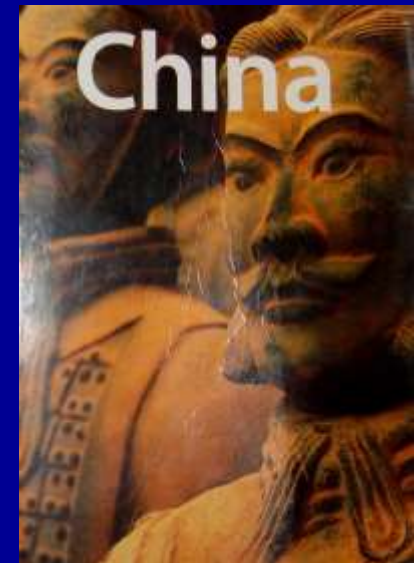




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Experiencing cast-iron foundries and machining companies in China



Only productivity is the key to a longterm subcontracting base.

A comparison between **Chinese** and **Turkish** suppliers



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Introduction Gietburg Group :

 Gietburg Holding		Workforce	Tonnage/yr	Material	Partweight
	Gieterij Doesburg	100 FTE	10.500 ton	GGG+GTS	1 - 15 kg
	Ergocast	320 FTE	23.000 ton	GGG+GG	5-70.000 kg
	Cirex	245 FTE	1.500 ton	Steel	0,01 – 15 kg
	Cirex CZ				
	Doesburg Components	90 FTE	25.000 ton	GGG+GG	1 – 750 kg
	Gietburg	15 FTE			
	Gietburg China RO				
	Modelmakerij Hengelo	30 FTE			
		+	+	+	
		800 FTE	60.000 ton	Turnover 2008 : 140 Mln €	



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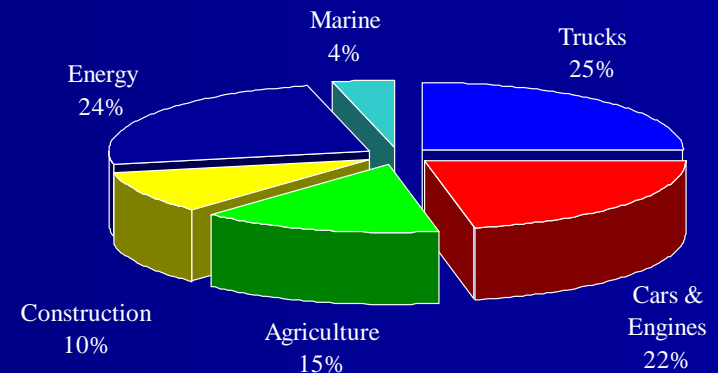
Competence :

World class component expertise :

- Casting and machining knowledge in house
- Development partner for OEM
- Make or buy : both in 1 hand

Key markets :

- Automotive : Personal car , Engines & Trucks
- Agriculture / Marine
- Non Automotive : Energy, Construction equipment



Key customers (Sand castings)

- DAF
- Deutz
- Daimler
- DDC



Key customers (Big sand castings)

- Siemens
- Bosch Rexroth
- ZF
- DemagPlasticsGroup



Key customers (Lost wax)

- INA
- BMW
- VW
- ZF





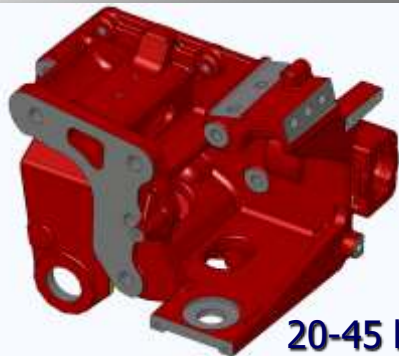
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Product examples of castings subcontracted by Gietburg :

Steeringbox brackets



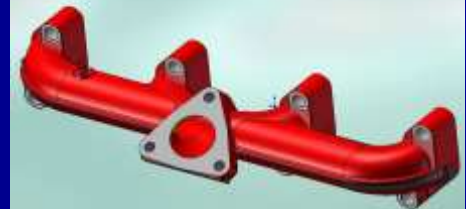
20-45 kg

Flywheel housings



15-35 kg

Intake&Exhaust Manifolds



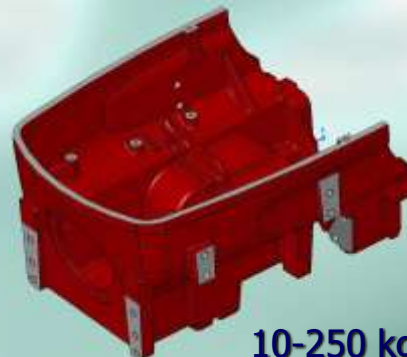
1-20 kg

Cabin & Spring brackets



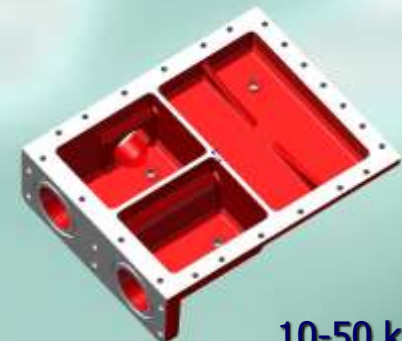
5-35 kg

Agriculture parts



10-250 kg

Marine parts



10-50 kg

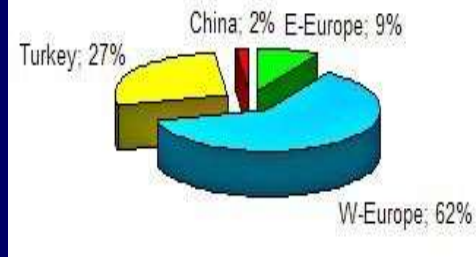


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Gietburg Sourcing Network

25.000 tons/year : 2008 Overview



W-Europe supplies

2008 : 62%

2008 : 27%

2007 : 20%

2006 : 10%

2005 : 4%

2004 : 0%

E-Europe supplies

2008 : 9%

China supplies

2008 : 1-2%

Turkey supplies



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China : some facts

- 250 x The Netherlands ; 12 x Turkey
- 1,3 Billion People (80 x NL ; 17 x Turkey)
- 90 % Han Chinese ; 10 % Minority
- 90 % Mandarin language ;
10 % Kantonees/Taiwanees/Korean
- popular facts...

They copy everything.....

We can't understand them.....

They make things very cheap....

Most of them are poor.....

They all look the same

They eat funny things



How to start business in China ?

- Understand cultural background
- Visit China for a longer period
- See more than HongKong, Shanghai and Beijing
- Solve communication problem



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Understand cultural background : China historic dynasties

		<u>Dynasty</u>
4000 BC	- Agricultural community flourished in Xian area and Shandong province - Beginning of metallurgy (bronze age)	Xia
1500 BC	- Earliest examples found of writing system of China today	Shang
500 BC	- Confucius taught his rights and morality : structure of Chinese society rooted - Iron discovered ; China = Zhong Guo 中国 = Reign of the middle	Zhou
221 BC	- End of Chinese warring states period ; First Emperor Qin unifies China - Standardizing the script ; start of building Chinese wall against the Mongolians	Qin
206 BC	- Further unifying ; start trade with the "barbarians" ; opening Silk road	Han
220 AD	- Grand Canal constructed (600) ; Confucianism achieved dominance	Jin, Sui Tang, Liao
1211 AD	- Genghis Khan defeats Chinese and creates great Mongolian Empire - Marco Polo and others start trade with far east	Song, Jin Yuan
1368 AD	- Rebel groups leader Zhu restores Chinese rule - Chinese wall completed ; Forbidden City Beijing constructed (Yongle 1403) - First European settlements (Macau 1557) established - Europeans take over dominant position in the world	Ming
1644 AD	- Manchu dynasty ; Chinese lose pole position ; Europeans create concessions - Opium drug weakens Chinese position ; Last Emperor Puyi falls in 1911	Qing



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Understand cultural background : Post dynasty period

- 1911 - Dynastic rule comes to end : Sun Yatsen's Republican Government
- 1926 - Chiang Kaishek's Kuomintang (Nationalist party) dominates China politics
- Chinese Communist Party (CCP) opposition grows
- 1935 - Mao Ze Dong is the recognised leader of the CCP
- 1937 - Japanese Invasion ; WWII period creates Japanese – Chinese rivalry
- 1949 - People's Republic China is established ; Kuomintang fled to Taiwan
- Land reform started ; power to the farmers ; intellectuals and foreigners banned
- 1958 - "Great leap forward" to overcome lag of agricultural output turns out disastrous
- 1960 - Chinese – Russian relation ends ; China isolates itself completely
- Big state owned companies produce according planned economy strategy
- 1966 - Cultural Revolution ; Red guards rule over China ; schools/university closed for 10 years
- 1976 - Mao Ze Dong dies
- 1980 - Deng Xiao Ping opens China to the outside world ; One child policy started



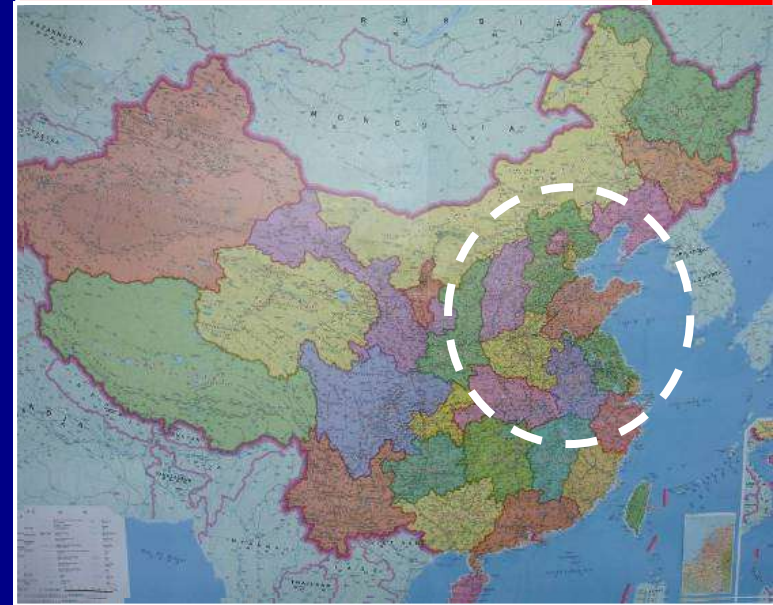
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Visit China for a longer period :

- 2 pre-orientating visits in 2006
- Fulltime orientation in China march – october 2007
- Search for suitable partners for part range 1–300 kg
- 20 Foundries + 10 machining companies visited
- Establishment RO in Dalian, Liaoning Province
- 22 october 2007 opening Gietburg China RO office
- 1 Chinese employee in Dalian office ; full-time
- 3 Foundries selected as partner in 2007
- First parts shipped in small series to Gietburg end 2007

city of DALIAN 大连





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gietBurg China RO
杰特伯格中国代表处

Machined Cast-iron and Steel Castings 铸铁及钢铸件加工

<p>外国(地区)企业常驻代表机构 登 记 证</p>	<p>登记机关: (中文) Governing Authority</p> <p>地址: Address</p> <p>负责人姓名: Name of Chief Representative</p> <p>业务范围: Scope of Business</p>
<p>REGISTRATION CERTIFICATE OF FOREIGN ENTERPRISES PERMANENT OFFICE IN CHINA</p>	<p>登记机关: Name of Head Office</p> <p>负责人姓名: Name of Chief Representative</p> <p>地址: Address</p> <p>业务范围: Scope of Business</p>
<p>注册号: 123456789 Certificate No. 123456789</p> <p>该代表机构经核准于某年某月某日, 有效成立。</p>	<p>登记机关: Name of Head Office</p> <p>负责人姓名: Name of Chief Representative</p> <p>地址: Address</p> <p>业务范围: Scope of Business</p>
<p>The following representative office is hereby granted the permanent certificate</p>	<p>中华人民共和国国家工商行政管理局 DIRECTOR GENERAL OF THE ADMINISTRATION FOR INDUSTRY AND COMMERCE OF THE PEOPLE'S REPUBLIC OF CHINA</p>



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Economical facts China

- Special economic zones
- Coastal area driven
- 800 million people inland
- 100 million farmers needed in agriculture
- Salary 50 – 100 Euro / month
- 3 holiday periods of 1 week

Important for export :

- VAT return for export
- Region benefit system





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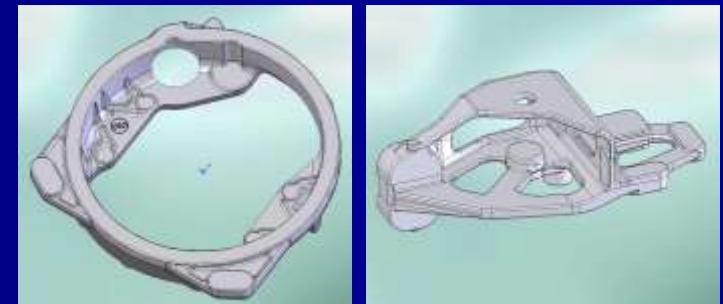
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Global costs Cast-iron parts Euro/kg :

Overview based on Gietburg major productgroups
 in medium series (10.000 - 20.000 pcs/year)

- Flywheel housings in GG
- Frame parts for trucks in GGG

LEVEL january 2006



	-Western Europe		China		Turkey		
	<u>GG</u>	<u>GGG</u>	<u>GG</u>	<u>GGG</u>	<u>GG</u>	<u>GGG</u>	
Material	0,27	0,32	0,24	0,29	0,24	0,29	World market prices
Energy	0,10	0,15	0,10	0,15	0,10	0,15	World market prices (tax)
Machine	0,20	0,25	0,15	0,20	0,18	0,23	Region prices,incl. depreciatio
Labour	0,35	0,35	0,05	0,05	0,15	0,15	Region prices
Overhead	0,10	0,10	0,05	0,05	0,08	0,08	Region prices
Scrap/misc.	0,05	0,07	0,10	0,14	0,06	0,09	Region prices
	----- +		----- +		----- +		
	1,07 euro/kg	1,24	0,69 euro/kg	0,88	0,81 euro/kg	0,99	



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Global costs Cast-iron parts Euro/kg :

LEVEL jan 2006

	Western Europe		China		Turkey	
	<u>GG</u>	<u>GGG</u>	<u>GG</u>	<u>GGG</u>	<u>GG</u>	<u>GGG</u>
	-----	+	-----	+	-----	+
Level 2006	1,07 euro/kg	1,24	0,69 euro/kg	0,88	0,81 euro/kg	0,99
Margin 8 %	0,08 euro/kg	0,10	0,06 euro/kg	0,07	0,07 euro/kg	0,08
Transport	0,03 euro/kg	0,03	0,15 euro/kg	0,15	0,07 euro/kg	0,07
Total	1,18	1,37	0,90	1,10	0,95	1,14
	100 %		78 %		82 %	

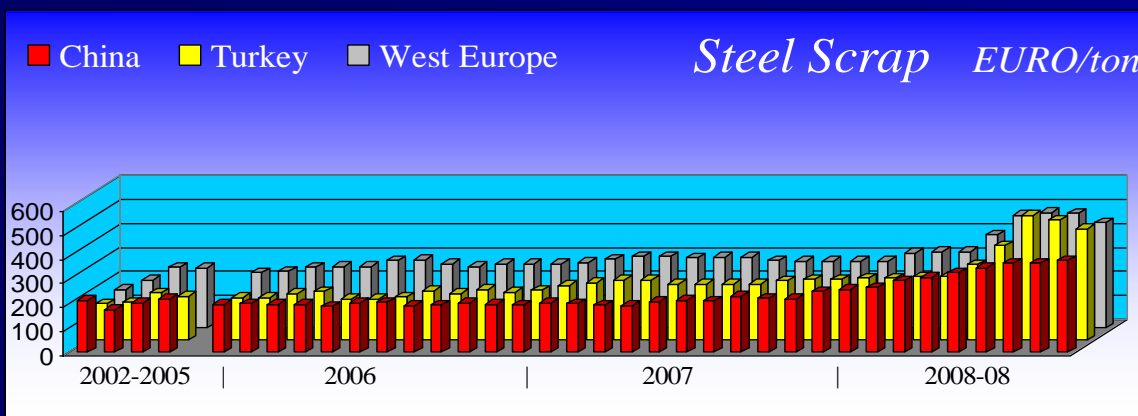


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Price development for raw materials :

Jan '06 Aug '08

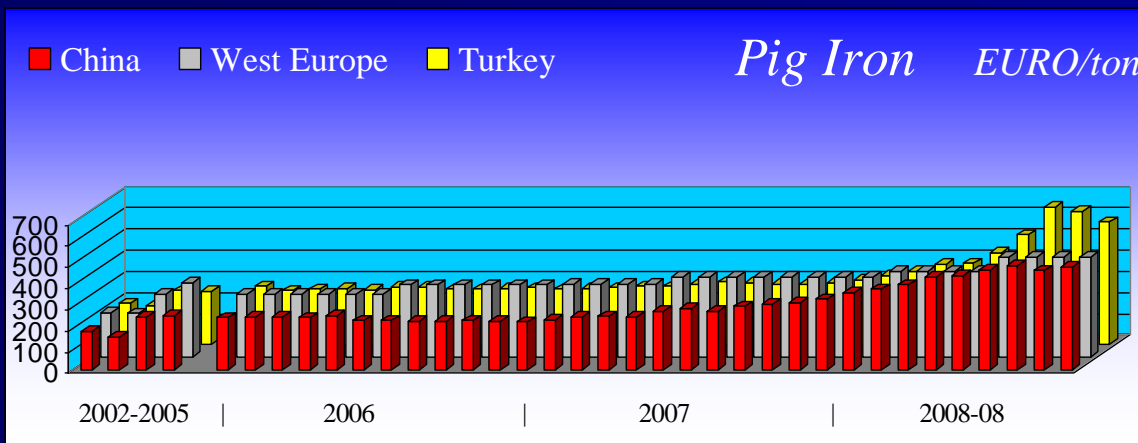


W-Eur 231 437 + 89%

China 200 382 + 91%

Turkey 176 462 +163%

Jan '06 Aug '08



W-Eur 295 470 +59 %

China 245 486 +98%

Turkey 277 577 +108%

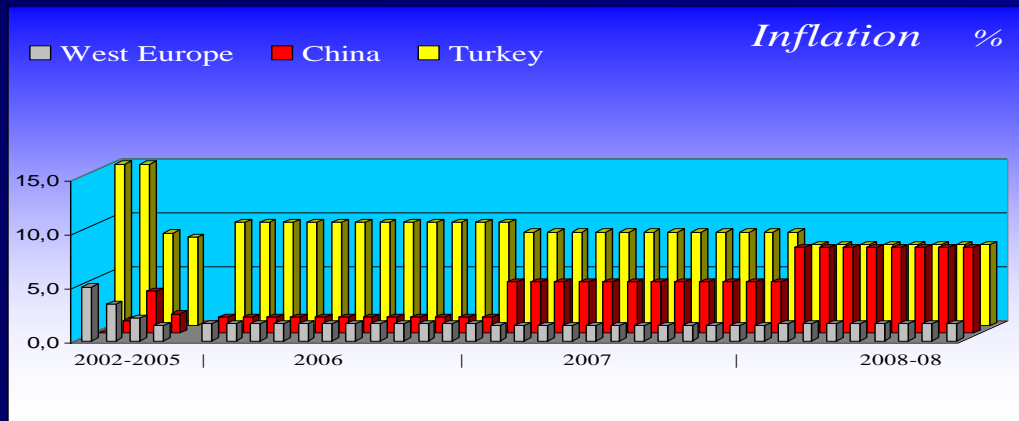


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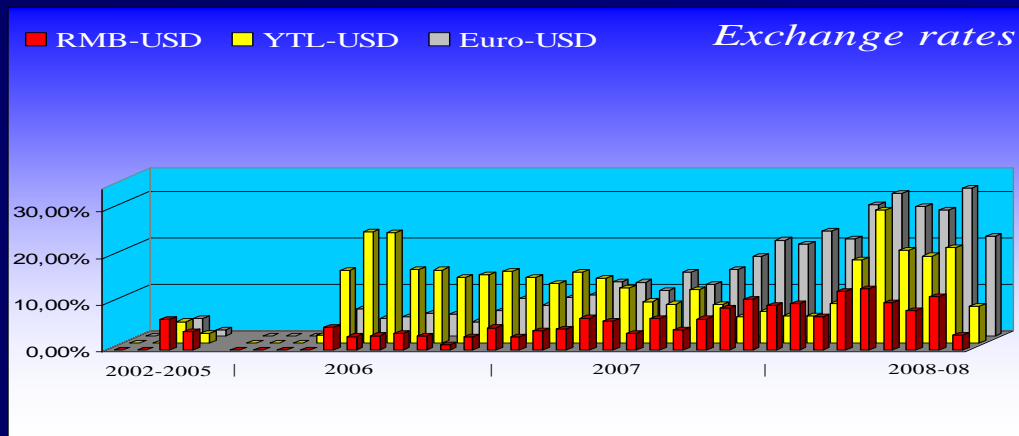
Labourcost development (inflation) :



W-Eur 1,6 * 1,4 * 1,6 + 4,6 %

China 1,5 * 4,8 * 8,0 + 15 %

Turkey 9,6 * 8,7 * 7,5 + 28 %



In the period jan 2006– aug 2008
Chinese RMB (3 %) and
Turkish Lira (8 %) weakened in
 comparison with Euro but not as
 much as the US Dollar (20 %)

We pay in **Euro** , so **beneficial for suppliers** , but exchange rate only
 may not be reason to change
 strategy of outsourcing



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Global costs Cast-iron parts Euro/kg :

LEVEL aug 2008

	Western Europe		China		Turkey		
	<u>GG</u>	<u>GGG</u>	<u>GG</u>	<u>GGG</u>	<u>GG</u>	<u>GGG</u>	
	-----	-----	-----	-----	-----	-----	
	+		+		+		
Level 2006	1,07 euro/kg	1,24	0,69 euro/kg	0,88	0,81 euro/kg	0,99	
Margin 8 %	0,08 euro/kg	0,10	0,06 euro/kg	0,07	0,07 euro/kg	0,08	
Transport	0,03 euro/kg	0,03	0,15 euro/kg	0,15	0,07 euro/kg	0,07	
Total	1,18	1,37	0,90	1,10	0,95	1,14	
	100 %		78 %		82 %		
Increase 2008	0,20	0,20	0,21	0,21	0,29	0,29	Material
	0,01	0,01	0,01	0,01	0,02	0,02	Transport
	0,02	0,02	0,01	0,01	0,04	0,04	Labour
Total 2008	1,41	1,60	1,13	1,33	1,30	1,49	
	118 %		96 %		109 %		
	100 %		81 %		92 %		

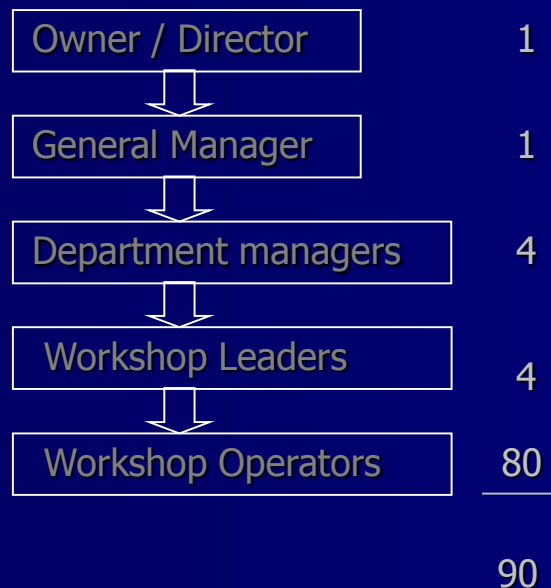


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Productivity difference 1 : Number of organisation layers in foundry

Western Europe



China



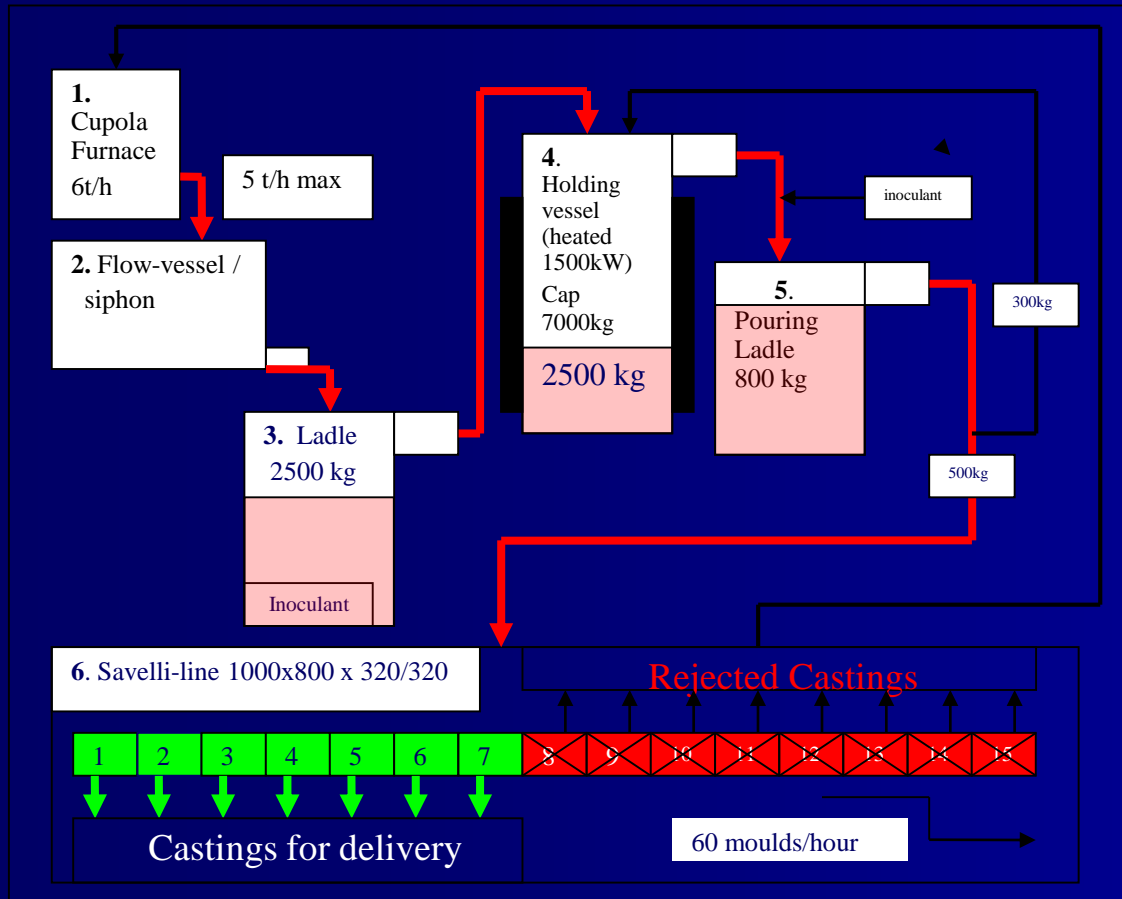


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Productivity difference 2 : Production proces creates a lot of waste



China : output **Turkey : output**

- 800 kg melt	- 800 kg melt
- 7 castings	- 21 castings
- Sand	- Sand :
15x750 kg =	22x250 kg =
11 ton	5,5 ton
- Output /h	- Output / h
30 Castings	120 Castings



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Productivity difference 3 : Foundry equipment not balanced / optimised

- State of the art (HWS, Künkel Wagner, Disa) moulding lines have often Chinese manufactured components in cooling line and sand supply systems
- Chinese look-a-like moulding lines Suzhou and Jinan are less stable constructed and therefore make lower quality moulds
- Length of cooling lines is often much too small
- Due to tremendous over-capacity of foundries a lot of castings are produced with sand-iron ratios far above 15
- Breakout of castings is mainly done manually
- 95 % of all cores are made according shell / hotbox proces
- Bulk transport of additives is not known in China : sand supply with 50 kg bags

Investment in China means nearly always installing extra equipment instead of improving existing equipment.....



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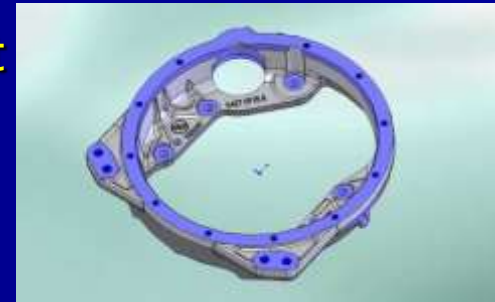
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Productivity difference 4 : People instead of equipment

China : 8 machines ; 11 operations ; 15 people / shift

Turkey : 3 machines ; 3 operations ; 3 people / shift

W-Europe : 1 machine ; 2 operations ; 1 robot



- | | |
|--|---|
| OP010 Machine1, Vertical milling machine conventional | - Mill C-Surface -2,5 mm |
| OP020 Machine1, Vertical lathe conventional | - Mill X-Surface until 80,6mm |
| OP030 Machine2, Vertical grinding machine conventional | - Grind X-Surface until 80,4mm |
| OP031 Machine2, Vertical grinding machine conventional | - Grind C-Surface until 80,2mm |
| OP040 Machine3, Vertical machining center CNC 3 axis | - Machine all (thread)holes ,
incl. finishing startmotorhole
and fitholes 12 +0.027 |
| OP050 Machine4, Vertical Lathe | - pre turning dia. 361,950+0,057 |
| OP060 Machine5, Horizontal machining center CNC 3axis | - Machine all threadholes
surface X and 5 spotfaces dia 32 |
| OP070 Machine6, Horizontal machining center CNC 3 axis | - Machining 1659 variant |
| OP080 Machine7, Vertical grinding machine conventional | - Grind X-Surface until 80,1mm |
| OP081 Machine7, Vertical grinding machine conventional | - Grind C-Surface until 80-79,8 |
| OP090 Machine8, Vertical Lathe CNC | - finish dia 361,950+0,057 |



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Summary TECHNICAL / QUALITY :

- The choice for manual instead of mechanisation prevents development in proces capability
- Key product characteristics (critical product dimensions) are less stable
- Because of bigger variation in tolerances , on location checks are necessary
- Due to other perception of quality the way to quality is long
- Layout of patterns and machining tooling should be predescribed

Summary ECONOMICAL :

- Due to low productivity, labour costs are higher than calculated
- Single sourcing is for complex parts too dangerous : double sourcing will reduce benefit

Conclusion :

- High volume parts are still competitive in West-Europe
- Medium series can be interesting in China when demanded specification is not too tight
- Low volume parts bring benefit when purchased in China only when combined to reach volume

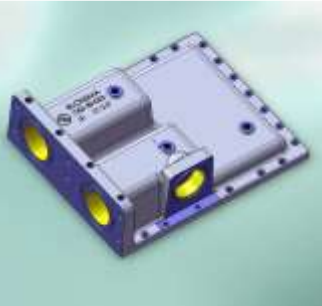


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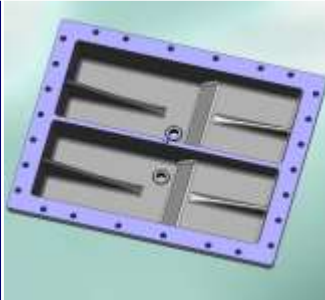
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Gietburg parts from China :

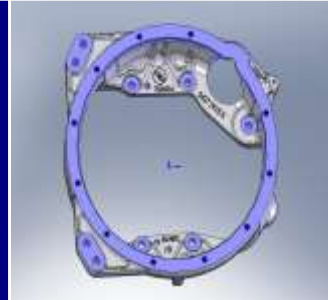
Status : oct 2008



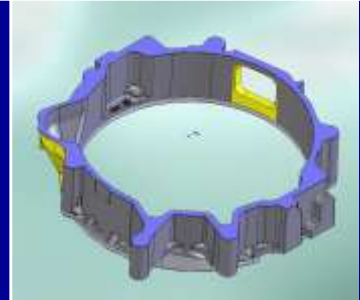
GGG40 ; 42 kg ; 250 pcs/yr
 PRODUCTION SINCE DEC 2007



GGG40 ; 25 kg ; 250 pcs/yr
 PRODUCTION SINCE DEC 2007



GG25 ; 17 kg ; 10.000 pcs/yr
 PRE-PRODUCT, SINCE MAR 2008



GG25 ; 26 kg ; 10.000 pcs/yr
 Samples sept 2008



GGGSiMo ; 3 kg ; 10.000 pcs/yr
 Samples sept 2008



GGMoCr ; 3 kg ; 3.000 pcs/yr
 Samples sept 2008



GG25 ; 5 kg ; 10.000 pcs/yr
 Samples sept 2008

Potential new projects :

- Lost wax
 steel parts

- Agriculture
 GG parts

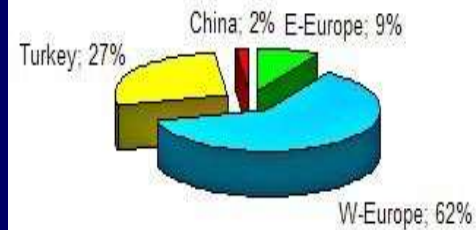


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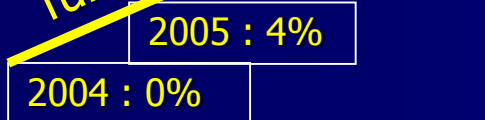
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Gietburg Sourcing Network

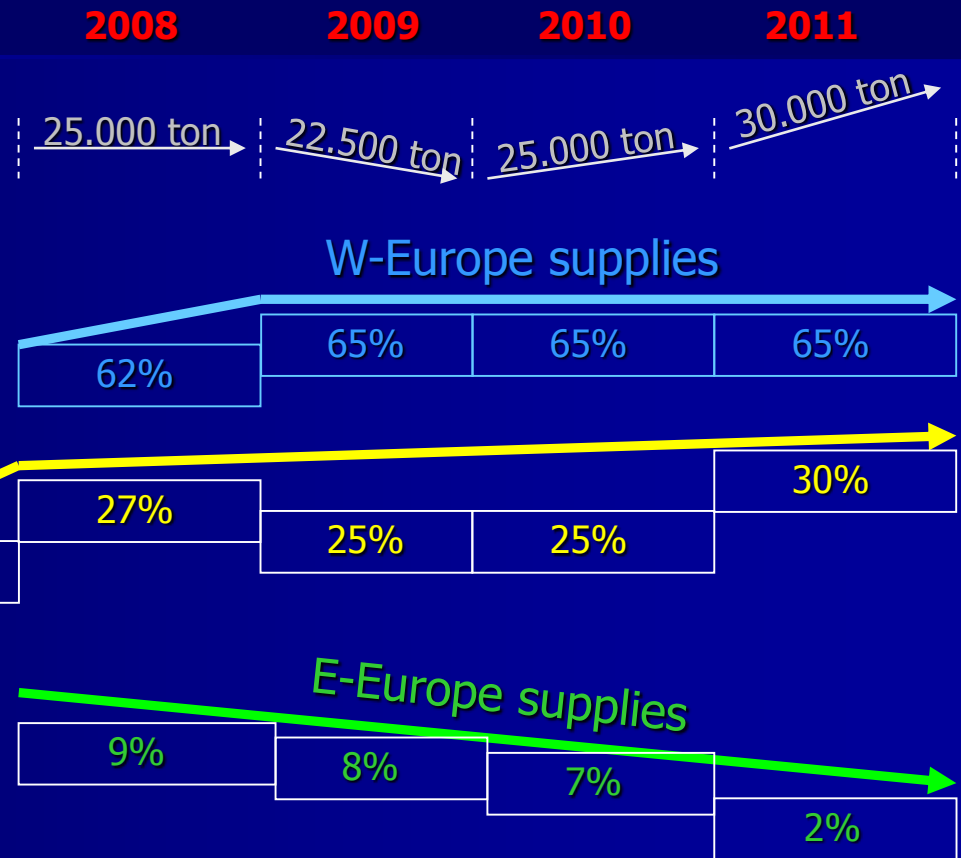
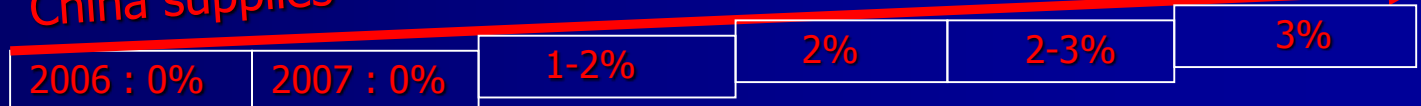
25.000 tons/year : 2008 Overview



Turkey supplies



China supplies





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Thanks for your attention ..

and remember ...

as long as you increase **productivity**,
output, but also **quality** will improve further

Than **Turkish** foundries will stay competitive

and at least as important :

your people in the foundry keep on smiling

