Our location is 3 hours to Shanghai by car, 15 minutes to Beilun seaport.

NINGBO GP TURBOCHARGER CO.,LTD.
NINGBO MOTOR INDUSTRIAL CO.,LTD.

Add:18# Tian Long Shan Road,Beilun,Ningbo,China P.C.:315806

Tel:+86-574-86113247
Fax:+86-574-86113240

E-mail:mary@nbmotor.com
www.gpturbocharger.com

INFORMATION

NINGBO MOTOR INDUSTRIAL CO., LTD is one of the leading company in the field of auto parts & accessories in China.

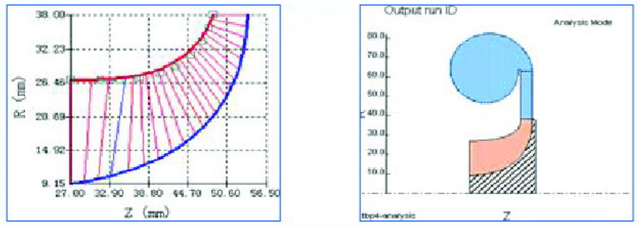
To be a share holder of NINGBO GP TURBOCHARGER CO., LTD, and cooperated with CHINA NORTH ENGINE ACADEMY, we start producing both diesel engine & gasoline engine turbochargers for both OEM and aftermarket since 2000.

Our products cover all popular turbochargers brands for vehicle applications, also for full range of cartridges and replacement parts for turbochargers fitted to original equipments. We continue to be committed to producing the highest quality products for our worldwide customers.

TECHNOLOGY

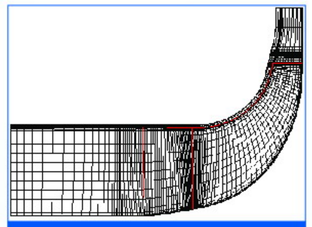
Product design, testing ability

Two wheels' design and test capacity:
Two wheels' basic design of the process is as follows:
(for example: compressor impeller):
The initial model of the impeller design. One-dimensional thermodynamic calculations to determine basic design parameters of the wheel and complete the initial model of the impeller, here we mainly use Concept-NREC software design.

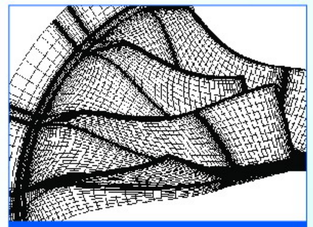


Meridional flow channel design

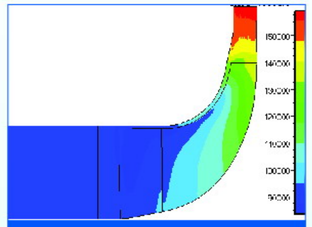
CFD analysis and optimization. Numeca software using the initial model impeller flow analysis based on CFD analysis to determine areas for improvement and re-adjust the relevant parameters in the NREC, optimizing model



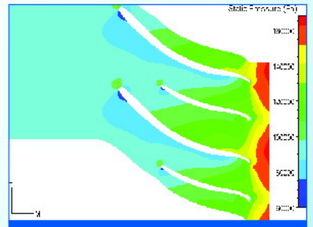
Impeller's Grid meridian channel



Impeller and some air mesh diffuser

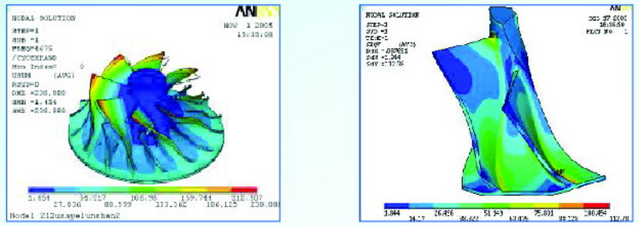


The meridian average static pressure cloud points



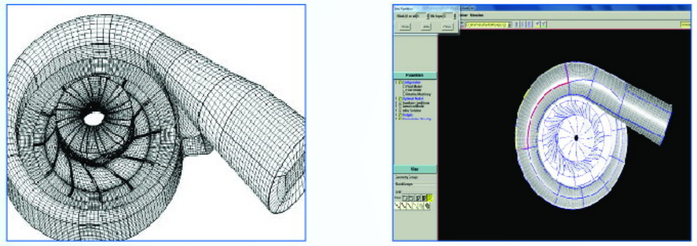
50% of the blade height Blade-to-Blade static cloud points

Intensity and modal analysis. Doing the intensity and modal analysis for impeller which has been through CFD analysis and optimization, according with the analysis results, to adjust leaf thickness and other organizations to optimize the size.

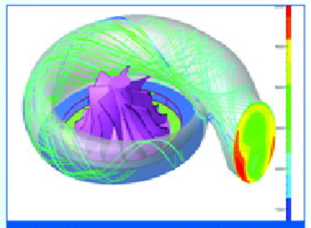


Strength Analysis of Impeller

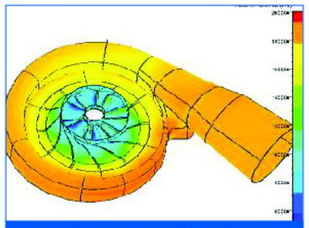
Housing model of compressor impeller and the United CFD analysis. By design of the impeller and the compressor housing joint of the CFD analysis, distinguish between the compressor impeller and the matching housing, according with the analyzing results, to determine the housing of the compressor impeller and some parameters with further optimization.



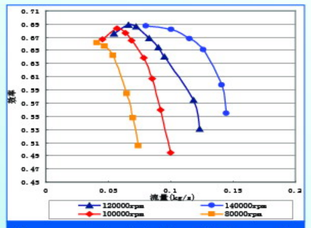
The overall mesh of Compressor



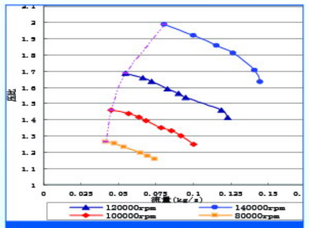
Three-dimensional flow line analysis



Static pressure distribution



Numeca calculate the efficiency of the flow chart



Numeca pressure ratio in the calculation flow chart

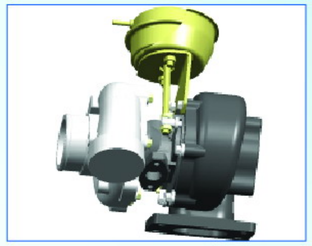
About the VGT / VNT turbocharger

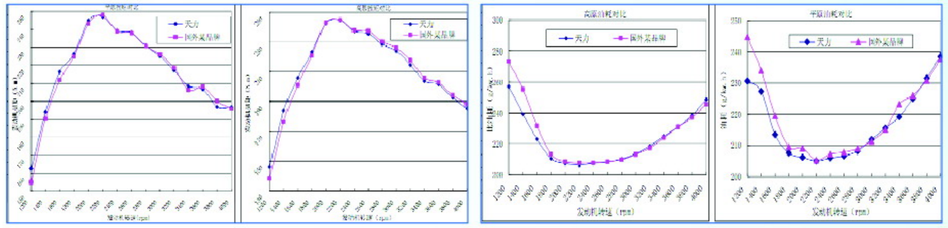
Ningbo GP Turbocharger has R & D since 2006, VGT / VNT turbocharger, has been tested with many domestic OEMs and providing products.

Example 1: Yun Nei: D19TCI engine

The JK48 with vacuum adjustable turbocharger performance indicators:

发动机型号	D19TCI
型式	4冲程、直列、水冷、双顶置凸轮轴、CRDI
控制型式	电控直喷
气缸数	4
气门数	16
缸径×行程(mm)	96×102
排量(L)	1.9
压缩比	15.5:1
最大功率 kW/rpm	92/3000
最大扭矩 N.m/rpm	285/1800-2200
配气机构	16 气门、双顶置凸轮
重量（Kg）	170
机油最低消耗率（g）	0.12
噪声（dB）	85dB
排放	欧 III



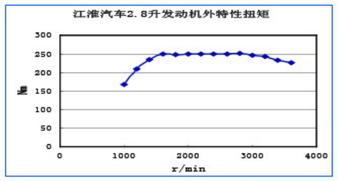


Reliability:

Turbocharger reliability bench testing by 100 hours, 20 hours of thermal shock testing.

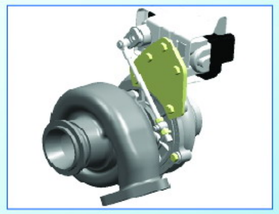
Engine bench test evaluation by the 1,200 hours.

Yun Nei D19TCI engine is installed in JAC Rein car



Example 2: 2.8-liter engine JAC

JK55 with adjustable vacuum adjustor. Test performance curves shown below:



Example 3:

Huatai Automobile 2.0 L engine with our electronically controlled adjustable JK50 turbocharger, being carried out with test and loading test.

In addition, we already have with the international equipment suppliers to jointly develop the calibration equipment for mass production. In the VGT / VNT turbocharger technology is a leading domestic level.

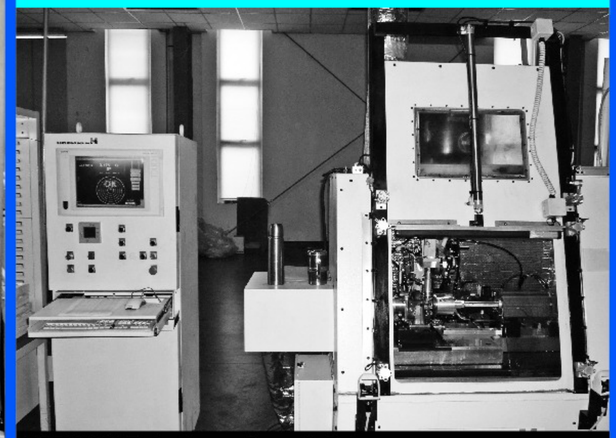
EQUIPMENT

Germany Schenck
Turbine Vertical Dynamic Balance

HARDINGE Machining High-precision NC Grinder

Germany Schenck
Impeller Vertical Dynamic Balance & AT Material-removing machine

Semi-automatic Assembly Line



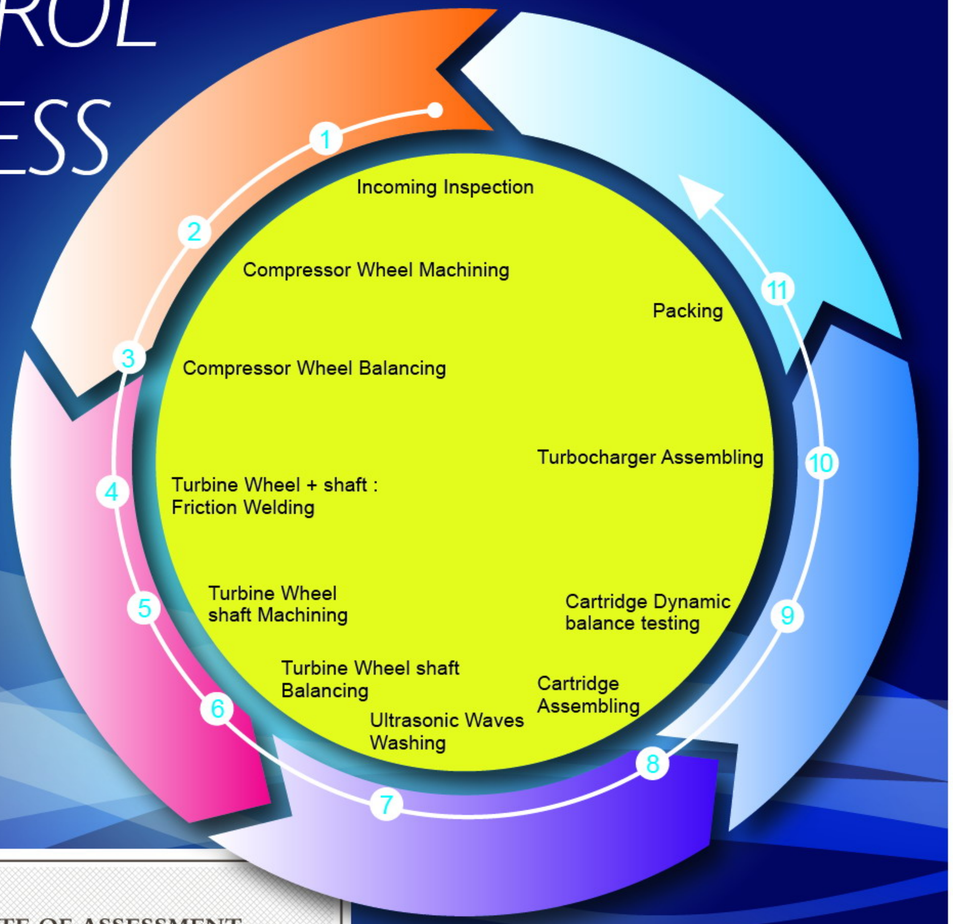
HOFMANN Turbocharger Dynamic Balance

OKUMA Turbine machining High-precision NC lathe

PRODUCTS ADVANTAGES

- Our turbochargers can fit with 40kw ~ 210kw engine
- The Impeller diameter from 45mm ~ 210mm, the maximum single level pressure rate can reach 3.8, the maximum rotate speed over 200,000 r/min
- Combined with the advantage of radial flow & spindle flow, we developed mixed flow turbo technology, which rise 3% of the turbo efficiency
- Choose the best size matching between turbine and impeller, we solve the problem of bad acceleration of turbocharger
- Using water cooling technology to cool down the lubricate oil temperature

PRODUCTION & QUALITY CONTROL PROCESS



CERTIFICATE OF ASSESSMENT

AQA International,LLC,attests that:

Ningbo GP Turbocharger Co., Ltd.

No.18,Tianlongshan Road,Daqi,Beilun District,Ningbo City,Zhejiang Province,China 315806

with a scope of:

Design and Manufacture of Turbocharger

Exclusions: None

is in compliance with the Technical Specification ISO/TS 16949:2009

The effectiveness of this certificate shall be validated by periodic surveillance audit of AQA for maintenance.

Validity of certificate please visit at WWW.aqachina.com

AQA Certificate No:	6624
IATF Certificate No:	0381126
Last Modified:	05/14/2011
Registration Period:	05/06/2010 To 03/30/2012
Initial Registration Date:	04/25/2006

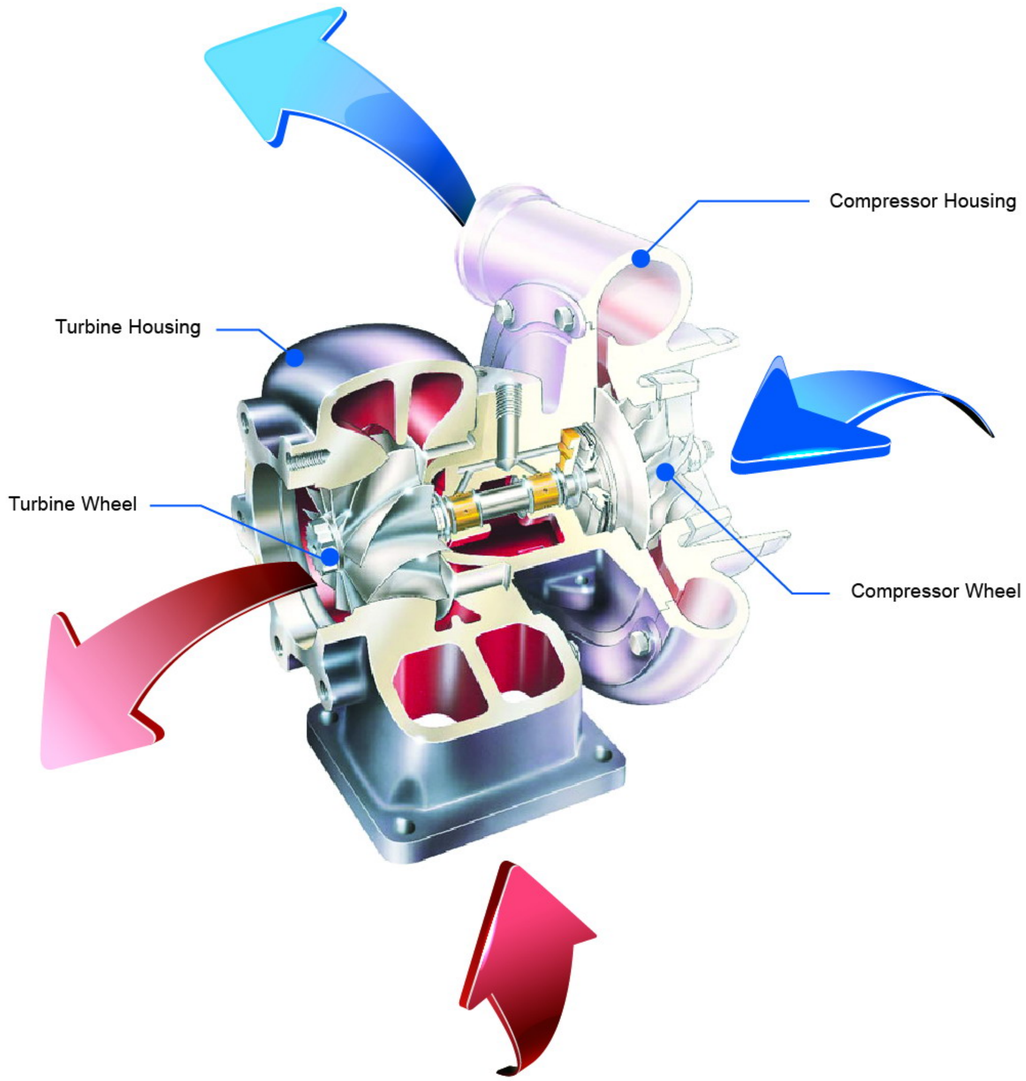
CEO, AQA International

aqa INTERNATIONAL

501 Commerce Drive NE
Columbia, South Carolina 29223, USA
Tel: (800) 281 4384
Fax: (803) 779 8109

CERTIFICATION

SECTION



TURBOCHARGERS

We supply approx 300 models of turbochargers, please take details as attached disk.

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OEM: 3530996,3530997,3802272	
Engine: 6BTAA	
Fuel: diesel	
Suitable for CUMMINS	

OEM : 721164-0013,721164-0011,721164-0009,	
721164-0005,721164-0003	
Turbo code: 17201-27030	
Suitable for TOYOTA	Year: 2001
HP:115	
Capacity (ccm):2000	
Engine: 1CD-FTV	
Fuel: diesel	

OEM: 714788-5001,172743,2352805,23522189	
Suitable for DETROIT DIESEL	
Year: 1999	
Type (L): 12.7	
Power: 470HP	
Engine: series 60 12.7L DDC	
Fuel: diesel	

OEM number: 702012-5012	
Turbo code: 5010015R92,1831458C91,1831383C93	
Suitable for FORD 7.3L	
Compressor A/R:1	
Turbine A/R:1.15	
Year: 1999--2003	
Engine: DIT	
Fuel: diesel	

OEM: 713672-0002,713672-5006S,713672-5005S,	
713672-0002,768329-5001S 454232-1/3/4/5,	
768331-0001 768331-0002,038253019C,	
038253019CX,038253019CV,038253019A,	
038253019AX	
Suitable for VW	Year: 2000
Type (L):1.9	HP:110
Engine: 1.9TDI	Fuel: diesel

OEM numbers: 06A145713D	
Turbo code: 53039880052	
Suitable for Audi	Type: 1.8L
Compressor Air: 1:1	
Turbine A/R year: 2000-2001	
HP: 180	
Engine: 1,8-5V quer/transversal	
Fuel: petrol	

TURBOCHARGER REPLACEMENT PARTS

- 1 Cartridge
- 2 Turbine Wheel
- 3 VNT Nozzle ring
- 4 Compressor Wheel

OEM CUSTOMERS

BorgWarner

JAC

QUESTIONS

Engine Lacks Power	Black Exhaust Smoke	Excessive Engine Oil Consumption	Blue Exhaust Smoke	Turbo Noisy	Cyclic sound from turbo	Oil Leak from compressor seal	Oil Leak from turbine seal	Cause	Remedy
★	★	★	★			★		Clogged air filter	Replace air filter
	★	★	★	★	★	★		Obstructed air intake to turbo	Remove Obstruction
★	★			★				Obstructed air outlet duct from compressor to intake manifold	Remove Obstruction
★	★			★				Obstructed intake	Remove Obstruction
				★				Air leak in duct from air cleaner to compressor	Replace seals or tighten fasteners
★	★	★	★	★				Air leak in duct from compressor to intake manifold	Replace seals or tighten fasteners
★	★	★	★	★				Air leak at intake manifold to engine joint	Replace seals or tighten fasteners
★	★	★	★	★		★		Obstruction in exhaust manifold	Remove Obstruction
★	★					★		Obstruction in muffler or exhaust stack	Remove Obstruction
★	★			★		★		Gas leak in exhaust manifold to engine joint	Replace seals or tighten fasteners
★	★			★		★		Gas leak in turbine inlet to exhaust manifold joint	Replace seals or tighten fasteners
				★				Gas leak in ducting after turbine outlet	Repair gas leak
		★	★			★	★	Obstructed turbo oil drain line	Remove obstruction or replace oil drain line
		★	★			★	★	Obstructed engine crankcase vent	Clear obstruction
		★	★			★	★	Turbo center housing sledged or coked	Change engine oil, filter, replace turbo as required
★	★							Fuel injection pump or injectors incorrectly adjusted	Replace or adjust injectors and/or injection pump
★	★							Engine camshaft timing incorrect	Check/reset timing
★	★	★	★			★	★	Worn engine rings or liners (blowby)	Repair as needed
★	★	★	★			★	★	Internal engine problem (valves, pistons)	Repair as needed
★	★	★	★	★	★	★	★	Dirt caked on compressor wheel	Clean with non caustic cleaner and soft brush, change filters
★	★	★	★	★	★	★	★	Damaged turbo	Analyze turbo to determine failure, replace turbo

Turbocharger Installation Check List

★	Replace oil supply lines and fittings. These lines often become plugged with decomposed oil which restricts oil flow and drainage.
★	Do not used silicone or thread tape
★	Make sure all openings to turbo are open and not plug or capped off.
★	Shut off fuel or disable ignition and crank the engine for at least 15 seconds or until oil pressure is raised
★	Allow engine to fast idle (1,000 RPM) for 3 - 5 minutes to seat turbo seals
★	Always let engine idle for 3 -5 minutes before shut down, otherwise the turbo will continue to spin without oil lubrication and pressure
★	When changing oil, be sure to prime oil filter

GP TURBO CHARGER 2011

LOGISTICS