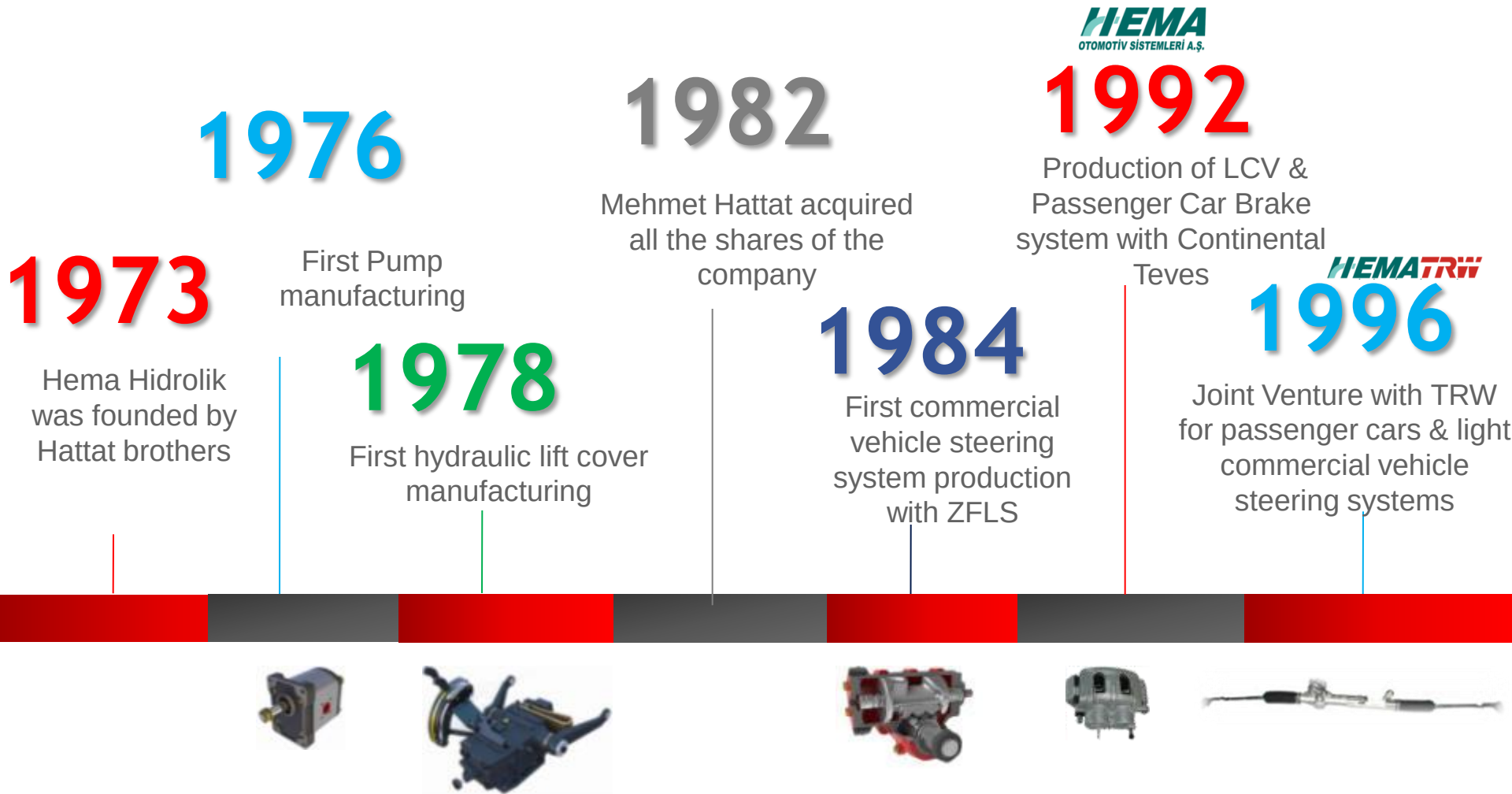




MILESTONES



MILESTONES

2000

Hema Defense
Founded

2002

Production of Agricultural
Tractors 2002

2004

Groundbreaking ceremony
for Diamonds of Istanbul

2014

New Steering
Systems Plant
Founded

1998

1998 Company
Title changes
into Hema
Endüstri AS

2001

Transfer of DBH site from
UK Poole November 2001

2004

Foundation of Hema
Energy

2009

HemaMetal
Foundry Founded

H-EMA
ENDÜSTRİ A.Ş.



H-EMA
ENDÜSTRİ A.Ş.



HATTAT HOLDING BUSINESS UNITS

HATTAT
HOLDING A.Ş.

HEMA
ENDÜSTRİ A.Ş.



HEMATRİ
OTOMOTİV DİREKSİYON SİSTEMLERİ A.Ş.



HEMA
OTOMOTİV SİSTEMLERİ A.Ş.



HATTAT TARIM
MAKİNALARI SAN. ve TİC. A.Ş.



HEMA
DEFENSE



HEMA
METAL



DIAMOND
of
ISTANBUL



HEMA
ENERJİ GRUBU



CERKEZKOY SITE

AUTOMOTIVE

AGRICULTURAL

DEFENCE

FOUNDRY

CONSTRUCTION

ENERGY

HATTAT Holding Cerkezkoy Premises



LOCATION



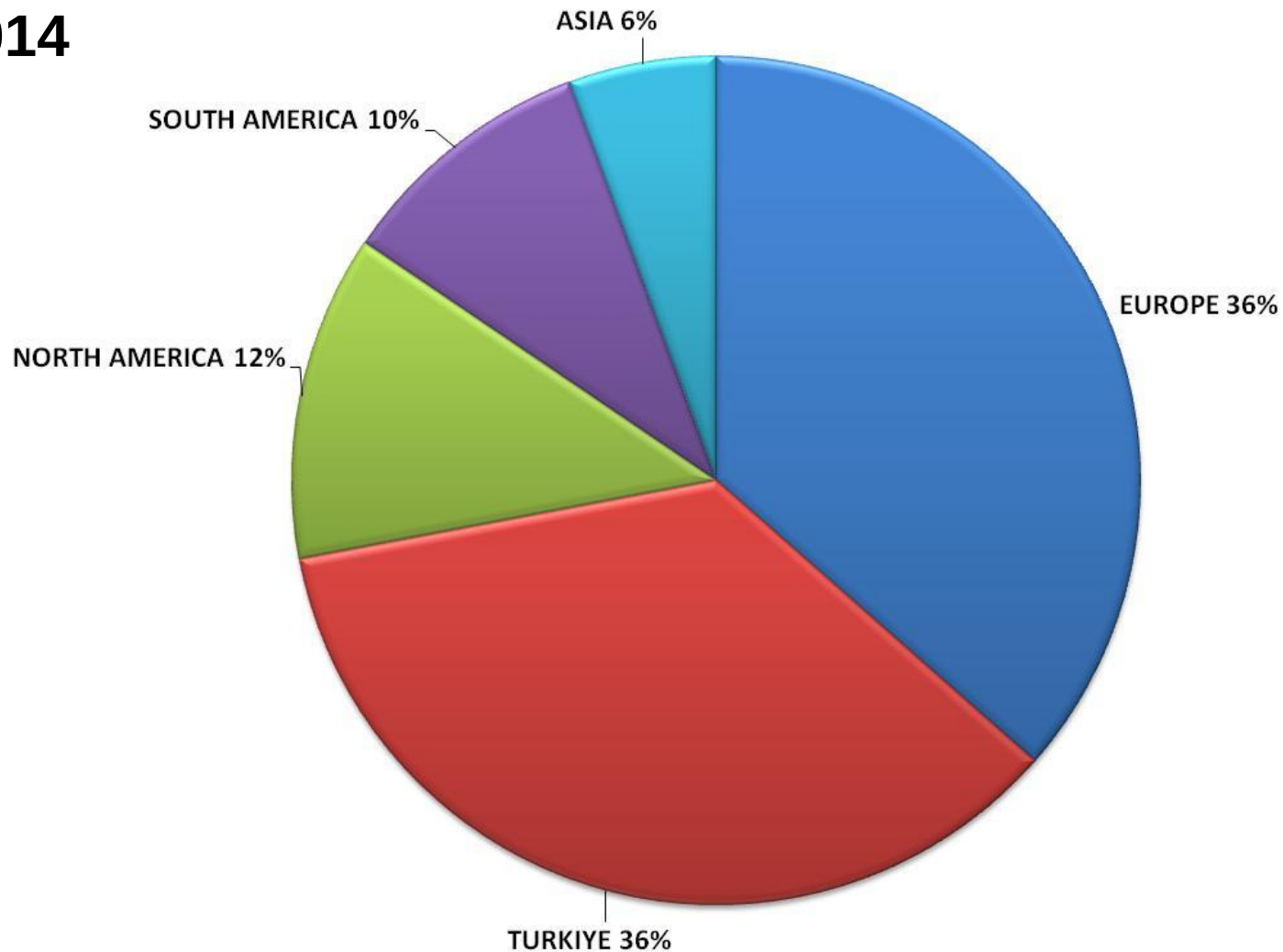
HEMA TURNOVER

\$ Million



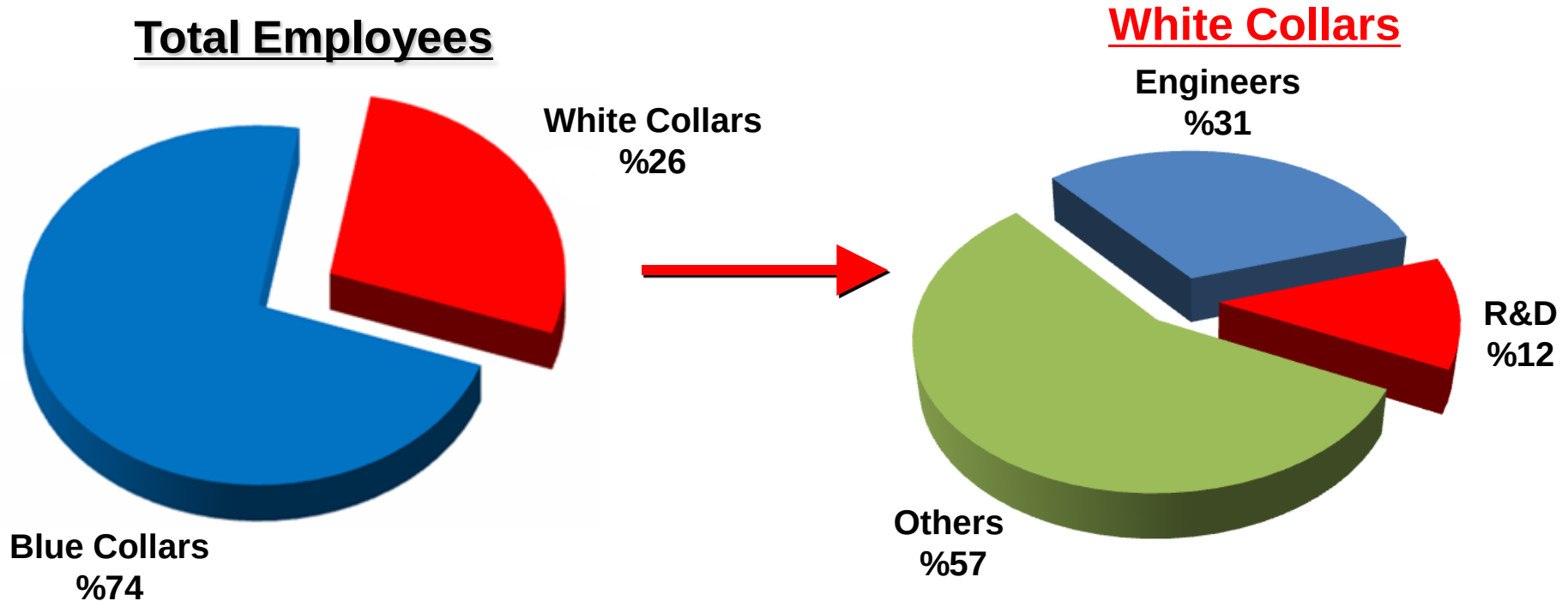
TURNOVER BY TERRITORY

2014



HATTAT Holding Cerkezkoy Premises

HUMAN RESOURCES



2355 Employees in Çerkezköy Premises
(as of JAN / 2015)

CUSTOMERS



RENAULT



FORD OTOSAN



Mercedes-Benz



JOHN DEERE



VALTRA

EvoBus

UNIMOG



TEMSA

RENAULT
TRUCKS

DEFENSE



CATERPILLAR®



Savunma Sistemleri A.Ş.



Otokar

Perkins



TEREX®



IVECO



KARSAN

ISUZU



BUS & COACH FACTORY SANDS CO., LTD



MITSUBISHI®

SisuDiesel

Türk Traktör



HYUNDAI
HEAVY INDUSTRIES CO.,LTD.



MAGNA

KUKA



Design • Customize • Manufacture



ASHOK LEYLAND

VOLAT



TERBERG
BENSCHOP

Manufacturers of capital vehicles

HEMA GLOBAL SALES



GLOBAL WAREHOUSES & PURCHASING OFFICES



RESOURCE PLANNING



VERSION 6.0

- FI (FINANCIAL ACCOUNTING)
- FA (FIXED ASSETS)
- CO (CONTROLLING)
- SD (SALES & DISTRIBUTION)
- MM (MATERIALS MANAGEMENT)
- PP (PRODUCTION PLANNING)
- QM (QUALITY MANAGEMENT)
- HR (HUMAN RESOURCES)
- CS (CUSTOMER SERVICE)
- WM (WAREHOUSE MANAGEMENT)

QUALITY CERTIFICATIONS



- **ISO-TS 16949 (since 2003)**
- **ISO 14001 (since 2004)**
- **ISO 9001 (since 1997)**
- **OHSAS 18001 (since 2010)**
- **ISO 50001 (since 2013)**
- **ISO 27001 (since 2015)**
- **AQAP 2110 (since 2006)**
- **AS9100 AVIATION QUALITY MANAGEMENT SYSTEM (since 2010)**
- **CATERPILLAR SQEP SILVER MEDAL (since 2008)**
- **DAIMLER-MERCEDES CATEGORY “1” (since 2007)**
- **FORD Q1 (since 2005)**
- **MANUFACTURING CERTIFICATE FOR ARMORED VEHICLES (since 2001)**
- **SECURITY CERTIFICATE FROM MINISTRY of DEFENSE (since 1998)**

QUALITY INITIATIVES

*The Roadmap
to Customer
Impact* 6σ

LEAN 6 SIGMA

3	MASTER BLACK BELT
22	BLACK BELTS
25	GREEN BELTS
184	YELLOW BELTS

- LEAN MANUFACTURING
- TOTAL QUALITY MANAGEMENT
- AUTONOMOUS MAINTENANCE
- PREVENTIVE MAINTENANCE
- JUST IN TIME
- KANBAN

More than 80 ongoing projects..



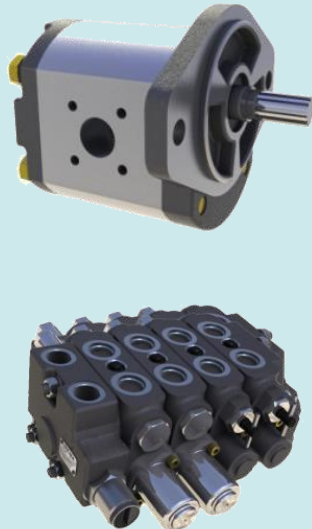
COMMERCIAL STEERING SYSTEMS

- Steering Gears
- Pitman Arms
- Str. Valves
- Str. Cylinders
- Bevel Gear Box



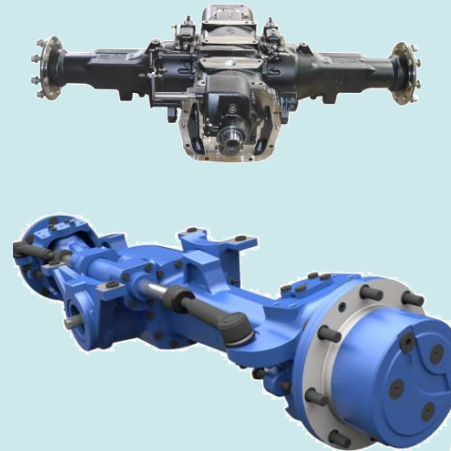
HYDRAULIC SYSTEMS

- Pumps
- Valves
- Lift Covers
- Lift cover valves



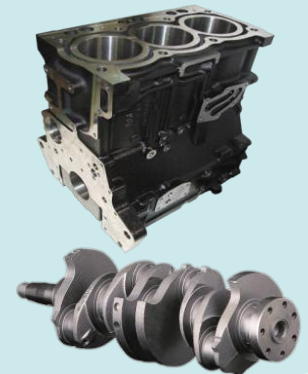
POWERTRAIN SYSTEMS

- Transaxle
- Transmission
- Gearbox
- Axle
- Timing Gears



ENGINE SYSTEMS

- Cylinder Block
- Cylinder Head
- Adaptor Plate
- Crank Shaft
- Lubrication Pump
- Balancer
- Oil Sump
- Planet Carrier





GEARS



LIFT COVERS



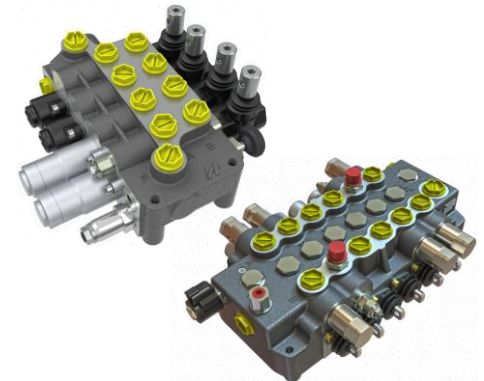
PUMPS



4WD AXLES



ENGINE COMPONENTS



VALVES



TRANSAXLES

HEMASTEERING SYSTEMS



Bus & Coach



Truck, Military and Special Purpose



LT & Mini Bus



PRODUCTION EQUIPMENTS

• UNIVERSAL MACHINES	856
• MACHINING CENTERS, CNC LATHES & GRINDING MACHINES	430
• GEAR HOBGING, SHAVING, SHAPING & ROLLING MACHINES	87
• TEST RIGS	60
• HEAT TREATMENT FURNACES	32
• HONING MACHINES	24
• WASHING UNITS	24
• BROACHING MACHINES	12
• PAINTING, COATING, IMPEGNATION UNITS	9
• THERMAL DEBURRING MACHINES	2
• MICROPLASMA NITRIDING UNIT	2
• ION COVERING UNIT	1

TOTAL UNITS: >2100

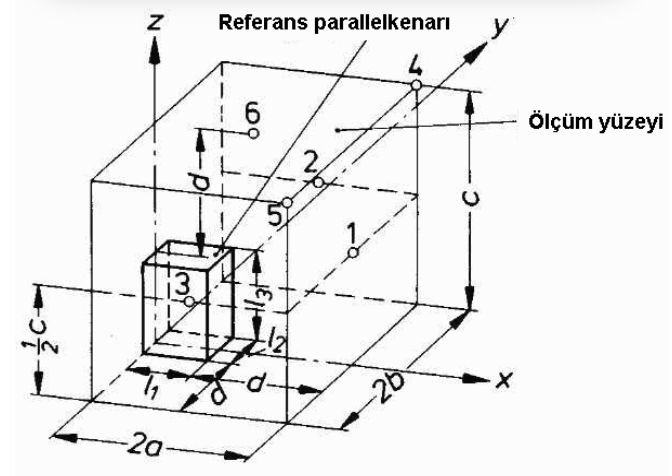


TEST CAPABILITY

TEST RIGS	TOTAL
Pump Test Rigs	4
Hydraulic Lift (Rockshaft) Rigs	4
Steering Gear Test Rigs	3
Valve Test Rigs	2
Fatigue Test Rigs	1
Endurance Test Rg For Front Axle & Transmission	1
Structural Test Rig For Front Axle & Tansmission	1
Anechoic Room	1
Brake System Test Rigs	6



ANEQHOIC ROOM MEASURING SYSTEM



MEASUREMENT TOOLS



MEASUREMENT TOOLS



- **LABORATORY MEASUREMENT DEVICES (Various)**
 - **SALT SPRAY TEST BENCH (2 Chambers)**
- **INTERNAL CLEANLINESS MEASUREMENT ROOM**
 - **PHYSICAL & CHEMICAL LABORATORIES**

R&D CAPABILITIES

- 2012 PATENT CHAMPION OF THE YEAR
- CUSTOM DESIGN TO CUSTOMER REQUIREMENTS.
- DESIGN STEPS COMPLYING WITH ISO/TS 16949 QUALITY SYSTEM REQUIREMENTS.
- APPLICATION OF PROTOTYPES IN PLACE.
- PERFORMANCE AND DURABILITY TESTS IN HEMA.

R&D WORKFORCE

ENGINEER PHd	2
ENGINEER Msc	4
ENGINEER	53
TECHNICIAN	13
DRAFTMAN	18
TOTAL	90

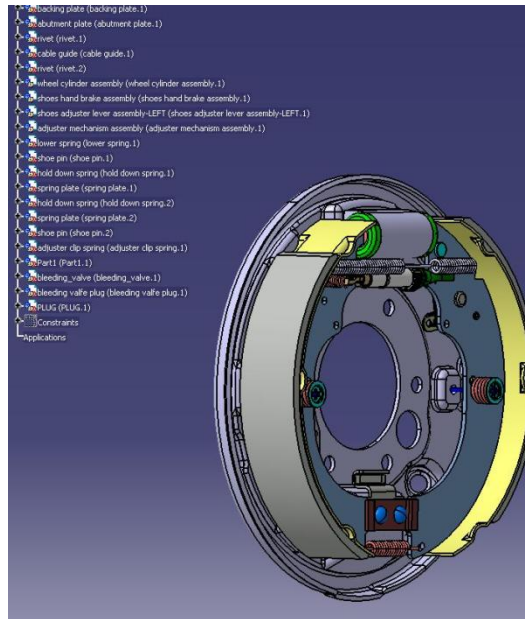


R&D DESIGN SOFTWARES

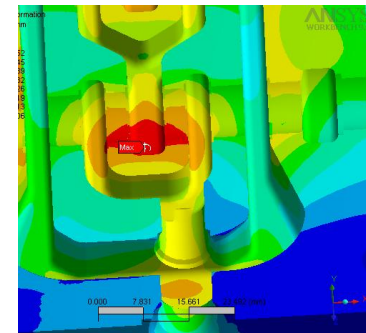
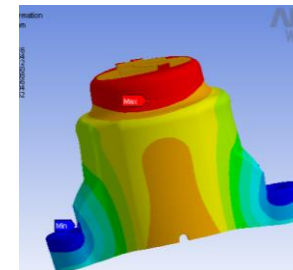
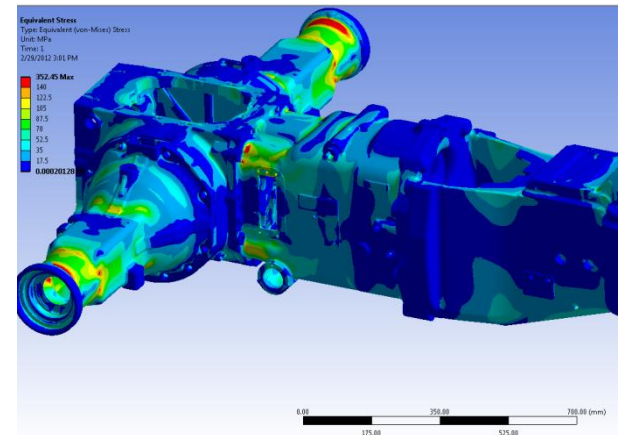
3D Modelling



CATIA V5



Structural and Thermal Simulation



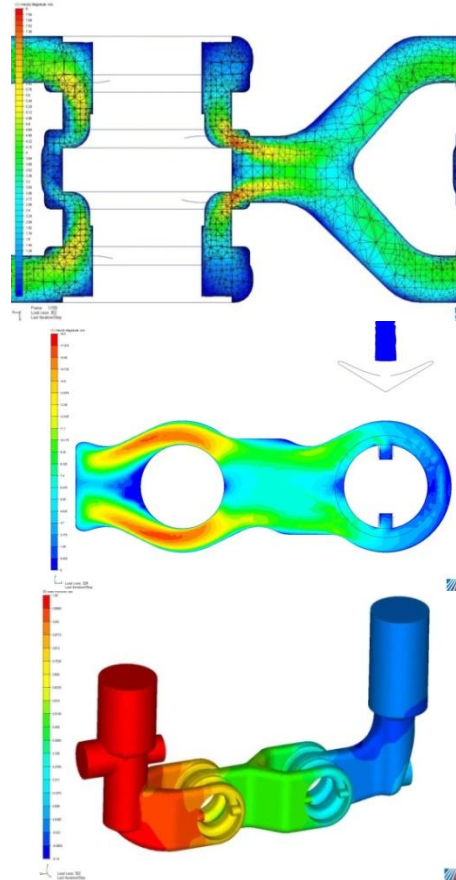
R&D DESIGN SOFTWARES

1D Hydraulic Circuit Simulation and Planar Mechanical Simulation

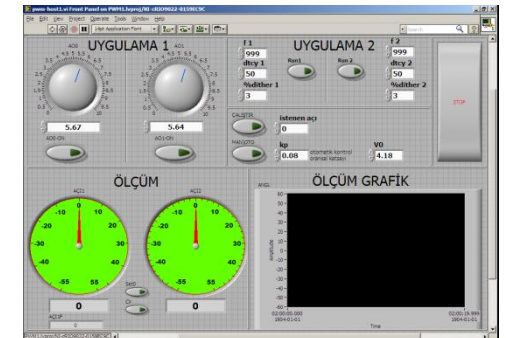
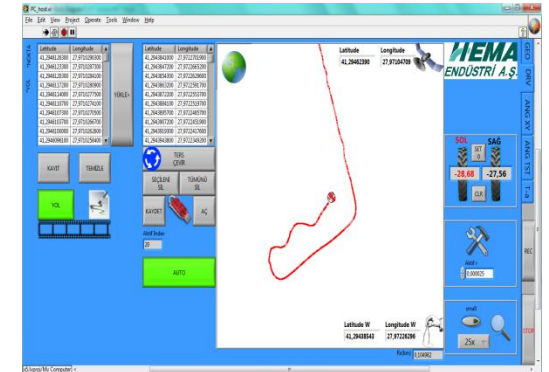


Computational Fluid Dynamics Simulation

Autodesk® Simulation CFD



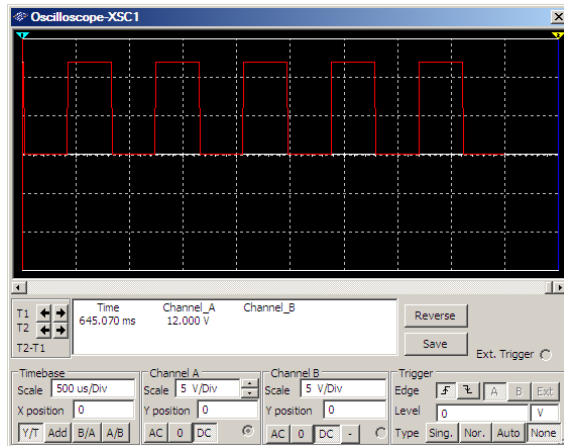
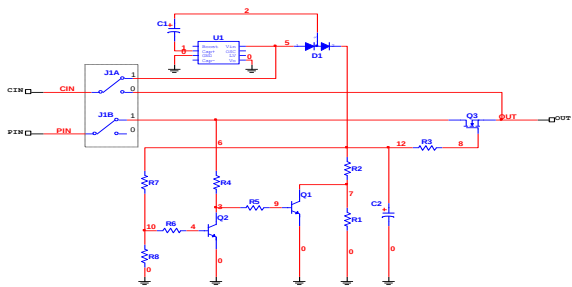
Test / Control / Simulation Software



R&D DESIGN SOFTWARES

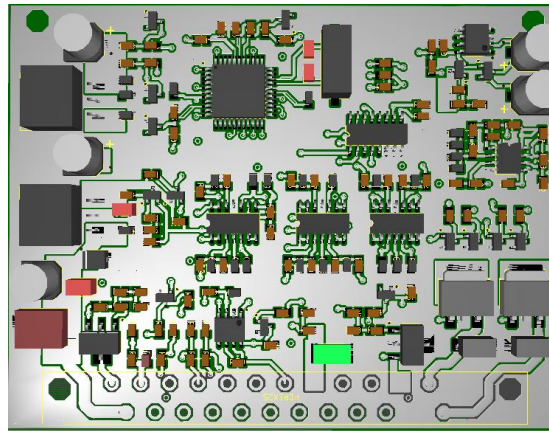
Electronic circuit design software

NI Multisim™



PCB design software

NI Ultiboard™

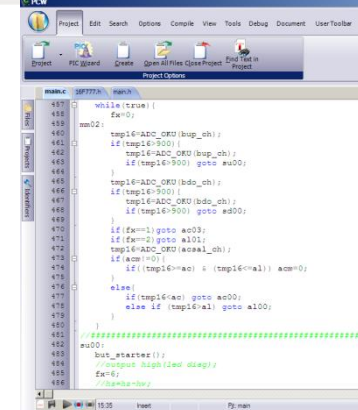
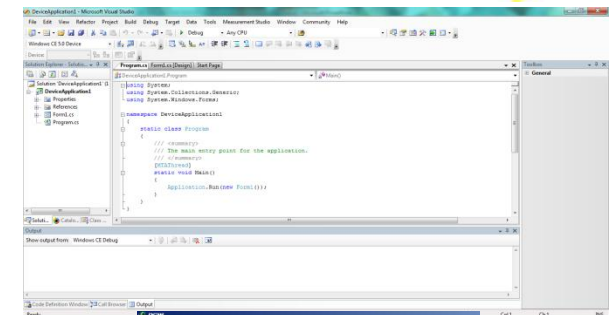


Programming

Microsoft
Visual Studio
Team Suite

CCS
Inc
PCWH Compiler

MATLAB



TOOL SHOP

- **FIXTURES**
- **APPARATUS**
- **GAUGES**
- **TOOLS**
- **CUTTER GRINDING**
- **MACHINE RE-ENGINEERING**
- **MACHINE OVERHAULING**





“Your Business Partner in Safety”





A Joint Venture since January 1996

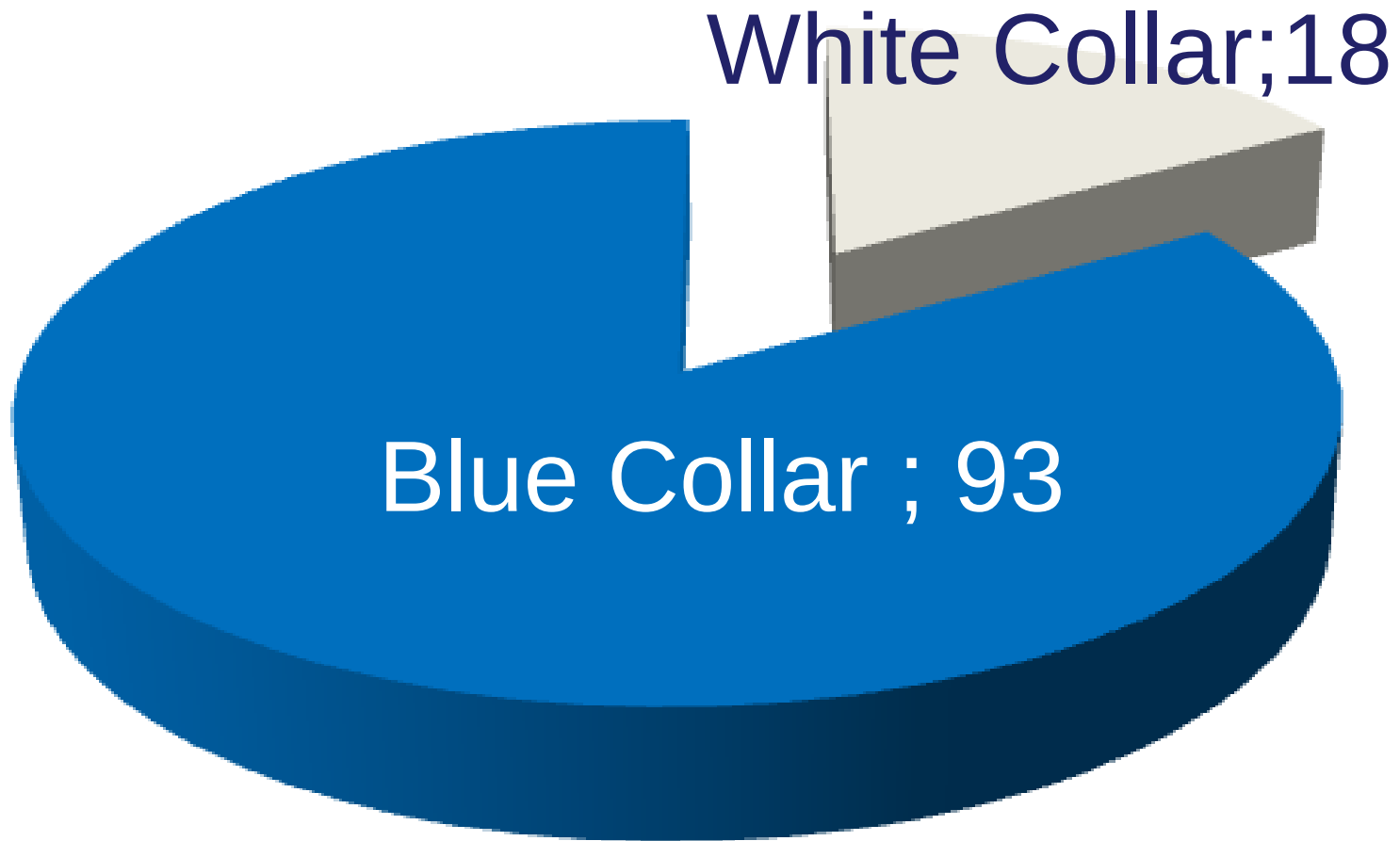
Shareholders: 80%



20%

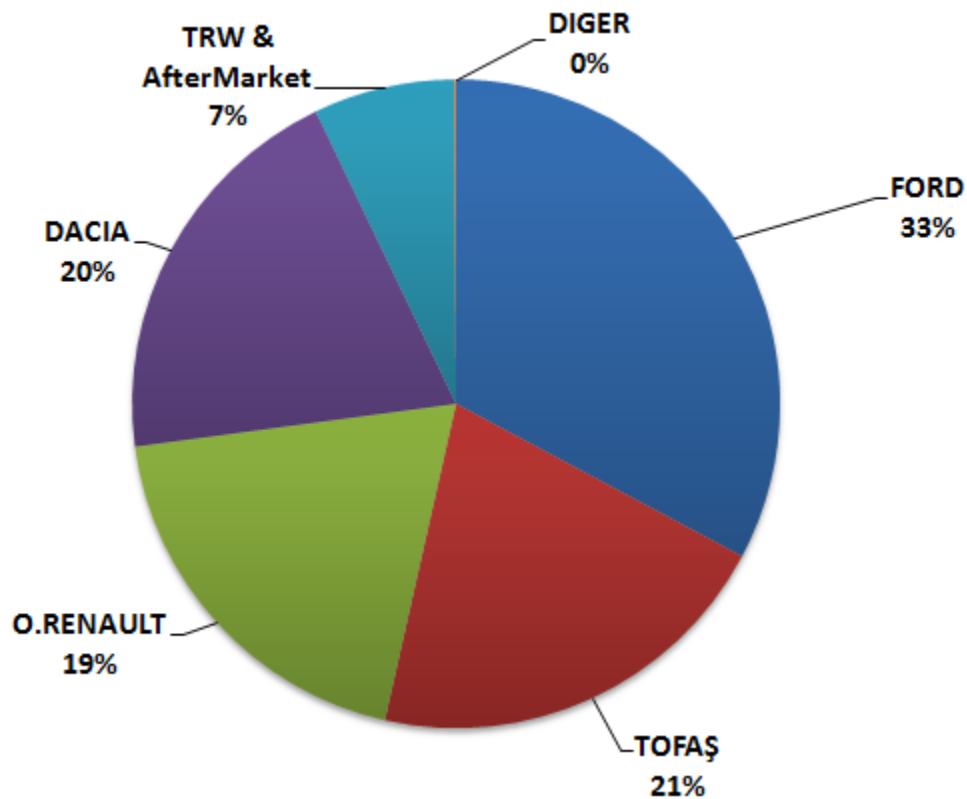


HEMATRW WORKFORCE

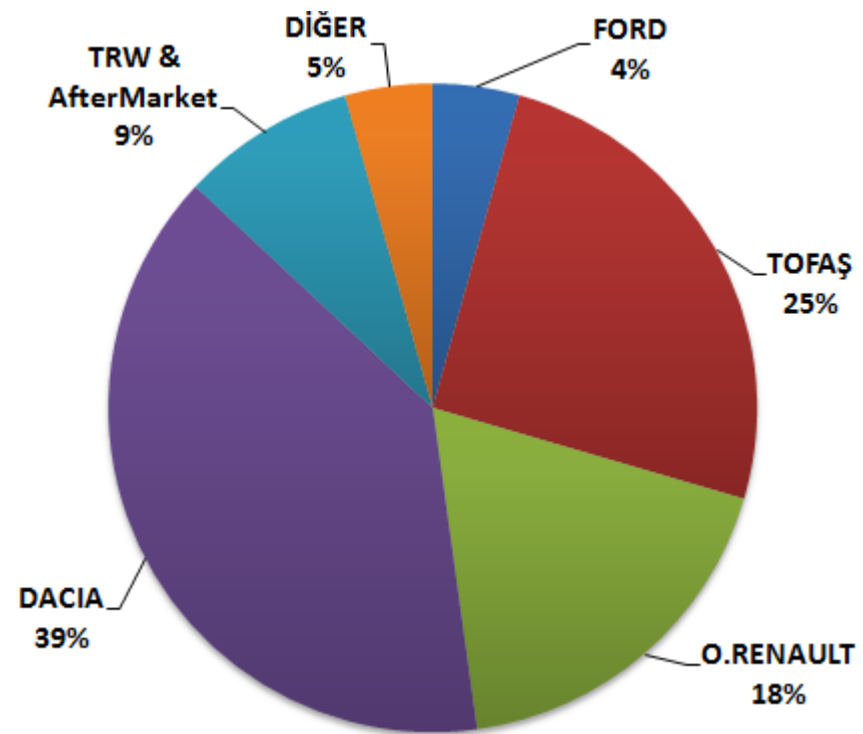


HEMATRW 2013-14 TURNOVER

2013



2014



PRODUCT RANGE

1- HYDRAULIC STEERING GEARS



 FORD – TRANSIT CONNECT (V227)
FORD – TRANSIT (V184-347/8)

 FIAT – PALIO
FIAT – ALBEA
FIAT – DOBLO
FIAT – 131 PR&P
FIAT – MCV/D200

 RENAULT – MEGANE I (X64)
RENAULT – SYMBOL (X65)

 DACIA – DUSTER (H79)

2- MECHANICAL STEERING GEARS



 FORD – TOURNEO COURIER (B460)

 FIAT – 131 MANUAL
FIAT – DOBLO MANUAL

 RENAULT – MEGANE II (84)
RENAULT – CLIO (85)
RENAULT – FLUENCE / MEGANE (L38/B32)

Joint Venture with TRW since 1996



TRANSIT



TRANSIT CONNECT



TOURNEO COURIER



MEGANE II



CLIO III BC 85



SYMBOL X 35



B32



FLUENCE L38



DOBLO



ALBEA



MINI CARGO



PALIO



LINEA



DUSTER

PRODUCTION LINES



8 Million Steering Gears



July 2013

TEST CAPABILITY

DURABILITY TEST



TORQUE TO FAILURE TEST



FUNCTIONALITY TEST

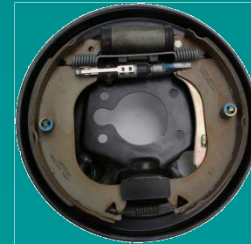
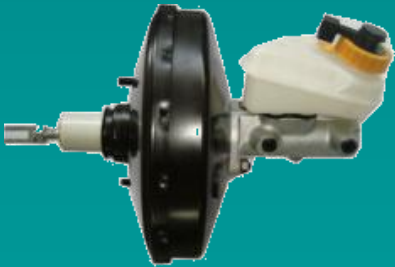


IMPACT TEST



MUDDY WATER TEST

“Braking Systems & Precision Machining”



HEMA, A BRAND YOU CAN DEPEND ON!

HEMA, GÜVENEBİLECEĞİNİZ MARKA

- BRAKING SYSTEMS SOLUTIONS PARTNER
- 16 YEARS OF SAFETY COMPONENT EXPERTISE
- WORLD CLASS PRODUCTION FACILITY
- GLOBAL LOGISTICS NETWORK

- FREN SİSTEMLERİ ÇÖZÜM ORTAĞI
- EMNİYET PARÇASINDA 16 YILLIK TECRÜBE
- DÜNYA KLASINDA ÜRETİM TESİSİ
- GLOBAL LOJİSTİK AĞI



AT HEMA OTOMOTİV, WE ARE PROUD TO SERVE THE AUTOMOTIVE INDUSTRY FOR OVER 16 YEARS WITH OUR WORLD CLASS PRODUCTION FACILITY AND EXPERIENCED TEAM.

HEMA OTOMOTİV OLARAK, DÜNYA KALİTESİNDE ÜRETİM TESİSİMİZLE VE TECRÜBELİ KADROMUZLA, 16 YILDIR OTOMOTİV ENDÜSTRİSİ İÇİN HİZMET VERMEKTEN GURUR DUYMAKTAYIZ.



HISTORY

NEW LICENCE WITH TRW

- FORD B460

SUBCONTRACT BUSINESS WITH TRW SINCE 2011

- RENAULT W98

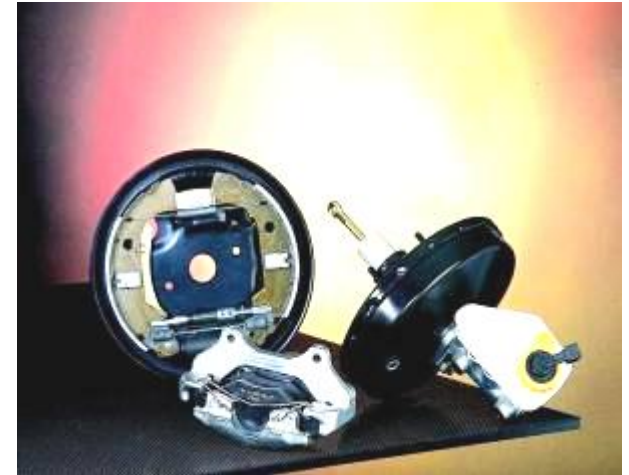
DESIGN & DEVELOPMENT SINCE 1999

- PEUGEOT J10
- BMC MEGASTAR-LEVEND
- INTRALL LUBLIN ZI60M
- VALTRA

ACHIEVED PROJECTS WITH CONTI-TEVES LICENCE

- FIAT PALIO, SIENA, WEEKEND
- FIAT DOBLO
- FORD TRANSIT CONNECT

START OF PRODUCTION 1996



BRAKING SYSTEMS PRODUCTS



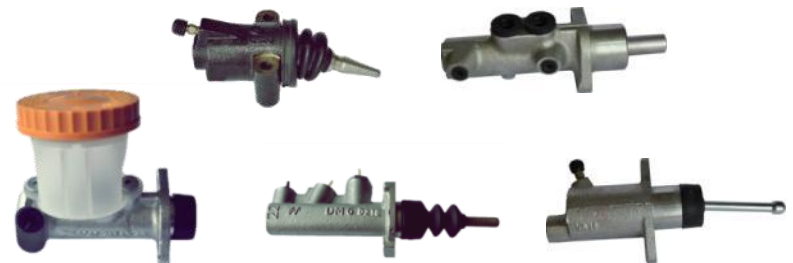
CALIPERS



BOOSTERS



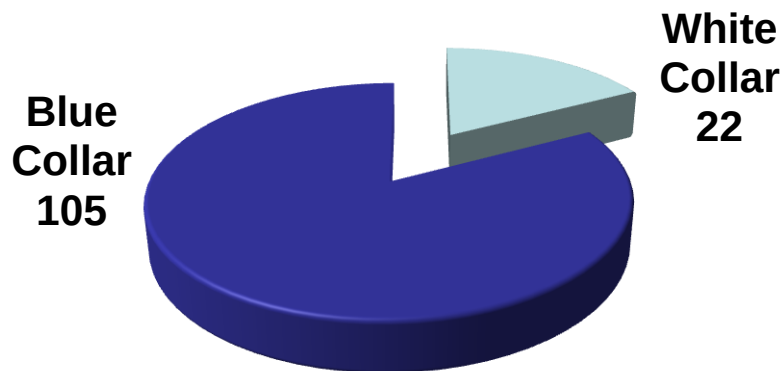
DRUM BRAKES



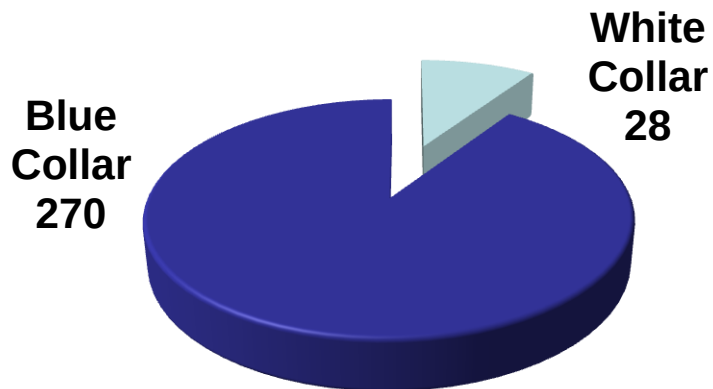
VARIOUS CYLINDERS

HEMA OTOMOTIV WORKFORCE

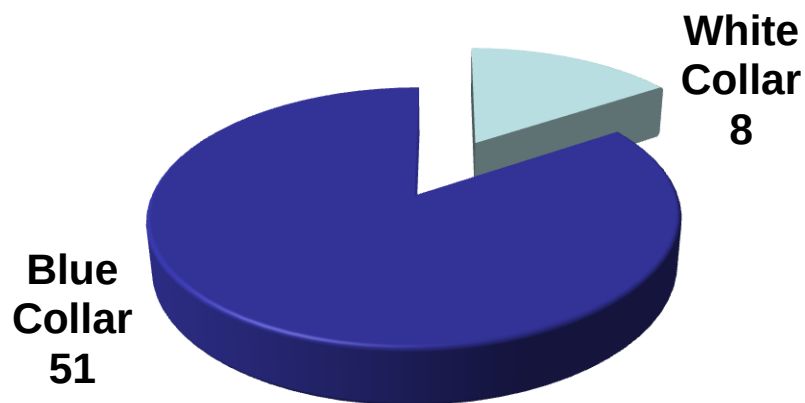
BRAKING SYSTEMS PLANT



METAL FOUNDRY

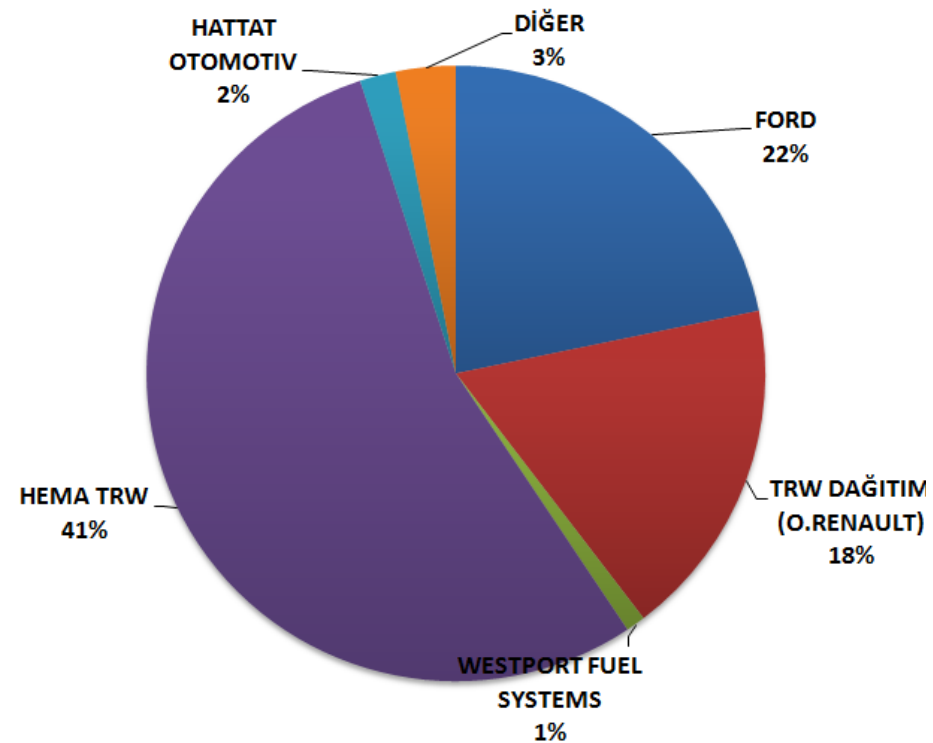


HPDC PLANT

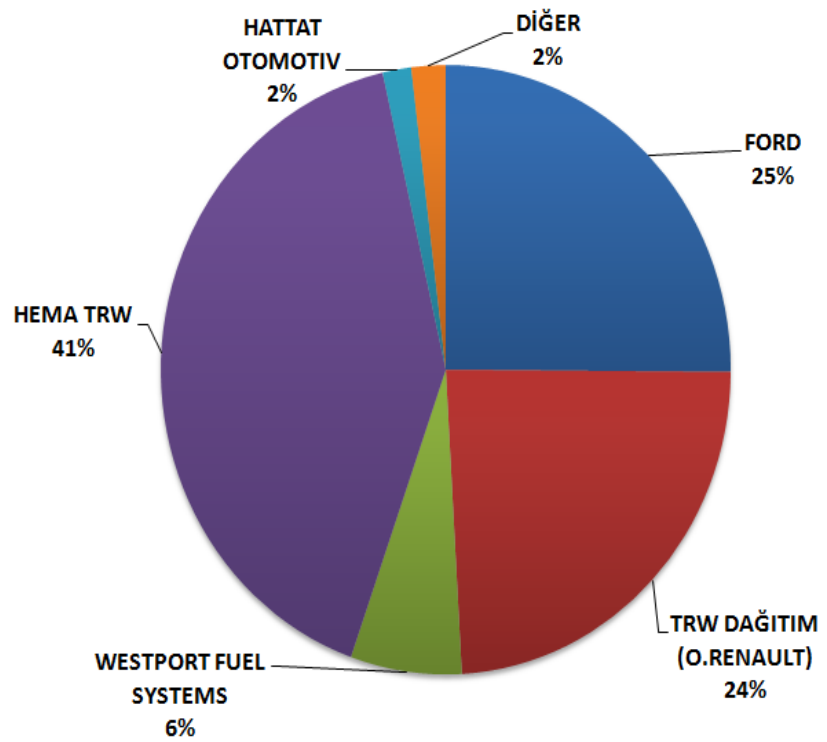


HEMA OTOMOTİV 2013-14 TURNOVER

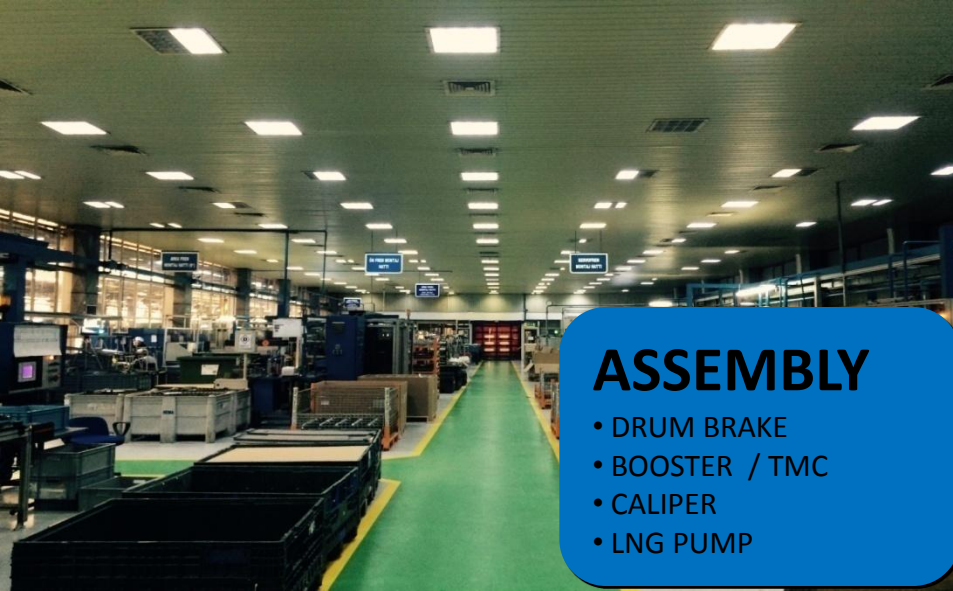
2013



2014



BRAKING SYSTEMS & MACHINING PLANT



ASSEMBLY

- DRUM BRAKE
- BOOSTER / TMC
- CALIPER
- LNG PUMP



MACHINING

- NODULAR CAST IRON
- GRAY CAST IRON
- ALUMINUM
- STAINLESS STEEL



COATING

- ZINC PLATING
- E-COATING



BONDING

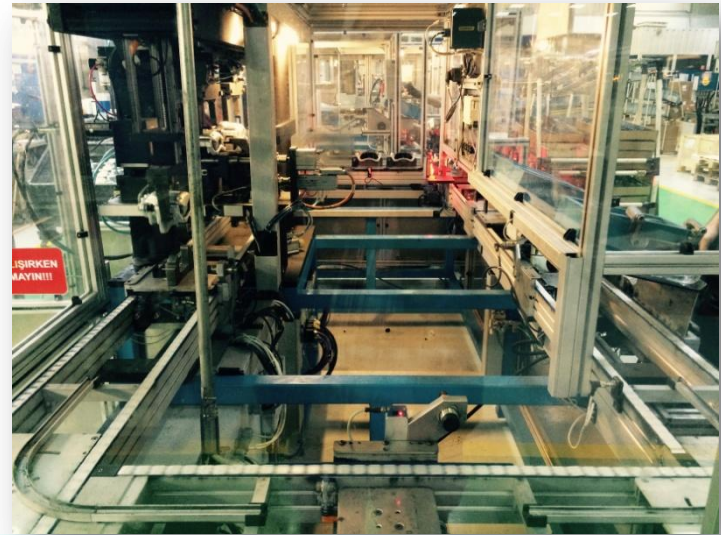
- BRAKE SHOE BONDING

AUTOMATED ASSEMBLY LINES

- 1- CALIPER BRAKE ASSEMBLY**
- 2- SERVO BOOSTER ASSEMBLY**
- 3- DRUM BRAKE ASSEMBLY**



1-Caliper Brake Assembly Line



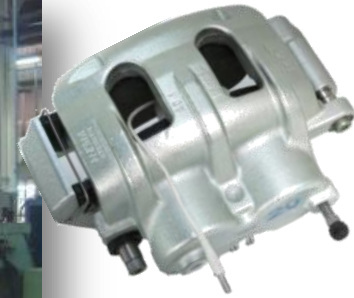
2-Servo Booster Assembly Line



3-Drum Brake Assembly Line



PRECISION MACHINING CAPABILITY



Nodular
Cast Iron

Gray Cast
Iron

Precision
Machining

Aluminum

Stainless
Steel



BRAKING SYSTEMS & MACHINING PLANT MACHINE PARK

HORIZONTAL MACHINING CENTER	23
VERTICAL MACHINING CENTER	17
RADIAL DRILLING MACHINE	11
TURNING MACHINE	2
GRINDING MACHINE	1
BROACHING MACHINE	2
HONNING MACHINE	2
BURNISHING MACHINE	1

BRAKING SYSTEMS & MACHINING PLANT MACHINE PARK



BRAKING SYSTEMS & MACHINING PLANT MACHINE PARK



SURFACE TREATMENTS

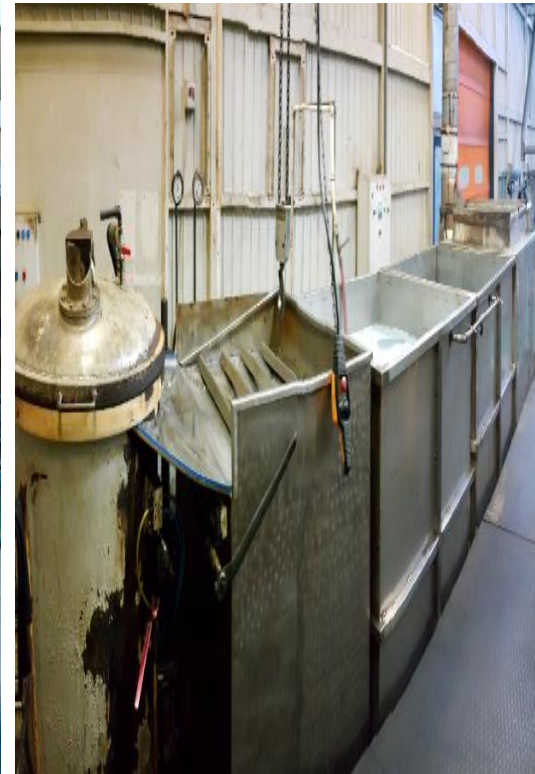
1-Zinc Coating



2-E-Coating



3-Impregnation



ANALYSIS AND VALIDATION



ACTUATION UNIT FUNCTIONAL TEST BENCH



ACTUATION UNIT ENDURANCE TEST BENCH



BURSTING TEST BENCH



CALIPER FUNCTIONAL TEST BENCH



CALIPER ENDURANCE TEST BENCH



DRUM BRAKE FUNCTIONAL AND ENDURANCE TEST BENCH

“A Breaking System Specialist” since 1996



TOURNEO COURIER



TRUCK



TOW TRUCK



TRUCK



CLIO 4



HATTAT

VALTRA

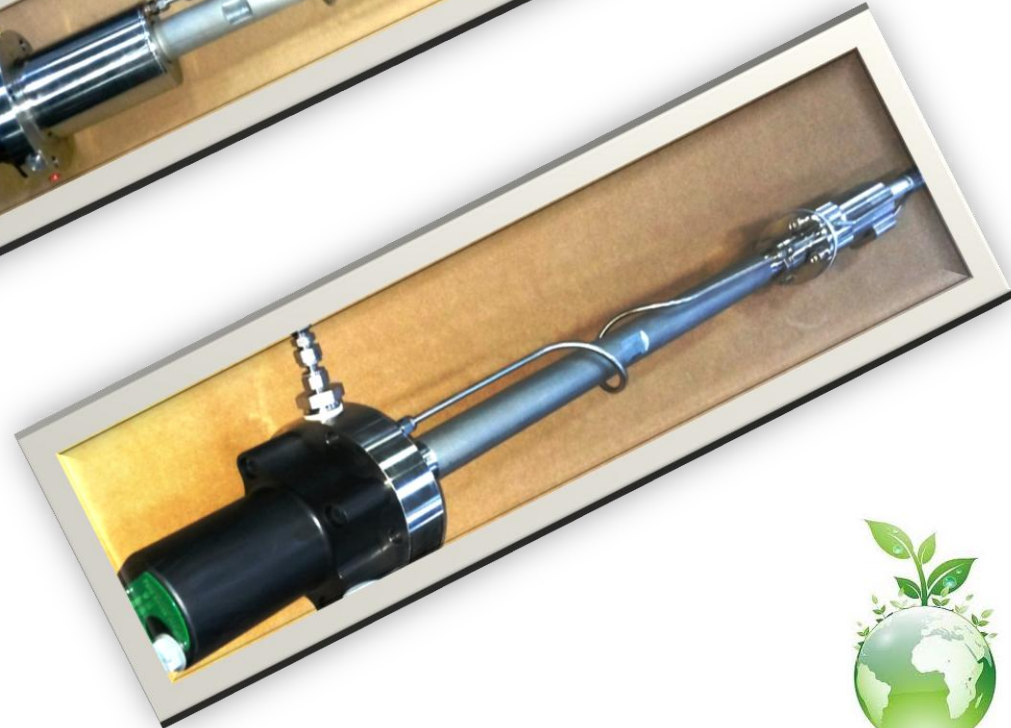


TÜMOSAN



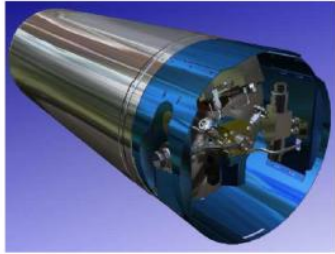
LNG PUMP PRODUCTS

WestportTM
Here and Now.



LNG PUMP Products

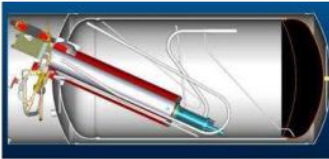
Westport HPDI LNG Tank Module



LNG Tank



High Pressure Pump + Vaporizer



Liquefied
Natural Gas

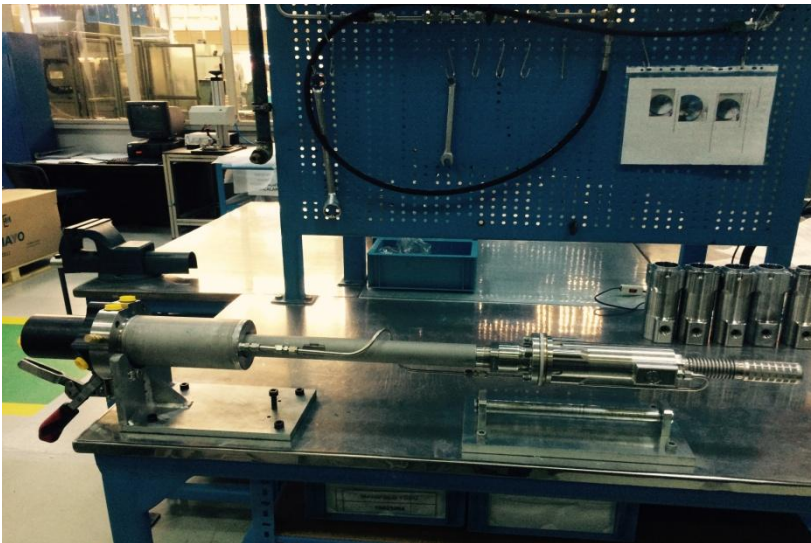
- Longer range
- Faster fill
- Less weight



2 x 60 DGE
LNG tanks =
120 DGE



- Two LNG tanks are integrated to each Truck.
- LNG Pumps vaporizes the LNG which is at -160 Celcius and pumps it to the engine.
- HPDI (High Pressure Direct Injection) technology for heavy duty vehicles which are over 400 HP.
- Cummins ISX 15L Diesel engines are being used for LNG transition.



ALUMINIUM HPDC PLANT MACHINE PARK

MACHINE DESCRIPTION	CAPACITY	QTY	PRODUCER
HPDC MACHINE	1300 TON	1	IDRA
HPDC MACHINE	1200 TON	1	CAST MASTER
HPDC MACHINE	1200 TON	1	AMAC
HPDC MACHINE	1100 TON	1	IDRA OL 1100 PRP
HPDC MACHINE	900 TON	2	PRINCE
HPDC MACHINE	850 TON	1	IDRA
HPDC MACHINE	400 TON	1	BÜHLER
FURNACE	1200 Kg/hr	1	STRIKOWESTOFEN
FURNACE	600 Kg/hr	1	AYYILDIZ
FURNACE	600 Kg/hr	1	KARL LEY
FURNACE	600 Kg/hr	1	INDUGA
STORAGE FURNACE	1200 Kg	1	STRIKOWESTOFEN
STORAGE FURNACE	900 Kg	2	STRIKOWESTOFEN
STORAGE FURNACE		1	Typ. TE300UMBAU
STORAGE FURNACE	1200 Kg	1	MARCONI
STORAGE FURNACE		1	WESTOFEN
MOLD HEATER		6	STERLCO

MACHINE DESCRIPTION	CAPACITY	QTY	PRODUCER
MOLD HEATER		1	TOOL-TEMP
MOLD HEATER		2	iECi
DEGASSING UNIT		1	DMS ENGINEERING
ROBOT		3	ABB FOUNDRY
ROBOT	6 AXIS	1	KAWASAKI
ROBOT		1	ABB FOUNDRY S640.10-00187045
TRIM PRESS	20 TON	1	HANNİFİN
TRIM PRESS	20 TON	1	HANNİFİN
TRIM PRESS	25 TON	1	Mc.Nr. 11.106.00
TRIM PRESS	30 TON	1	DIESSE PRESSE
TRIM PRESS		1	IDRA
LOADING UNIT		1	AMAC
X-RAY RADIOSCOPY UNIT		1	RICH SEIFERT
X-RAY UNIT	160 KVA	1	
VIBRATION MACHINE	500 lt.	1	ERBA
SAND BLASTING MACHINE		1	SATMAK
SANDER UNIT		1	GLEICH

ALUMINIUM HPDC PLANT CAPABILITY



MAIN FURNACE



1200 T HPDC MACHINE

ALUMINIUM HPDC PLANT CAPABILITY



1100 T HPDC MACHINE



900 T HPDC MACHINE



400 T HPDC MACHINE

ALUMINIUM HPDC PLANT CAPABILITY



ROBOTIC ARM



AUTOMATIC SPRAYING UNIT

ALUMINIUM HPDC PLANT CAPABILITY

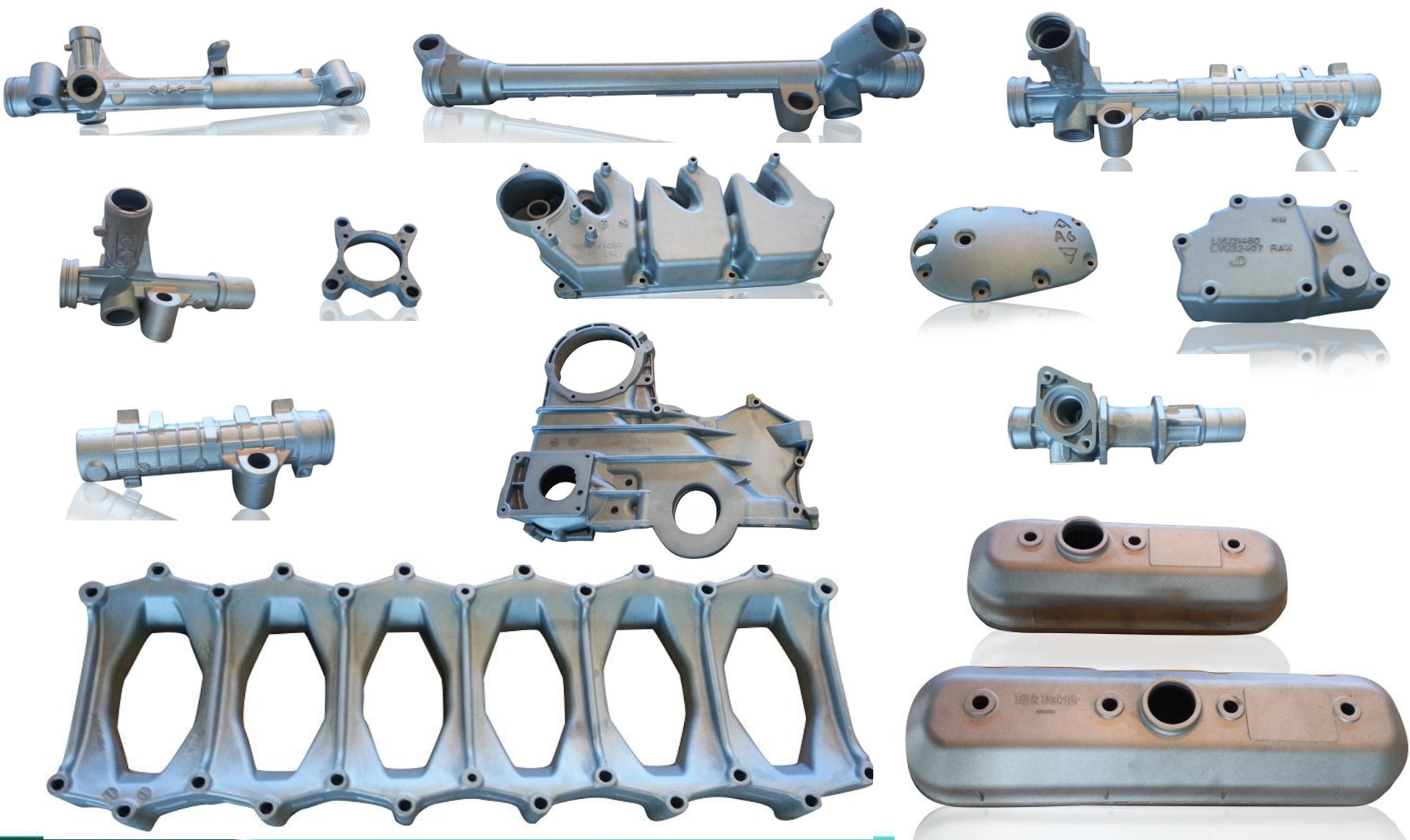


SAND BLASTING



VIBRATION

ALUMINIUM HPDC PRODUCTS





HEMA METAL FOUNDRY



CAST IRON FOUNDRY

PLANT AREA	: 22.560 m²
PRODUCTION CAPACITY	: 60.000 tons/year
(with additional molding lines (2012))	: 120.000 tons/year
CAST WEIGHT /Box for LINE 1	: app. max 350 kg
CAST WEIGHT /Box for LINE 2	: app. max 150 kg
(Engine Blocks, Axle Bodies, Gearbox & Housings etc.)	
MATERIAL GRADES (ISO)	: EN GJL 20 – 30 - DIN GG20-30
	: EN GJS 40 – 70 - DIN GGG40-70



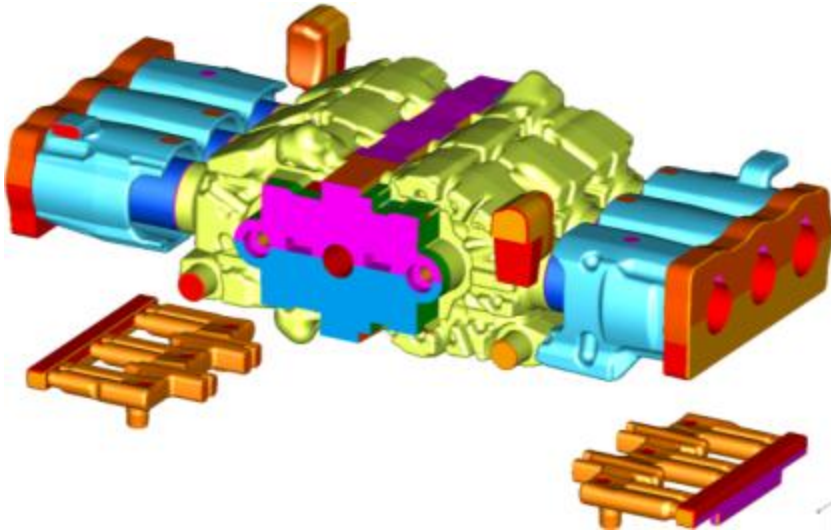
CAST IRON MOULDING LINES

HEINRICH WAGER SINTO EFA-SD 5.5 MOULDING LINE

BOX SIZE 1130x800x(350+350)MM



HEMA METAL FOUNDRY



HEMA METAL FOUNDRY - CORE SHOP



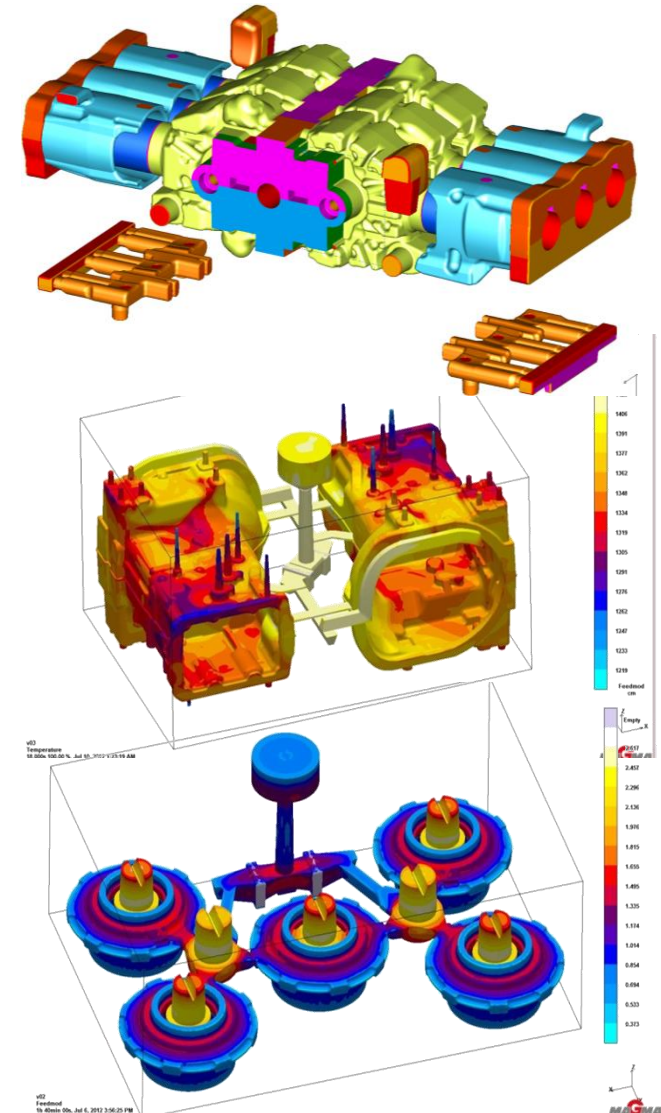
HEMA METAL FOUNDRY - ENGINEERING

ENGINEERING SOFTWARES

- I-DEAS NX
- UNIGRAPHICS NX
- SOLIDWORKS
- Magmasoft Casting Simulation with IronModule

TRANSFER FILES

- IGES, STEP, PARASOLID (3D)
- DXF, DWG, PRT (2D)
- IDEAS native UNV files, unv file, pkg file
- CATIA catdata export files
- PRO E file, Ug file



THANK YOU
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