



**TARH NEGASHT**

**Design and manufacturing solutions**

# Introduction

TARH NEGASHT Company is one of the leading manufacturers of gears and gearboxes in Iran and a trusted provider of technical and engineering services for various industrial problems. Since its establishment in 1996, it has taken part in many different projects within various fields of design, manufacturing and quality control. Beside gears and gearboxes, design and manufacturing of turbomachines and turbomachine components, some specific machines and components and producing catalysts or compounds and coating anodes with precious metals are other main areas of activities in TARH NEGASHT. Undertaking projects of various engineering fields, demands a team of educated, experienced, responsible and self-motivated staff with a thorough understanding of engineering knowledge.

TARH NEGASHT has always been keeping on taking part in new and innovative projects introduced by industry. Customer satisfaction has always been a great concern for TARH NEGASHT and as a result of its high quality services, TARH NEGASHT successfully achieved the highest grade (Grade A) from SAPCO partner ranking in 1998. Today TARH NEGASHT has a close cooperation with major Iranian automakers and industrial complexes such as IranKhodro, SAPCO, SAIPA, MEGA Motor, Mehvarsazan, TUSRC (Tehran Metro) and Iran Railways.

TARH NEGASHT is a fast growing company and is planning to expand its cooperation with international partners.

# History, Executive and Scientific Experiences of TARH NEGASHT Co

## 1. Installation of mass production line.

- Pride automobile crown-wheel gear production line and manufacturing of 50000 parts.
- GM locomotive pinion production line and production of 2000 pinion parts.

## 2. Design

- Tens kinds of multi axle specific machine gearboxes
- Single axle specific machine for milling and drilling
- Screw turning specific machine according to all of the standards, used in Iran market
- Canal digging-trench plan
- Strength and performance test apparatus of damper
- Strength test apparatus of optical welding of damper
- Six jigs and fixtures for machining of 405 Peugeot knuckle on center machine

## 3. Design and manufacturing

- Ball joint test apparatus of Peykan automobile
- Persia Peugeot Motor door and rear box test apparatus
- Pinion and crownwheel unbalancing measurement apparatus
- Mazda automobile forward parapet
- Final drive
- Connecting rod mass and impulse center measurement apparatus
- Automatic rivet press for connecting crownwheel to Pride automobile differential box
- Coriolis acceleration measurement apparatus for circular fluid stream
- Cylindrical helix gears deburring apparatus

## 4. Inverse Design

- Locomotive turbo charger sun gearbox
- Driver and idler GM locomotives gear
- Final drive
- CG11 Road construction roller power train gearbox
- Marcant-Class 50 putting chaff gearbox and twitcher mechanism
- Yanmar AP-100 rice planter machine gearbox
- Handy crane gears
- Vespa motorcycle power train gears
- CG125 motorcycle power train gears
- Toyota landcruise delco gears
- Technical document preparation and Paykan automobile differential hypoid gears measurement
- Pride automobile (automatic model), governor, speedometer and power train gears
- Pride automobile (automatic model), centrifugal governor
- Pride automobile (automatic model), motion transmission control set(Valve unit)
- Z24 Nissan,16 valves, Cylinder head
- Double suction Pump mather+platt, model: :Medi Vane 8/10 DMED
- Byron Jackson Vertical turbine pump, model : 8 MA/15
- Mission pump, model : Mission Magnum1 - 3×2×13 R
- Mission pump, model : Mission 1-1/8 Pedestal 1×1½×8½ C

## 5. Inverse Design and manufacturing

- GM locomotive crownwheels and pinions- 62/15, 60/17, 59/18 teethes
- GE(General electric) locomotives pinion-17 and 20 teethes
- Speedometer gears and GM locomotives hydraulic wrench
- Davenport crane gearbox gears
- Orton crane coupling
- TUSRC DC traction pinion-15 teethes
- Agriculture ditcher, Keverneland model
- Final drive casing and carriage
- Radiator cap torsion bar
- BMP1 roof door torsion bar
- Cooling turbine impeller

## 6. Outfit and renovation

- Mitutoyo contracer apparatus computerized outfit, model : CBH-400 and B-41D by Profile Analysis software for Contracer (PASCO)
- CMM apparatus outfit, model : C806 Mitotoyo by GTS software
- Paykan differential Gleason hypoid gear generator, Gleason hypoid gear lapper and Gleason hypoid gear tester outfit and renovation
- Cylindrical gears Hobbing, shapping, shaving and grinding outfit and renovation
- Final drive outfit and renovation
- Pacific multi-stage pump, model : JTC
- Moret jet pump, model : MRVO 350.300.500
- Moret condense pump, model : MRVO 500.450.700

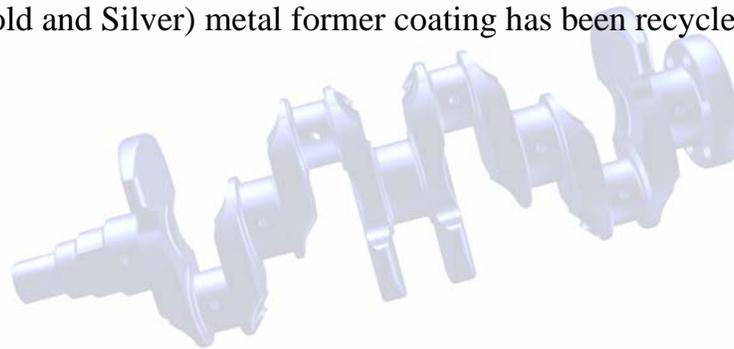
## 7. Engineering researches

- Hypoid gears technical science preparation and registration
  - Geometrical identification
  - Inverse Design
  - CMM measurement
  - MRR Instrument and process
  - Heat treatments and materials
  - Direct design
- Paykan connecting rod ranking
- Mazda automobile Ride and handling analysis
- Barrel and conical nonlinear springs analysis

## 8. Electroplating

- Metallic coating creation from substances:
  - Copper, Brass, Bronze, Cadmium
  - Chromium, hard chromium, Nickel and hard Nickel
  - Zinc (galvanization)
  - Silver, Gold and Platinum (on Niobium, Titanium, Zirconium and Tantalum base metallic)
- On variety of parts of different metallic base and with one of the following shapes:
  - Sheet and belt
  - Bar and tube
  - Mesh and grid
  - Geometrical complex shapes

In situation that the coating material is expensive (like Platinum, Palladium, Gold and Silver) metal former coating has been recycled.



## 9. Copper parts manufacturing

- Anode Copper rod
- Copper flexible plates
- Electrode Holder Nozzle from following material :
  - ◆ Copper-Beryllium alloy
  - ◆ Copper-Beryllium-Cobalt alloy
  - ◆ Copper-Beryllium-Nickel alloy
  - ◆ Copper-Beryllium-Chromium alloy

## 10. Turbomachines

- Viscous incompressible stream Navier-stokes three dimensional solution in Body Fitted Coordinate on body for internal and external stream
- Triple component internal stream analysis software preparation (pump, turbine and compressor), Torque converter (HydroDADS) containing :
  - ◆ Three part torque converter and hydrodynamic coupling design software
  - ◆ Three dimensional in triple parts torque converter grid producing software
  - ◆ Stream analysis software in toque converter(CFD)
- Centrifugal pumps design software (PDS)
- Gas pressure supporting stations parts selection software (Gas turbine, centrifugal compressor, ...)
- Selection, Design and manufacturing possibility researches of gas turbo compressor
- Inverse design, Pride automobile torque converter technical document preparation
- Stream and heat transfer solution in rotating canals
- Internal fluid stream measurement venturies design in tube
- Analysis of physical properties changes effect on Conjugated Heat Transfer in vertical canals in unsteady conditions
- Researches on Reciprocation pumps field

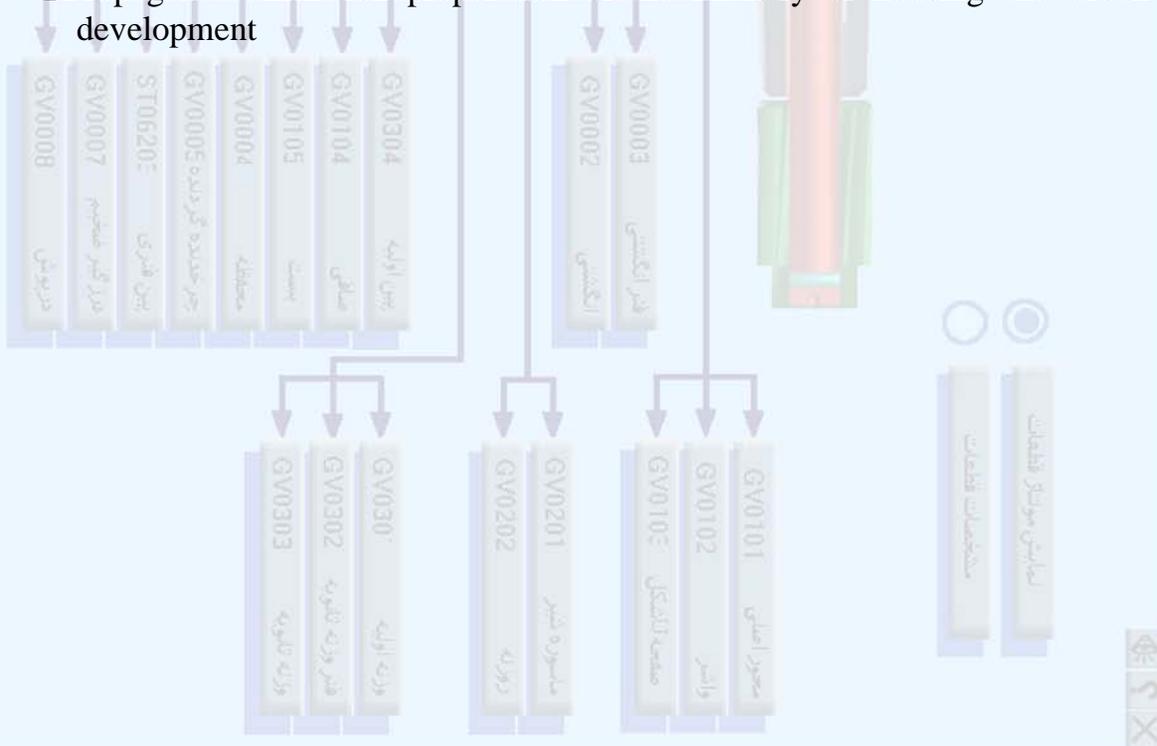
## 11. Computerized software

- Involute cylindrical gears reverse design software
- Involute spline inverse design software
- Gears and Gearboxes Analysis, Design, Inverse engineering and Optimization (GADIO), containing :
  - Cylindrical gears design software
  - Drawing Gears and splines design software
  - Gears quantities calculation software
  - Gears teeth profile design software
  - Cylindrical gears design optimization software
  - Cylindrical transverse helical gears design software
  - Gear generator tools design software
  - Handy and automatic gearboxes design software
  - Differential gears design software
  - Multi-spindle head gearbox design software
- Hypoid Gears and Gearboxes Analysis, Design, Inverse engineering and Optimization (HyGADIO), containing :
  - Hypoid gears geometrical design software
  - Hypoid gears tooth Contact Analysis (TCA) software
  - Hypoid gears tooth contact optimization software
  - Hypoid gears tooth surface calculation software
  - Hypoid gears surface deviations minimization by CMM software
  - Hypoid gears three dimensional manufacturing simulation software in AutoCad
- Automobile handy and automatic gearboxes selection software
- Connecting rod dynamic analysis software (CONROD)
- Dimensional tolerance engineering software (DTS)
- Geometrical tolerance engineering software (GTS)
- Profile Analysis Software for Contracer (PASCO)



## 12. Computerized animation

- Parts playing animation preparation and montage method with multimedia software for gear, motor, front axle and rear axle of Pride automobile
- Parts playing animation preparation and montage method with multimedia software for gear, motor, front axle and rear axle of self tensioning final drive
- Parts playing animation preparation and montage method for multi-spindle head gearbox
- Parts playing animation preparation and montage method for tapping machine
- Parts playing animation preparation for Pride automobile crank
- Parts playing animation preparation and montage method with multimedia software for Pride automobile governor box and torque converter of automatic gearbox
- Propagative animation preparation for presentation of National Iran Gas Company (NIGC)
- Propagative animation preparation of gas safety caution
- Propagative animation preparation of the ministry of housing and urban development



### 13) Content and specifications of industrial machines of Tarh Negasht Company

rank	machine name	model	number	work dimension(diameter*length)	manufacturing date	manufacturing company	manufacturing country
1	Gear Hobbing Machine	5K80	1	800*600mm	1975	Comintern	Russia
2	Gear Hobbing Machine	5K32	1	630*500mm	1975	Comintern	Russia
3	Gear Hobbing Machine	32	1	320*400mm	1988	Comintern	Russia
4	Gear Shaving Machine	ABC-02B-1749	1	320*100mm	-	Stankoimprot	Russia
5	Gear Grinding Machine	5B833	2	320*150mm	1983	Komsomolets	Russia
6	Gear Grinding Machine	5M841	2	400*150mm	1991	Komsomolets	Russia
7	Bevel Grinding Machine	-	1	320*150mm	-	-	Russia
8	Internal Grinding Machine	3K228A	1	500*400mm	1987	-	Russia
9	Internal Grinding Machine	3K227A	1	300*250mm	1981	-	Russia
10	Face Grinding Machine	-	1	400*1000mm	1975	-	America
11	Cylindrical Grinding Machine	WY323.21	1	320*1200mm	1990	-	Bulgaria
12	Tool Sharpening Grinding Machine	CE642	1	200*300mm	1990	-	Russia
13	Broaching Machine	-	1	-	1984	-	Russia
14	CNC Lathe	NC31	1	700*1500mm	1988	-	Russia
15	CNC Lathe	-	1	900*1500mm	1988	-	Russia
16	Horizontal Lathe	-	1	720*1500mm	-	-	Russia
17	Horizontal Lathe	-	1	1250*3000mm	-	-	Russia
18	Horizontal Lathe	ZA63502A	1	360*1000mm	2006	-	China
19	Milling Machine	C6236A2	1	120*300*600mm	2006	-	China
20	Radial Drilling Machine	-	1	-	1983	-	Russia
21	Horizontal Bandsaw Machine	AY280	1	280mm	2007	Aymaksan	Turkey
22	Induction HT System	-	1	-	1985	-	Russia
23	Electroplating System	-	1	-	2006	-	Iran
24	4 axis CNC milling machine	Farax V16	1	1200x800x600	2009	Farazgaman	Iran
25	CNC Lathe	Farax T45	1	450x1000	2009	Farazgaman	Iran