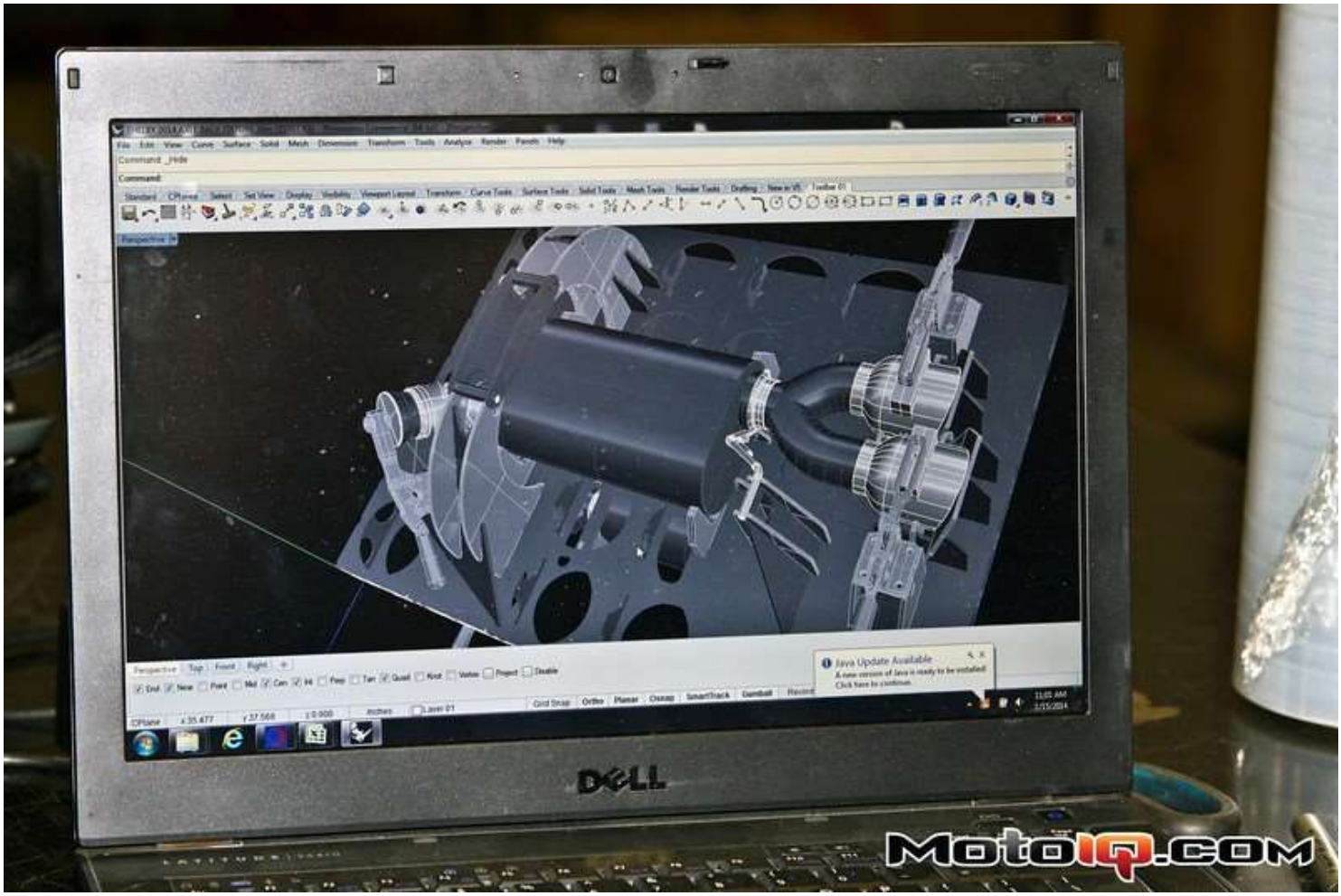
The CMM 6-Axis Ferrell/Roamer Arm is the first step in the development of any Kooks header or exhaust system. Every OEM production car is scanned and digitized into a 3D model to accurately determine the amount of clearance there is. With the clearances known, they can go through every design option that will fit to quickly and efficiently determine what is best before a tube is ever cut or bent. This saves time and development cost for Kooks, which results in a better product at a more affordable price for the consumer.



Here you can see the CAD drawing of the NHRA Pro-Modified in the first picture of this article. Ensuring clearance from the tires and chassis, the CAD drawings enable Kooks to design the best exhaust that will fit the very first time.



The 3D Roamer Arm is also crucial in developing the jigs. Here you can see an Axle-back muffler for a Shelby GT500 Mustang inside its jig.

Once the jigs are determined, they are laser cut in-house and welded together like a model dinosaur. All of the jigs are built on rotisseries for ease of welding in every nook and cranny without stressing the worker. Check out the exact similarity to the digital file in the previous picture.

This Vector Coordinate Measuring Machine is a laser-scanner used to digitize a pre-bent tube. This is a very important quality control device which is used to verify programming in the digital bending machines. If a tube ever does not fit the jig during production or during the creation of a new jig, this machine figures out if the bend matches the intended angle and prints out a data sheet to compare to the original CAD drawing from the 3D arm to figure out the problem.

Here we see Papa Kook advising during the test fitment of the first exhaust made on this brand new jig.

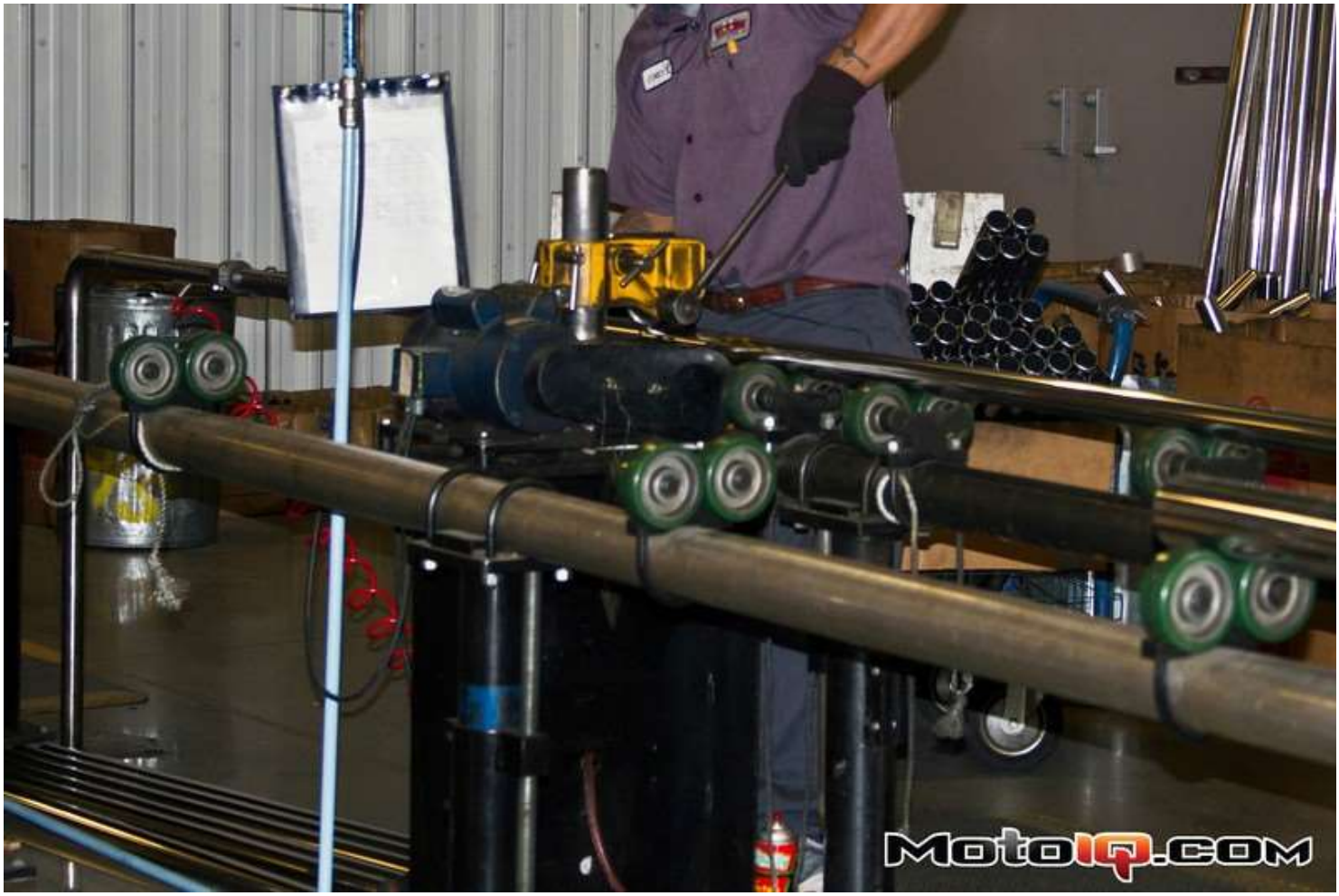
The whole company is a labor of love, and you can see it the minute you talk to anyone who works there. You can especially see it in Papa Kook's interactions with all of his employees. We could walk through their facility without Papa Kook talking to every individual employee, asking them about the project they were working on, and giving father-like mentoring guidance to help perfect the task at hand. There is no 9-5 'punch the clock' mentality, but rather enthusiastic people who love what they do and love racing, and this passion really shows in all of their products.

The entire 50,000sq-ft facility is air conditioned with 30' ceilings. This not only makes for a great work environment for the welders on hot summer days, but it also makes for a more consistent product from a metallurgy standpoint since everything is produced under the same conditions every day.

While this is not Papa Kook's first mandrel bender, this 3" unit has been with him since 1969 and has seen hours of use by Papa Kook's own two hands.

Technology has come a long way since the 60's. This is a brand new 2013 model 4.5" robotic mandrel bender. While modern, larger, faster, and cooler, this is just in addition to the 1969 unit, not replacing it. They are that busy.

Everything they make starts as a straight tube of stainless steel. There are giant racks as far as the eye can see in every corner of every room with tubes of varying wall thicknesses and diameters depending on the application.



The stainless steel tubes are cut to length by this roll-cutter, which cuts the pipe without creating any burrs. This is a faster, cleaner, more efficient method than using a traditional cutting wheel or band saw. Cutting down on wasted time and energy wit better processes and technologies results in more consistent and better products while saving money in the end. This philosophy permeates the entire company.

Here you can see two of the many digital benders at the Kooks facility. Before anything is bent, the operator selects what needs to be made on a digital touch-screen. An image and description of the part is displayed for confirmation of what is needed before anything is ever bent. This cuts down on cost, time, and error. Once you hit go, the part is created before your very eyes.

At every station we walked by, Papa Kooks was passing on his decades of knowledge and experience to his employees. You can see his enthusiasm for making great products on this face as well as everyone in the company. With a great demeanor, Papa Kook also has a great sense of humor. Before we even met him, he scared the crap out of my photographer by yelling at him for taking pictures in the R&D room where we were shooting, which obviously was not a problem.

Here we see a C7 Corvette header being created. After the tubes are bent, they are laid out on their respective jigs and are tacked into place. The merge collectors are added and they are off to the welding station for completion. Now it's starting to look like a header.

Once the headers are bent and tack welded into place, they make their way to the welding stations where the expert welders complete the welding with both MIG and TIG welds depending on the need for the application. Here we see headers for a NASCAR K&N racecar on the rotisserie. They are made in pairs and both right and left bank headers are on opposite sides of the jig.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Here we can see the beautiful TIG welds performed on a merge collector by the craftsmen at Kooks.

Once welded, the headers are ready to be boxed and shipped to their new homes and installed under the hood of something cool.

Kook's Headers are the sole supplier to the NASCAR Canadian Tire and K&N series. They are also the spec muffler for both the Whelen Modified Southern and Canadian Modified tours.


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Here we see a large jig for an X-pipe. The machining process at this station is very interesting.

Here are some test pieces for various X-pipes. Traditionally O2 bungs are welded in place but Kooks has this new high-tech specialty machine which creates a bung out of the existing material in the tube. If you look at the tubes above, there is a much smaller hole than what's needed for the O2 sensor. The machine stretches and doubles the material back to create a flange which is then tapped to accept the O2 sensor. By getting rid of the welding altogether, this process makes for a far more durable threaded port and makes welding a separate piece obsolete.

Kook's has every exhaust producing tool imaginable. This OEM-quality notching machine quickly cuts out any notches needed to fit an OEM joint.

Continuing with the OEM quality theme, this device creates factory ball and socket exhaust joints which allows axle-back exhausts to bolt to existing mid-pipes without the need to cut or weld on flanges. This also makes exhaust systems modular enabling the customer to buy kits in stages or order cat-backs if you don't want to commit to a header-back system.

All of Kook's mufflers are made in-house. Here we see an SRT-8 muffler being completed with an OEM ball and socket exhaust joint.

Once an exhaust is finished, it makes its way to the packing station and to the inventory shelving to await a trip to their new home.

We were blown away with the technology and quality of Kook's state of the art facility and especially "Papa" Kooks' hands-on leadership and attention to detail which really shows in their products. While we knew Kooks was a premium brand that made excellent products, we had no idea of the extent of the technology that they use to make consistent products and their versatility and emphasis on efficiency to be able to offer them at a great price point. We want to thank George Kook Sr. and Jr., Chris Clark, and everyone at Kook's Custom Headers for showing us around their impressive facility which makes some of the best exhaust products on the market and in racing.