



TEAMEC bvba

Specialist in remanufactured A/C Compressors and Common Rail High Pressure Pumps



TEAMEC bvba
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History

- Teamec belongs to the family owned holding structure, founded 1957
- Holding consists of 6 different companies all in the automotive sector.
- Total work force : 156 people
- 1985 : start up of remanufacturing of rotating electrics (EDR). Sold the 2 production plants in 1998.
- 1998 : launch of remanufacturing operation for A/C compressors
- 2005 : launch of remanufacturing operation for Common Rail high-pressure pumps
- 2006 : opening reman plant in low cost country

Plants



Plants



Plants



Building 2.500 m² only production

Teamec plant - Belgium



Remanufacturing of A/C Compressors and CR pumps

Core warehouse



25.000 units

Remanufacturing of A/C Compressors

Quality control

- Production is based on the lean manufacturing system, using the QS (quality @ the source) measurements.
- The production line is set up according to the 5S principles
- Different measurement tools are used to secure the quality before and during production:
 - ❖ Storyboards
 - ❖ Visual work instructions
 - ❖ Immediate problem solving (Q@S & Reporting system)
 - ❖ Kaizen (Continuous improvement)
 - ❖ FTQ (First Time Quality measurement)
 - ❖ 5S
 - ❖ FMEA (Failure Mode & Effect Analysis reports)
 - ❖ PPAP (Production Parts Approval Process)
 - ❖ Teamleaders meetings every day
 - ❖ Quality time every morning
 - ❖ 8D reports

Remanufacturing of A/C Compressors

Have grip on incoming spare parts

- Constant monitoring of bought-in spare parts is necessary to maintain the quality standard
- Random tests of bought in spare parts are performed on a tailor made durability test bench

Remanufacturing of A/C Compressors

Quality control of bought in articles



The durability test bench allows to perform life cycle tests under the same circumstances as if it was mounted on a vehicle.

Remanufacturing of A/C Compressors


Efficient lay-out of production areas




- production based on lean manufacturing system
- workbenches are set up according to 5S principles
- allowing high flexibility in production to enable smaller batches (ex.VOR-orders/repairs)

Remanufacturing of A/C Compressors


Efficient lay-out of production areas

 **Werkinstructie Montage 7SB16C**
Zeskantbout = 7SBU


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Doc nr.: WI 128
Versie 1




Plaats de rondellen (spiegel 2 groebes)




Daarna de bouten




Bouten vastzetten, max machines op 2 in kruisverband



Dichting inoliën en plaatsen



Plaats de afdekkplaat met de uitgang hoge druk aan dezelfde kant als de ingang lage druk



Plaats de dichtingsring op de oliebout en bevestig deze op de compressor

Gemaakt op 2/02/2005

Visual work instructions are used to ensure quality during employee rotation.

Remanufacturing of A/C Compressors

Efficient cleaning of parts



Cleaning is performed in 2 stages.

1st stage: cleaning of undismantled unit to protect the internal parts, using high pressure cleaning machine.

Remanufacturing of A/C Compressors

Efficient cleaning of parts



...2nd stage : cleaning of internal parts using full automatic ultra sonic / rinsing / dry blast machine.

Remanufacturing of A/C Compressors

A/C compressor – before assembly



Remanufacturing of A/C Compressors

Measuring of tolerances



Due to wear, the ball shoes or pistons could be damaged

Therefore they need to be checked and replaced if necessary

Remanufacturing of A/C Compressors

Measuring of tolerances



If the tolerance of the piston on the swash plate is too big, ball shoes need to be changed to adjust tolerance.

Remanufacturing of A/C Compressors

Measuring of tolerances



Tests are performed on the variable compressor's most important part : the control valve

Remanufacturing of A/C Compressors

Measuring of tolerances



Valve plates are checked using a vacuum to check proper sealing of the high and low pressure valves.

Remanufacturing of A/C Compressors

Measuring of tolerances



Clutches are checked for straightness to avoid distress on drive belt.

Remanufacturing of A/C Compressors

Lathes



Remanufacturing of A/C Compressors



Hohning Machine

- remanufacturing of seized compressors
- reduce of core surcharge rejections

Remanufacturing of A/C Compressors



Lapping machine

- ensuring proper sealing of cylinderheads

Remanufacturing of A/C Compressors

Leak test of assembled product



After assembly the product needs to be tested for leaks.

A Helium leak test is performed to detect leaks. Tolerances are set to 2gr./year.

Remanufacturing of A/C Compressors

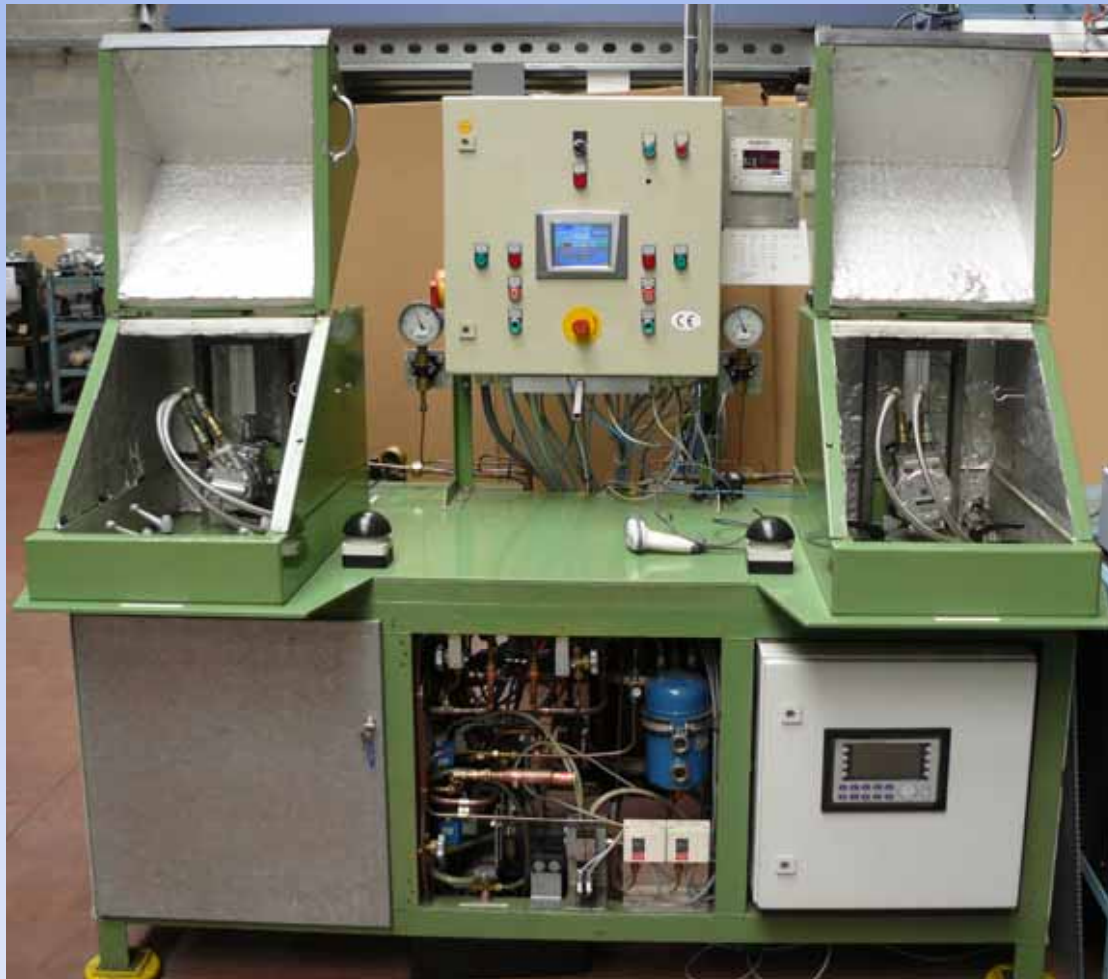
Function test of assembled product



A function test is performed on every unit, measuring performance of the compressor. Passed tests will result in the printing of a test report.

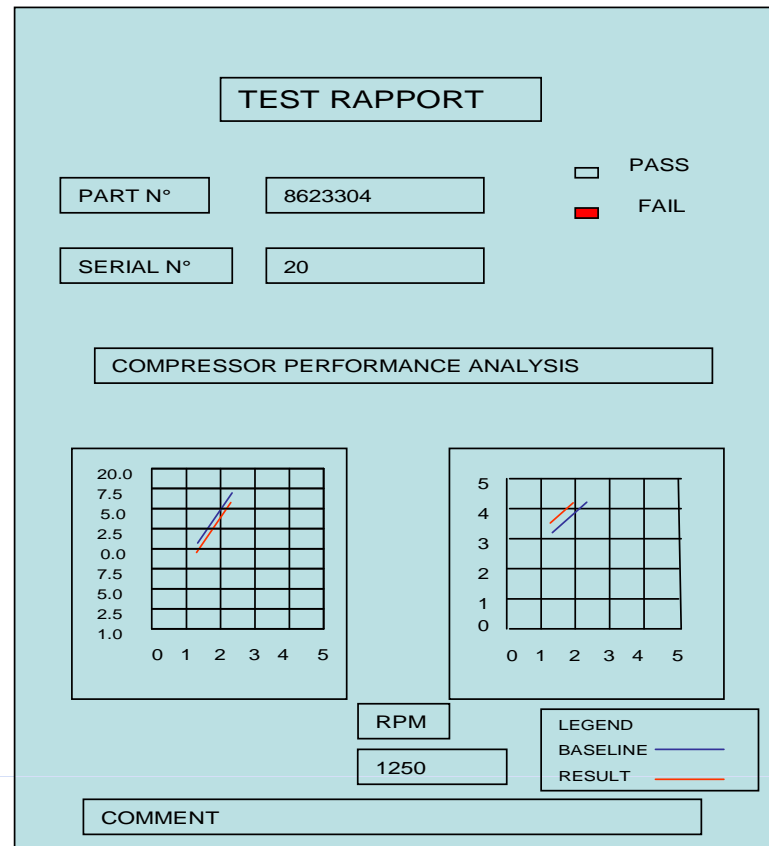
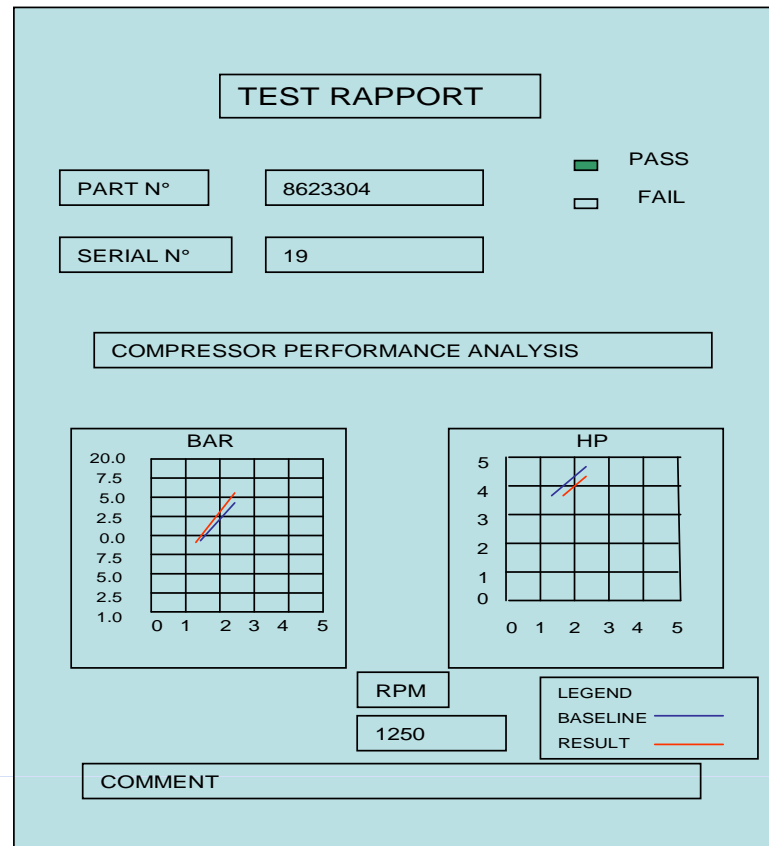
Remanufacturing of A/C Compressors

Double Station production test bench



Remanufacturing of A/C Compressors

Test report showing compressor performance



High pressure on the left, must be higher than the baseline / Consumption on the right (HP), must be lower than the baseline

Remanufacturing of CR Pumps

Assembly of common rail pumps



As Common Rail pumps are a high performance part and tolerances are very low, assembly needs to be done in clean rooms.

Remanufacturing of CR Pumps

Dust free operation(inside view)



Remanufacturing of CR Pumps

Dust free cabinet(inside view)



0,02 micron dust

Remanufacturing of CR Pumps

Assembly of common rail pumps



Special tooling is used to assemble the product; Common Rail pumps as well as A/C compressors require special tooling.

Remanufacturing of CR Pumps

Function test of assembled product



A function test is performed on every unit, using high quality test equipment, measuring performance of the pump. Passed tests will result in the printing of a test report. Due to the high pressure generated, test is performed in closed cabins.

Remanufacturing of CR Pumps

Test bench Common Rail



Remanufacturing of CR Pumps

Function test of assembled product

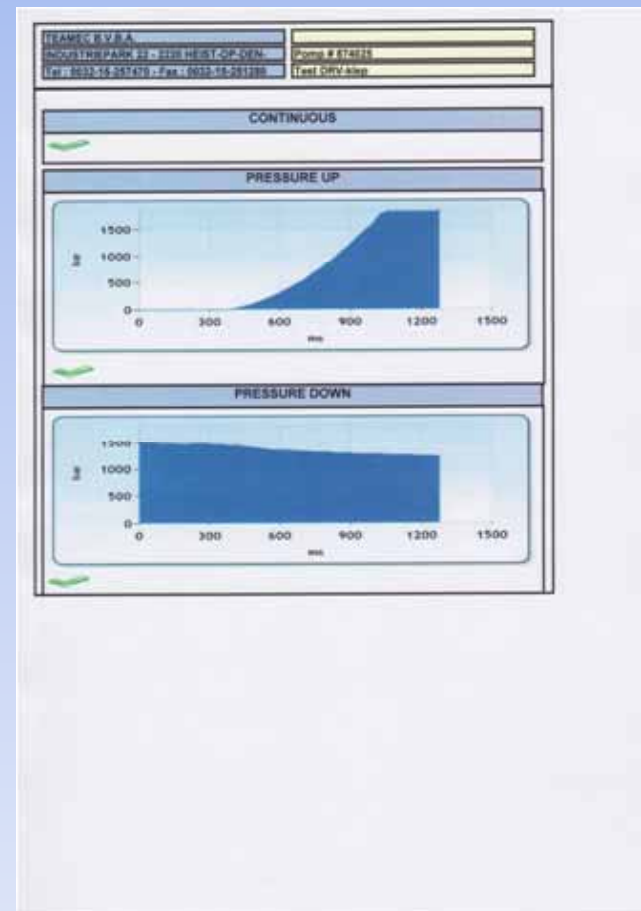


A function test is performed on every unit, using high quality test equipment, measuring performance of the pump. Passed tests will result in the printing of a test report.

Remanufacturing of CR Pumps

Test report showing pump performance

TEAMEC S.V.B.A.			
INDUSTRIEPARK 23 - 3330 HEIST-OP-DEN-BERG		Pomp # 874025	
Tel : 0032-16-257470 - Fax : 0032-16-251286			
Bosch 0 445 010 010 - Date : 19/03/2010 8.50.35			
LOW SPEED			
SubTest	Valori Nominali	Valori Rilevati	Esito
rpm 250 - bar 1000		5000 bar	✓
EFFICIENCY			
SubTest	Valori Nominali	Valori Rilevati	Esito
rpm 1000 - bar 1350	= 0.44 l/min	0.834 l/min	✓
rpm 2500 - bar 1350	= 0.749 l/min	1.837 l/min	✓
REGULATOR			
SubTest	Valori Nominali	Valori Rilevati	Esito
TEST DENSO			
SubTest	Valori nominali	Valori Rilevati	Esito
PRESSURELOST			
SubTest	Valori Nominali	Valori Rilevati	Esito
rpm 250	= 400 bar	N/A	✓



Remanufacturing of A/C Compressors and CR Pumps

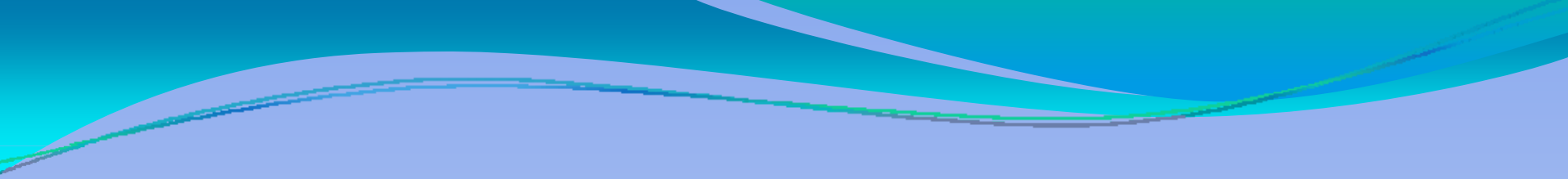
Delivering a quality remanufactured product

- constant investment in new technologies and test equipment
- constant monitoring of suppliers
- constant monitoring of production process
- constant investment in training of employees
- ...will result in delivering a quality remanufactured product

Remanufacturing of A/C Compressors and CR Pumps

Delivering a remanufactured quality product





Remanufacturing of A/C Compressors and CR Pumps

Thank you for your attention.