

# **BIG BANG INJECTION**



Big Bang Injection is an Austrian company that was founded in 2012.

What started as a part time venture, evolved into a full time enterprise manufacturing High Performance Common Rail Injectors.

We, the owners of Big Bang Injection (Martin Schöppl and Jürgen Tanzer), bring to the table a combined 25 years of HANDS ON Common Rail Injector experience.

We both parted ways with our full time employer Robert Bosch GmbH on January 31st 2016.

Our departure allows the release of information regarding our experience which has previously been kept under a cloak of secrecy, required by contractual restrictions with our former employer.

We were employed at the Robert Bosch GmbH Common Rail Injector Lead Development Facility for commercial vehicles, located in Linz, Austria.

Lead Development Facility. This is where the magic happens. Design, development, proto typing, assembly, testing....

[http://www.bosch.at/en/at/our\\_company\\_3/locations\\_3/locations-detail\\_7552.html](http://www.bosch.at/en/at/our_company_3/locations_3/locations-detail_7552.html)

Martin excelled in the Higher Technical Institute of Engineering. After graduating at the top of his class Martin started working in the Engineering Department at Robert Bosch GmbH's Lead Development Facility in 2004.

Cummins Common Rail Injectors were relatively new in 2004. Their shortcomings readily apparent as the useable life fell short of expectations. Martin's first three years at Bosch were in the Investigation Department, where he performed Field Validation including wear and function analysis.

Martin was then promoted to a task force leader, where he headed groups that targeted the issues of cavitation erosion and tribological wear in different injector valves. Unable to hold him back (or even slow him down) Martin was then promoted to Functional Development Department of Bosch Injectors. Here he improved the hydraulic behavior, injection quantity waviness, shot to shot spread, injector to injector spread, zero fuel capability, his list of achievements goes on and on. Martin has his name on several CR Injector internal design change patents. He has an incredible knowledge of all theoretical and actual functions of Common Rail Injectors.

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Jürgen Tanzer began his 14 year Robert Bosch GmbH career in 2002. He spent his first 7 years in the Investigation Department making hydraulic, functional and visual investigation of injector components. Jürgen was then promoted to the Platform Development area also. Here he did precision measuring, assembling, endurance testing and investigated the newest injector designs and prototypes from Bosch.

Jürgen became exceptionally skilled in the art of injector assembly. He earned the reputation of building the smoothest running, most reliable hand built injectors in the facility.

Therefore he did the majority of the prototype testing and new design work as he was the mechanic to count on at Bosch. Jürgen was chosen to instruct sales employees and employees from the automotive aftermarket into the basics of injector assembly and adjustments.

His passion is expressed in each injector he builds. It is either perfect, or it never meets his extreme level of Quality Control.

Now you know the magic of Big Bang Injection many have been speculating about. These are the reasons why no one in the aftermarket injector industry knows injectors better than BBI. No one is able to adjust them more accurately, to tighter tolerances, or manufacture them for a longer life time than we do. We will put our reputation on it !

Martin Schöppl

Jürgen Tanzer

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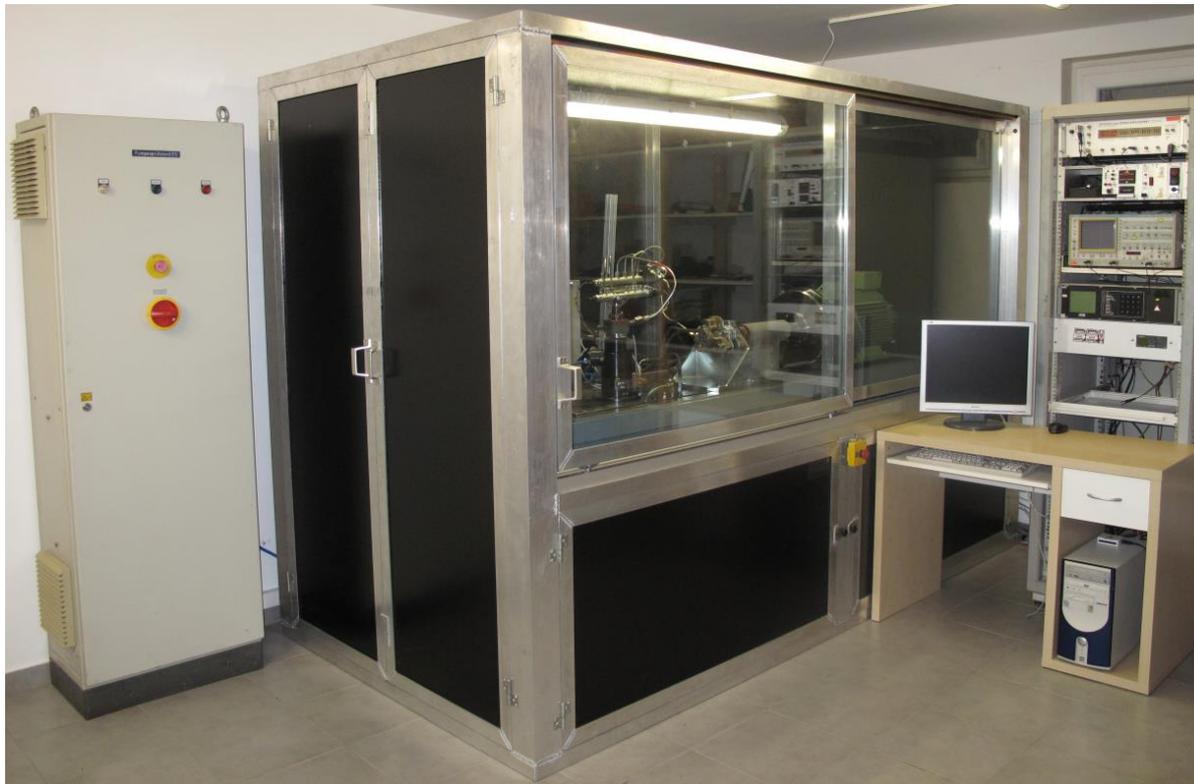
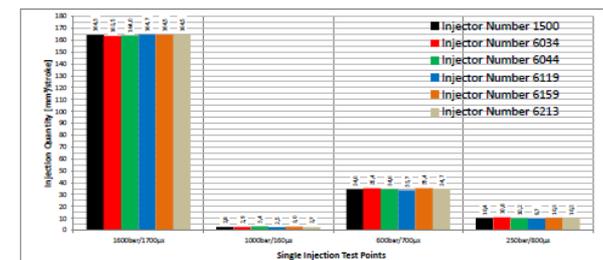
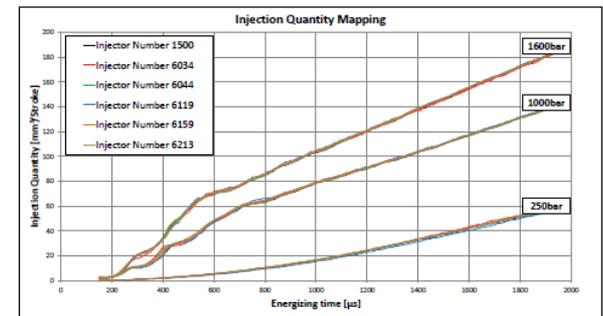
Each and every injector from Big Bang Injection is hand built utilizing ONLY brand new components. Our injector sets are adjusted to a maximum variance of 2% at full load injection quantity. Provided with each BBI injector set, our data test sheet includes single injection points and complete injection quantity mappings. Four single test points is not an adequate mapping quantity to assess the injectors function throughout it's entire operating range. Our data test sheet mappings are made utilizing over 600 measurement points, giving a complete overview of the hydraulic behavior of each injector, over the complete operating range of the engine.



## BBI Inj. Testing Certificate



Injector Set Number: MY4.5-S1-0059  
Injector Body upgrade: NO  
Date of testing: 26.11.2013



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We refuse to use any abrasive media to enlarge the nozzle holes. Our nozzle holes are eroded and hydro erosive rounded to an exact flow value.

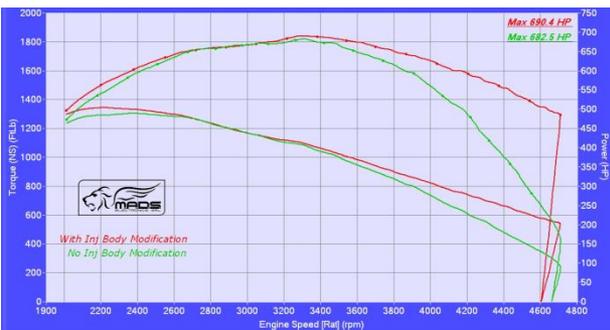
That means:

Every nozzle within a set will have the exact same flow value. Every single hole on each single nozzle has the exact same flow value, spray pattern and shape.

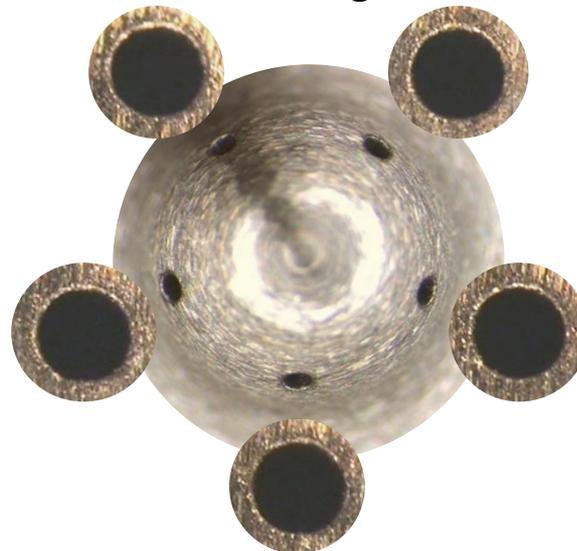
BBi is the only injector company offering body modifications which allow the injector to operate at a faster rate with correct function. BBi Injectors operate faster during the opening and the closing process which results in the same amount of fuel being injected in a shorter amount of time. OR more fuel being injected in the same amount of time ! This allows much greater performance at higher RPM's.

Big Bang Injectors provide: more power range, less smoke, no injector rattle, smoother idle, a quieter engine and better fuel economy.

Dyno run with and without high rpm body modification



BBi MY4.5 Stage1 nozzle

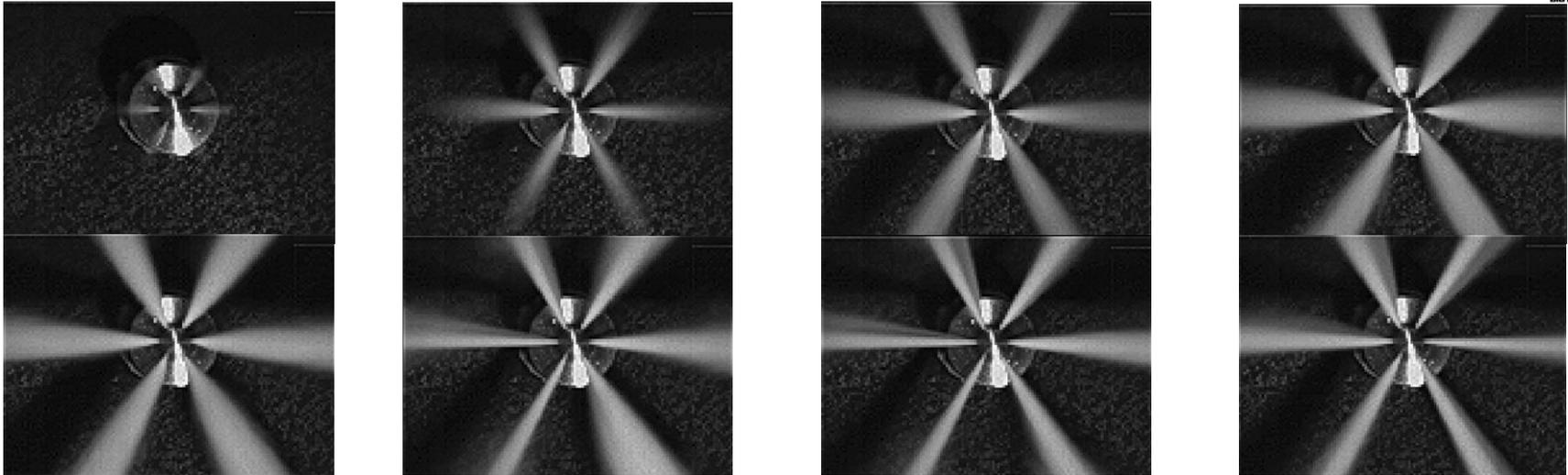


Abrasive media honed and deburred competitors nozzle

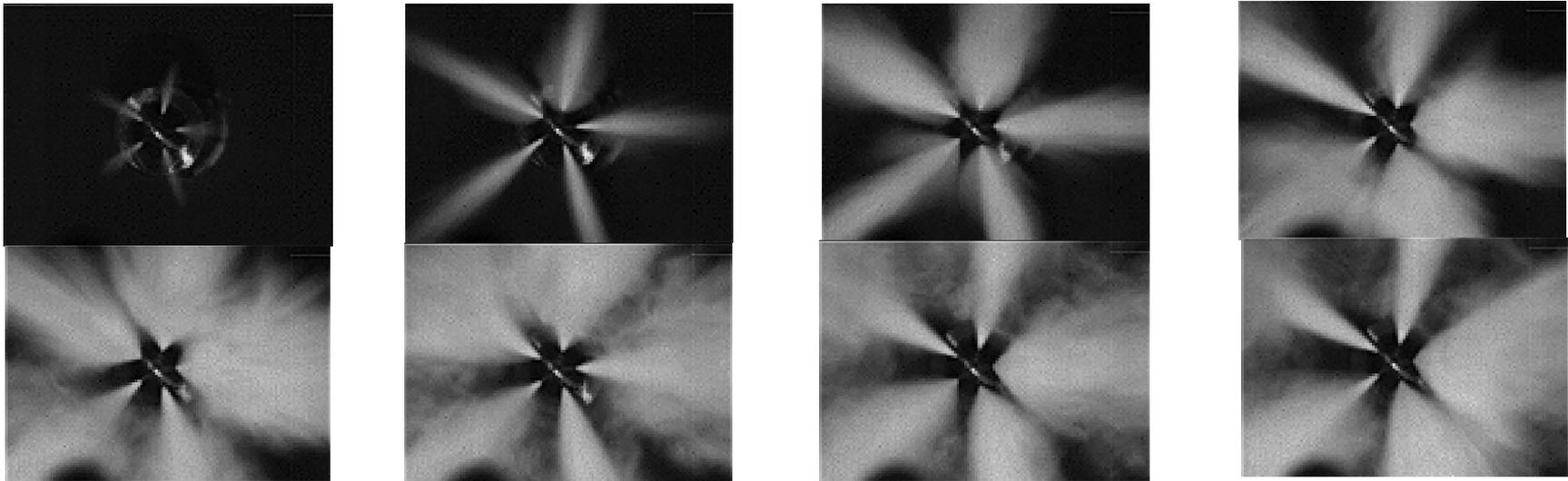


## Comparison of nozzle spray BBI Stage 3 vs abrasive media competitor nozzle

BBI MY03 Stage 3



Competitors 300HP nozzle



Here you can see the difference between a BBI Stage 3 and a competitor's 300hp extrude hone. BBI nozzles show consistent injection quantity between different injectors. Symmetry, and similar spray pattern out of every nozzle hole are some of the differences you can see and feel. Symmetric fuel in the combustion chamber causes symmetric forces on the piston and also symmetric temperatures. All which benefit your engine, resulting in a longer life time, less wear and less hot spots.