

Elettroidraulica Electrohydraulics 电子-液压 Elektrohydraulik Электрогидравлика



Standard Quality Plan

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1 Company profile

Company name

Atos spa

Registered office: Milano, Via Boccaccio 34

VAT registration number: 00778630152

Commercial register n. 101068

Headquarter: 21018 Sesto Calende (Va), Via alla Piana 57

Corporate Purpose

Design, manufacture and trade, on its own and on behalf of third parties, of equipments, machinery and industrial equipments generally

Share Capital: €. 5.270.000

Company Property: private, 8 shareholders

Board of Directors

Ing. Crespi L.

Dott. Crespi G.

Sig.ra Duchi T.

Ing. Carbonatto A.

Dott. Crespi P.

Dott. Ferrari G.

Dott. Pedrini B.

President of Board of Directors - CEO

- CEO

- CEO

- Director/General Manager

- Director

- Director

- Director

Holdings

Atos System Inc.

York, Pennsylvania

- USA

Est Due Srl

Trieste

- Italy

Atos (Shanghai) Hydraulics Co.,Ltd

Shanghai

- China

Perucchini Spa

Omegna (Novara)

- Italy

Fluid Power Associates Inc.

York, Pennsylvania

- USA

Industria e Università Srl

Castellanza (Varese)

- Italy

Note: they are all majority holdings, except the last two ones.

Sales & Marketing Branches

Atos Benelux

Amsterdam

Atos France

Lyon

Atos Germania

Dresden

Atos Spain

Madrid

Atos UK

Portsmouth

Atos Russia

Moscow

Atos Poland

Zabrze

Atos North America

York, Pennsylvania

Atos Brasil

San Paulo

Atos South America

Cordoba, Argentina

Atos China

Shanghai

Atos Korea

Hwasung

Atos India

Bangalore

Atos Singapore

Singapore

Standard Quality Plan



Atos Group – consolidated data

Personnel: around 500 included temporary employees

Turnover: 103Mio/€



Sesto Calende plant

ATOS spa

Personnel: around 350 included temporary employees

The average age is 42 years old (46 for 4 directors); 70% have high school or bachelor degrees

Turnover: 86Mio/€



Modena plant

Main company's divisions:

- Valves Division: pumps, on-off and proportional valves, manifolds and systems
- Cylinders Division: cylinders and servocylinders
- Electronic Division: electronic drivers and axis cards

Main manufacturing plants

Sesto Calende plant - Italy Surface under roof : 24.000 m²

Valves Division: vane and pistons pumps, conventional valves, modular valves, on-off valves, proportional valves, manifolds and complete electrohydraulic systems, more than 1.000.000 pcs. per year

Electronic division: analog and digital drivers for proportional valves, LVDT position and pressure transducers for proportional valves, digital axis cards for motion control, more than 100.000 pcs. per year

Modena plant - Italy Surface under roof : 5.000 m²

Cylinders Division: oleohydraulic cylinders and servocylinders, more than 35.000 pcs. per year



Atos Shanghai

Other manufacturing plants

Atos (Shanghai) Hydraulics Co.,Ltd Shanghai- China

Surface under roof: 8.000 m²

On-off valves, modular and conventional valves, 100.000 pcs per year

Perucchini, Omegna - Italy Surface under roof : 11.000 m²

Cast iron and steel, Shell-moulding foundry, 10.000 tons per year

Est Due, Trieste - Italy Surface under roof : 3.000 m²

Modular and conventional valves on Atos design, over 200.000 pcs per year



Perucchini Foundry

Standard Quality Plan



2 Quality Highlights

Quality Policy

Atos is always intending to achieve and maintain its main targets according to the Constant Improvement philosophy. This leading principle must be followed up and integrated in the company working style for an ongoing growth of corporate activities .

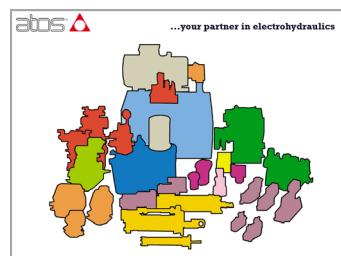
The guideline to achieve these targets are:

- Guidance to the Customer Satisfaction, namely the development of effective and proactive relationships providing a Quality Service based on product conformity starting from technical and commercial requirements
- Cost reduction of quality defects caused by the incorrect application of the Quality System; reduction of scraps and improvement of the efficiency of all activities in any Organization level by optimizing working methods and times
- Strict collaboration with suppliers to get progressive and constant improvements of the range of purchased products and services by increasing the Quality level and the competitiveness of overall costs
- Improvement of the sensibility, the team work attitude and the care of Quality targets in every level of personnel. It is taken good care of human resources management by qualifying the personnel through specific training courses
- Computerization of the production process and individual workstation throughout the company, in order to comply with requirements of traceability and production control

Quality and production requirements, design capabilities, Marketing activities and staff aspirations have to merge into a wide corporate project making persons aware of their responsibilities and more and more involved in a continuous growth of Atos.

Quality System conforming to ISO 9001:2008 supplemented with applications and methods of ISO TS 16949 Technical Specification

In a more and more competitive global market, the Quality of product plays a basic role in customers satisfaction and therefore in having a successful business. In continuous improvement perspective, Atos has decided to integrate the Quality Management System conforming to ISO 9001:2008 norm with applications and methods of ISO TS 16949 technical specification mainly applied in the Automotive market. The most significant methods used by Atos are: **DFMEA, PFMEA, CONTROL PLAN, SPC, PAP**.



ISO 9001:2008 Certificate

Sharing of quality policy with all corporate levels

The Quality policy and the most significant trend indexes are shared with all operating services and departments. The main goal is to maximize the involvement and participation of all company personnel in regards to Quality subjects. Everyone has the right and duty to notify possible inefficiencies or nonconformities both of product and service. Each report will be always checked by services in charge; appropriate and corrective actions will be targeted and put in the field.



Partnership with Customers

Strong partnership with customers and suppliers

Atos policy promotes strong partnership with customers and suppliers; close technical relationships with customers enable a thorough knowledge of products and applications, thus developing products able to meet all the requirements and suitable for the relevant application. The partnership with suppliers builds up and promotes their involvement in the company policy of continuous improvement; therefore the supplier becomes an active partner in the process of growth and improvement of Quality standards.



Technical session

Personnel with high competence

Atos invests a lot of resources in staff training at all corporate levels; the competence of staff plays a fundamental role to reach and maintain high quality standards over time and, in addition, to promote the policy of continuous improvement.

The training courses are planned with reference to the Skills Matrices, that point out and relate the individual skill to the running working activity, so any possible gap can be easily filled. In addition specific training are scheduled and focused on new methodologies learning (see ISO TS) or on using of new working tools.



Hand-on training

Suppliers with certified Quality System

For further higher quality assurance of purchased components, Atos suppliers have a certified quality system according to ISO 9001 or ISO / TS 16949 Quality Management System or their own quality system aligned to ISO 9001 standards. All suppliers are approved through joint Audit carried out by Quality and Purchasing specialists and their status of Atos supplier is maintained by continuous monitoring of their trend indexes particularly the PPM (Parts-Per-Million) nonconformities. The evaluation of suppliers by Vendor Rating is issued every six months. Suppliers with underperforming VR index respect to Atos' target are called to jointly define proper countermeasures to restore the targeted quality rating.

Standard Quality Plan



Software for Quality Management

Quality activities are managed by the support of a specific software; the IT solution is able to ensure the effectiveness of operations and greatly increase the efficiency of the corporate organization. The software includes a wide range of application modules, covering the requirements of the Quality system in regards to the most strategic areas such as: Quality Control, Metrology, Equipments Maintenance, Problem Solving, Nonconformities, the Statistical Process Control.

The software producer Quarta® Blulink , leading manufacturer, ensures the continuous updating of the application modules, this allowing us to always have an updated and modern tool.



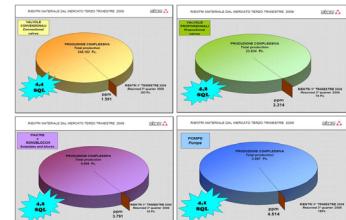
Quarta® Blulink: Quality Software

Punctual Analysis of Nonconformities, for a continuous improvement

The nonconformities are split in three main groups:

- External nonconformities, reported by customers
- Internal nonconformities, reported by departments or services
- Nonconformities in material entrance, dependent on suppliers and detected in acceptance

Each nonconformity is promptly investigated, checked and solved by applying corrective actions according to the methodology of the Problem Solving. The Quality service draws up the analysis of nonconformities quarterly; it is shared with all the company departments in charge, to jointly define and implement necessary and resolutive actions.



Nonconformities analysis

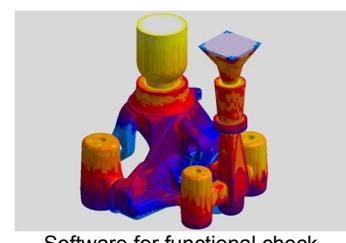
Specific software for design and DFMEA method

Atos design service uses specific software, able to analyze the requirements of products just in the early development phase and to define all the relevant activities of the technical office.

- **CFD** (Computational Fluid Dynamics) performs calculations of pressure losses and fluid forces generated by the fluid flowing into the valve
- **IST Spring Design** allows to calculate the loads and the geometrical parameters of a spring, besides it allows to check its performances under fatigue stress
- **IBIMEC** allows to apply DFMEA method in the component design. It also makes immediately available the company know-how through the analysis of the historical experiences up to the definition of a specific product
- **FEM** (Finite Element Method) checks the structural strength of a mechanical device.



Design Software



Software for functional check

Standard Quality Plan

Significant equipments at the R&D department

Atos R&D department is provided with the necessary equipments needed to carry out functional and performance tests on products and components; in addition specific machinery are able to simulate the most critical applications which Atos products could be applied to. The functional tests are performed both during the feasibility study of a new product and on large serial production. The R&D plays a fundamental role in identifying functional limits and weak points of the product, allowing designers to work and focus on the improvement of Quality, Reliability and Performance standards.

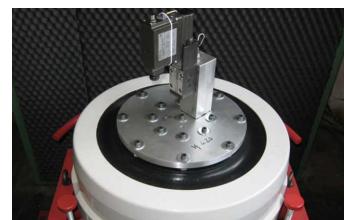
TYPE OF INSTRUMENT	MODEL	TEST PERFORMED	REFERENCE STANDARDS	TEST DESCRIPTION
SALT FOG CHAMBER	WEISS SC 450	SALT SPRAY TEST CONDENSED WATER TEST	UNI EN ISO 9227 UNI EN ISO 6270-2	Tests performed with a standardized solution of NaCl used to check corrosion resistance of coated samples
SHAKER	LING DYNAMIC SYSTEM V830-335 SPA16K	MECHANICAL STRESS AND VIBRATION ON 3-AXIS	EN 60068-2 DIN 40046	Sinusoidal oscillation Random oscillation X/Y/Z Shock test
THERMAL CHAMBER	WEISS WT 120/70	THERMAL TESTS RANGE -70°C +180°C		Functional tests of components with hydraulic and electric connection in real working conditions
IP PROTECTION DEGREE TEST	WEISS SWT 1000	IPX6 IPX7 IPX8 IPX9K	DIN 40050-9 CEI EN 60529	Analysis of IP protection class provided by enclosures of electronic components
INFRARED CAMERA	SAT-G 90	-20° ÷ 1500° 7.5μ÷13μ		Photo and video in infrared wavelength. Resolution ±80mKa 30°
FATIGUE TEST	VARIOUS SYSTEMS	FATIGUE TEST ON PRODUCTS FATIGUE TEST ON COMPONENTS		24/7 wear tests to verify reliability of products and components



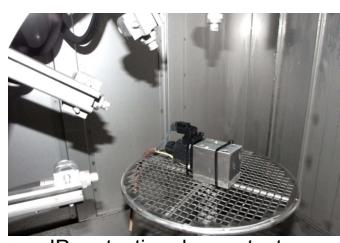
Salt fog test



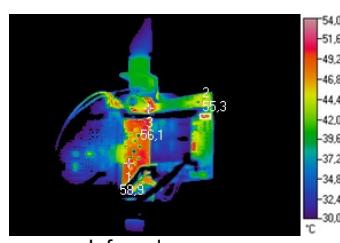
Temperature test chamber



Electrodynamic shaker



IP protection degree test



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Significant equipments at Quality Assurance department

The Quality Assurance department is provided with forefront machinery and equipment able to monitor automatically or semi-automatically the conformity of the components manufactured in-house or from suppliers. The controls are defined according to the critical points of each component, and according to the supplier's VR.

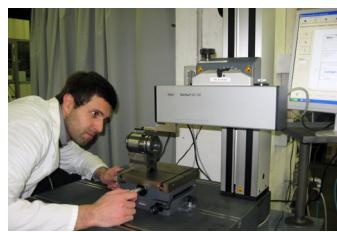
The quality and sampling plans are managed dynamically according to the number of conformed supplies and they are set on three levels: low, normal or intensive. Suppliers having high quality level maintained over the years, work under Free Pass; however all suppliers are required to prove and state the results of their own inspections and tests.

The QA dept is capable of supporting suppliers as well as the internal operational departments whenever specific instruments or customized inspection are required.

TYPE OF INSTRUMENT	MODEL	MEASURING RANGE	RESOLUTION	FEATURE
3D MEASURING MACHINE	DEA IOTA 0102	X 910mm Y 610mm Z 410mm	0.1µ	Renishaw probe PH10, SW TUTOR and PC-DMIS
3D MEASURING MACHINE	DEA GLOBAL 071005	X 700mm Y 1000mm Z 500mm	0.1µ	Renishaw probe PH10, SW TUTOR and PC-DMIS
OPTICAL SCANNER	HOMMEL-ETAMIC C310	Ø6÷100mm length 350mm	0.1µ	measure outside diameters, SW TURBOPTIC 3
PROFILE PROJECTOR	SCHNEIDER P500	X 200mm Y 100mm	1µ	Display MULTICOUNT 2000 magnification x10 x25 x100
ROUNDNESS TESTER	MAHR MMQ 44	X 180mm Z 500mm	0.01µ	Automatic probe T7W, SW FORM-PC
ROUNDNESS TESTER	MAHR MMQ 44	X 180mm Z 350mm	0.01µ	Semiautomatic probe T2W, SW FORM-PC
SPRING TESTING SYSTEM	EASYDUR DINO	0÷300Kg 0÷3000N	0.001 Kg	Three load cells 300Kg – 50 Kg – 5 Kg
UNIVERSAL LENGTH MEASURING MACHINE	JENA 01-600C	Length 0÷600mm	0.1µ	Calibration of measuring instruments sw QM-SOFT
ROUGHNESS MEASURING STATION	MAHR MARFURF XR20	X 120mm ± 750µ	0.001µ	Probe GD 120 , SW MAHRSURF XR20



3D coordinate measuring machine



Roughness measuring station



Optical measurement system



Roundness tester



Spring testing instrument



Universal length measuring machine

Forefront and highly reliable production machine

For in-house production of components, Atos uses the most advanced machines able to perform high productivity and capability and to grant high quality standards. Atos has been cooperating for several years with the leading manufacturers of high precision machining centers such as Buffoli and Mandelli.

Main features of the most important machining centers:

- Robotised feeding system
- Self-centering of workpieces by Renishaw checking gauge system
- Rack tool magazine with multiple pockets for no-stop operations
- Tool status control through axes power absorption
- Tool life control through a feeler pin
- Automatic replacement of damaged tool
- Automatic adjustment of working dimensions
- Cpk > 1.67

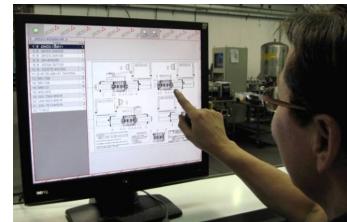


High precision machining centers

Assembling benches with PC's displaying drawings, part lists and visual instructions

The assembling benches are equipped with touch screen monitors connected to Atos' intranet network.

Once the unique barcode related to valves order is read, all the updated information needed to assemble properly the valve are displayed and available for the operator such as drawing, technical specifications and Visual Instructions. This important improvement optimizes the assembling operations by reducing possible errors and improving the order and layout of workstations thanks to paper documents removal.



Visual Instructions

Acceptance test on 100% of production

All Atos products are 100% tested; it allows to detect and identify possible functional nonconformities, before components are supplied to the customers. The test benches are fully automated to minimize the human error and to operate more efficiently and effectively thanks to preset test cycles tailored and selectable for each component. Any possible nonconforming product detected during the test is immediately rejected and delivered to the relevant department for analysis and overhaul.



Automatic testing benches

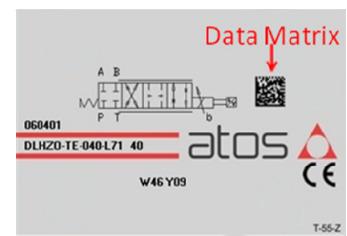
Univocal traceability of testing data through Data Matrix

Data Matrix is a bi-dimensional bar code able to record a lot of information regarding the valve production and testing.

Data Matrix is etched by laser on the valve nameplate for an immediate and univocal traceability of every single component; beside, it allows to combine performances and information measured during the valve's functional test.

Main information recorded in Data Matrix

- References of customer purchase order / acknowledgement
- Date and time of testing
- Operator who carried out the test
- Reference testing bench
- Measured parameters during functional test



Data Matrix traceability code

3 Purpose of the Standard Quality Plan

This Quality Plan, edited in conformity to UNI ISO 10005 norm, shows the procedures carried out by Atos to comply with the quality requirements applied to the production of components. The document has been deliberately issued in synthetic form and with general purpose contents because specific information are just included into the Quality Manual. Atos manufacture standard components, reported on technical catalogue, and special execution products as well; consequently the Quality Plan differentiates the specific activities related to both production lines.

If the contents of this document do not comply with the customers requirements, they could inquire to the Atos Quality Assurance Service a registered copy of Quality Manual. This document is considered under "not controlled distribution".

4 Atos and Quality Assurance

The Atos management system is in accordance with a Quality System conforming to the UNI EN ISO 9001-00 : 2008 norm.

The Quality management system certificates nr. 178/95 and 179/95 has been achieved via notified body R.I.Na. (Registro Italiano Navale) on 1995; whereas notified body CSQ released the later extensions. Nowadays only one quality system document nr.9105 certifies the three company divisions. Quality has been always a key point for Atos, specifically matured by managing orders according to quality assurance requirements for civil, naval and military applications.

Main supplies programs, managed according to the Quality Plan

Customer: OTO-MELARA La Spezia, Italy

Supplying: lifting and stabilizing cylinders for armoured vehicle type B1

Reference norm: NATO AQAP-4 (indirect qualification for Defence Admin. via OTO-MELARA)

Customer: ALENIA, Italy

Supplying: tilting and levelling cylinders for missiles launching ramp system SAMP-T.

Reference norm: NATO AQAP-1 (indirect qualification for Defence Admin. via ALENIA)

Customer: OTO MELARA La Spezia. Italy

Supplying: stabilizing and balacing cylinders for missiles launching ramp systems SKY GUARD

Reference norm: NATO AQAP-1 (indirect qualification for Defence Admin.)

Customer: Fiat Ferroviaria Savigliano (CN), Breda Costruzioni Ferroviarie (Pistoia), Italy

Supplying: lifting and handling systems for Eurotunnel trains

Reference norm: UNI ISO 29000

Customer: TRW Pamplona, Spain

Supplying: control valve for rear axle power steering of trucks

Reference norm: ISO TS 16949

Customer: CAT Paving System Minerbio, Italy

Supplying: manifolds and modular groups

Reference norm: ISO TS 16949

Certificates and qualifications achieved in Quality system

Quality system

- Dedicated Quality Plans to manufacture components in compliance with ATEX and PED directives
- Registration to the supplier and bidder lists of the Defence Administration for following components categories: motors, pumps and hydraulic servocontrols, piston and vane pumps, fluid dynamic devices for remote control
- Registration into vendor lists of important groups operating in automotive, energy, steel and mining industries

Product certifications:

- Explosion-proof ON-OFF and proportional valves also with integral driver and intrinsically safe valves for applications in hazardous environment and mining; they are certified according to ATEX , UL and Gost-R Rostechnadzor directives
- Explosion-proof valves for applications in hazardous environment; they are certified according to IECEx international safety standard
- Cylinders and pumps for use in explosive environmental; they are certified according to ATEX directives
- Safety manifolds for hydraulic press-brakes, certified by notified German agency "BG Berufsgenossenschaft"
- Safety manifolds for hydraulic bending presses, TÜV -Italy approved
- Pressure relief safety valves certified according to PED directives
- UL approved directional on/off control valves with coils in class H for standard applications
- Safety solenoid valves and cartridges with integral mechanic microswitch or inductive proximity sensors, TÜV-Italy approved
- Ex-proof solenoid valves spool type and free-leakage poppet type conform to SIL3 safety level according to low demand mode operation, TÜV approved
- All Atos valves are PCT certified, according to GOST-R (Russian mark equivalent to CE)

All above mentioned certifications are available on our web site www.atos.com

5 Duty responsibilities

Hereafter the relevant services of Atos organization that are responsible for the implementation of the Quality Plan:

- ASQ: ensure that the activities required by quality management system are planned, implemented and controlled by monitoring their development
- ASQ: determine the sequence and interaction of processes related to the Quality Plan
- ASQ: communicate requirements to all involved company services and divisions, subcontractors and customers. Solve issues that might come out at interfaces among these groups
- ASQ: double check the results of performed audits
- DGE: authorizes requests for exemptions to Atos Quality Management System procedures
- ASQ: monitor corrective and preventive actions
- DGE: review and approve changes to the Quality Plan or deviations from it

DGE : General Management

ASQ : Quality Assurance

Quality reference documents: QA-002-01-ASQ, Quality Manual

6 Checking of documents, data and records

All Atos documentation is identified, registered, protected and preserved in accordance with qualified criteria conforming to UNI EN ISO 9001:2008 norm.

All internal documentation is managed through specific procedures and specifications that define modes and responsibilities for their processing, coding, distribution and review.

Responsibility of the external documentation management falls on the reference department who is in charge of the specific activities of management, registration and distribution.

The external documents (norms, technical specifications of the customer) are considered under controlled distribution and they are registered in special lists drew up and updated periodically by QA dept. The data management is carried out by Atos both on paper and on data processing supports according to the running software used for management, design and usual practice and handled by the IT dept.

The records are identifiable, traceable and preserved for a minimum of three years.

The Quality reporting will not be disclosed to entities outside the company except for specific agreement with the end customer during the "contract review".

Quality reference documents: QA-005-01-ASQ, QA-005-02-ASQ, QA-005-03-ASQ, SAS-003-D

7 Training

Staff training is handled at all company levels according to defined procedures and skills required for specific roles or functions. QA dept is responsible for the program management, training and refresh courses.

Quality reference documents: QA-018-01-ASQ

8 Order processing and customer service

All customer notes, specifications and purchase orders are analyzed and checked in the "review of contract" according to established procedures.

Commercial (COM *), technical support-to-sales (ITEC) and technical dept. (TEC) are responsible for analysis and development of technical-commercial inquiries.

Atos has its own customer service with high skilled personnel normally engaged in R & D activities. The requested onsite technical assistance is recorded on a proper forms and it is always supported by specific technical reports sent to the customer.

Service dept (REV / ASS) is responsible for the management of goods returned for in-house inspection. ASS/REV is supported by R & D, Quality Control, QA and Production dept. whenever specific analysis and test are required.

Quality reference documents: QA-003-04-COM, QA-019-01-TEC, QA-019-02-PRO

9 Research & Development

Atos design is managed separately by each one the three divisions; each one is responsible for the relevant product range. Products design is developed by two different services: technical office that is the responsible of components design; R&D that is responsible of testing procedures and products validation.

The "Design Plan" is worked out by the technical dept. and, in case of standard product, it must be approved by Marketing dept. and General Management; whilst, in case of special product, the final approval is from customer. The planning and management activities of products design are defined by implementing DFMEA method that involves several company services.

The control and validation of the standard design are always carried out by testing one or more prototypes according to a qualification trials program prepared by the R&D dept.

The engineering development of special products is normally carried out by testing the "first sample" on the end-user machinery and by involving the customer for final approval.

Test and verifications reports are always registered into the Project Plan.

Quality reference documents: QA-004-01-TEC, QA-004-02-TEC, QA-004-03-TEC, QA-004-04-TEC

10 Outsourcing and suppliers' management

Each of three Atos business divisions manages the purchasing activities separately from the others.

In order to maintain high quality rating of purchased components, Atos makes use of suppliers with quality system according to UNI EN ISO 9001-2008 or ISO TS 16949 or with own quality system aligned to ISO standard. Each supplier is qualified and constantly monitored through specific audits carried out by Atos QA and Purchase dept. specialists.

Suppliers' Vendor Rating (VR) is issued by three Atos business divisions every two quarters in order to monitor suppliers' performances in terms of quality of supplying, reliability of delivery terms, flexibility and technical support forwarded to Atos. Suppliers with underperforming VR index respect to Atos' fixed target are called to jointly define proper countermeasures to restore the required quality rating.

Atos carry out specific frame agreements with suppliers having a VR higher than a fixed bench mark, long term high quality rate of supplies and strong technical relationship with Atos; this agreement includes self-certification and Free Pass.

The PAP procedure (Product Approval Process), derived from Automotive PPAP, is also active for the verification and validation of products manufactured by new suppliers or by already approved suppliers in case of changes in their production process.

The purchase orders are formalized on specific numbered forms, including the contract terms fixed in the relevant supplier's contracts.

Quality reference documents: QA-006-01-PRO, QA-006-02-PRO, SAS-465-Q

11 Production

The internal and external machining are managed through manufacturing and inspection cycle worked out for all types of components according to defined procedures.

Assembly and testing activities are managed through order and bill of material, supported by technical specifications and visual instructions for the assembly and testing operations of the specific product.

In **section 18** flowcharts of the standard production process of the three Atos divisions are reported.

Quality reference documents: QA-009-02-PRO, QA-009-03-PRO

12 Identification and traceability

The identification of parts and products is usually carried out by affixing the identification labels on the components. The critical parts are etched by punching or by laser.

The "primary material traceability" is applied only to the critical parts by affixing or marking specific codes through which it is possible to trace the manufacturer (supplier or Atos department), the production dating and the belonging batch.

The "finished products traceability", applied on all Atos products through marking, allows to identify the name of assembler and inspector, the dating (week/year) and the test execution procedures.

In addition, the new identification procedures through Data Matrix code etched by laser on the valve nameplate is now running. It consists of a bi-dimensional bar code for an immediate and univocal traceability of all valves manufactured by Atos on functional testing basis.

Quality reference documents: QA-008-01-ASQ, QA-008-02-ASQ, QA-010-01-ASQ

13 Control of goods supplied by the customer

Whenever applicable, the products supplied by customer are identified and handled separately from Atos standards line. Their storage is managed in separated warehouse areas.

Unless specific agreements and prescriptions, standard control and management procedures are applied.

Quality reference documents: QA-007-01-PRO

14 Products preservation

All the parts managed in the company are handled, stocked and preserved through specific equipment and protections. The preservation against ambient decay is granted by coating protective products.

Packing for the shipment is realised by using different protections related to the package weight, the selected way of transport, particular customer requirements and running norms.

Quality reference documents: QA-015-02-PRO, QA-015-03-PRO

15 Checking of not conform products

Specific areas for the segregation of nonconforming products are well marked in all production departments. The products nonconformities both for simple part faults as well as finished product defects are always identified with coloured tags: red for material to be rejected; yellow for material to be checked and overhauled. The rejected product is quickly scrapped or returned to the supplier in order to prevent any possible misuse. The exceptionally accepted or repaired material is properly identified and managed to allow its traceability in any phase of production process.

The analysis of nonconformities is handled through the Problem Solving methodology. The non-conformities procedures can be issued by any company dept. and they are always registered on specific forms according to defined procedures. QA dept. determines the method to manage the nonconformity and the activities needed to analyze the problem, the service in charge of the analysis and the action planning to prevent future occurrence. In regards to technical issues, Technical dept. has the exclusive responsibility for the acceptance of exceptions or repairs.

Quality reference documents: QA-013-01-ASQ, QA-013-02-ASQ

16 Monitoring and measurement

Process control is an effective and objective method to detect products nonconformities.

Inspections and tests are carried out on three different phases basis.

Acceptance sampling is done by the acceptance control dept. according to a sampling plan based on three set levels according to the product complexity/function and the supplier's VR rate. Drawings of mechanical parts, operative and visual instructions are adopted as reference documents. The sampling results are processed through Quarta® Blulink, a specific software able to issue effective and precise survey.

On line controls performed by the machine tool operator and based on statistic sampling; they are supervised by the foreman and the responsible of on line controls. On line controls are registered on specific department registers or via acquisition data software. Design drawings and manufacturing operational chart are used for such a purpose.

Final functional tests are performed on all components by the testing operator and in accordance with the product test specification or automatic testing procedures.

The objective proof of the functional tests' execution is granted by the presence of the "product traceability code" and by Data Matrix etched on the valve nameplate.

All the instruments used to control and test components are encoded and registered on specific master registration cards. Their suitability is constantly verified by the QA personnel employed in metrological laboratory through the relevant controls established in the same master registration cards. The instruments verifications are carried out by using primary samples SIT or by relying on external accredited laboratories. The instrument management relies on the support of QMSOFT® specific software.

Quality reference documents: QA-010-04-ASQ, QA-010-05-ASQ, QA-011-01-ASQ, QA-012-01-ASQ

17 Audit, statistic survey, corrective and preventive actions

Quality audits are constantly carried out by the QA personnel both inside the Company structure and organisation as well as at the external suppliers.

The results of the inspections are always registered on specific forms, that are integral part of the Quality system documentation.

Statistical techniques are applied to monitor constantly the performances of the most significant indexes:

- External nonconformities reported by customers
- Internal nonconformities reported by departments or in-house
- Nonconformities dependent on outsourcers and detected in acceptance
- Controls and tests in acceptance and in production
- Products' overhauling
- After-sales Service
- Customers' claims
- Delivery delays
- Missing parts in production

Quarterly the QA dept. draws up the non-conformity analysis in accordance with defined procedures.

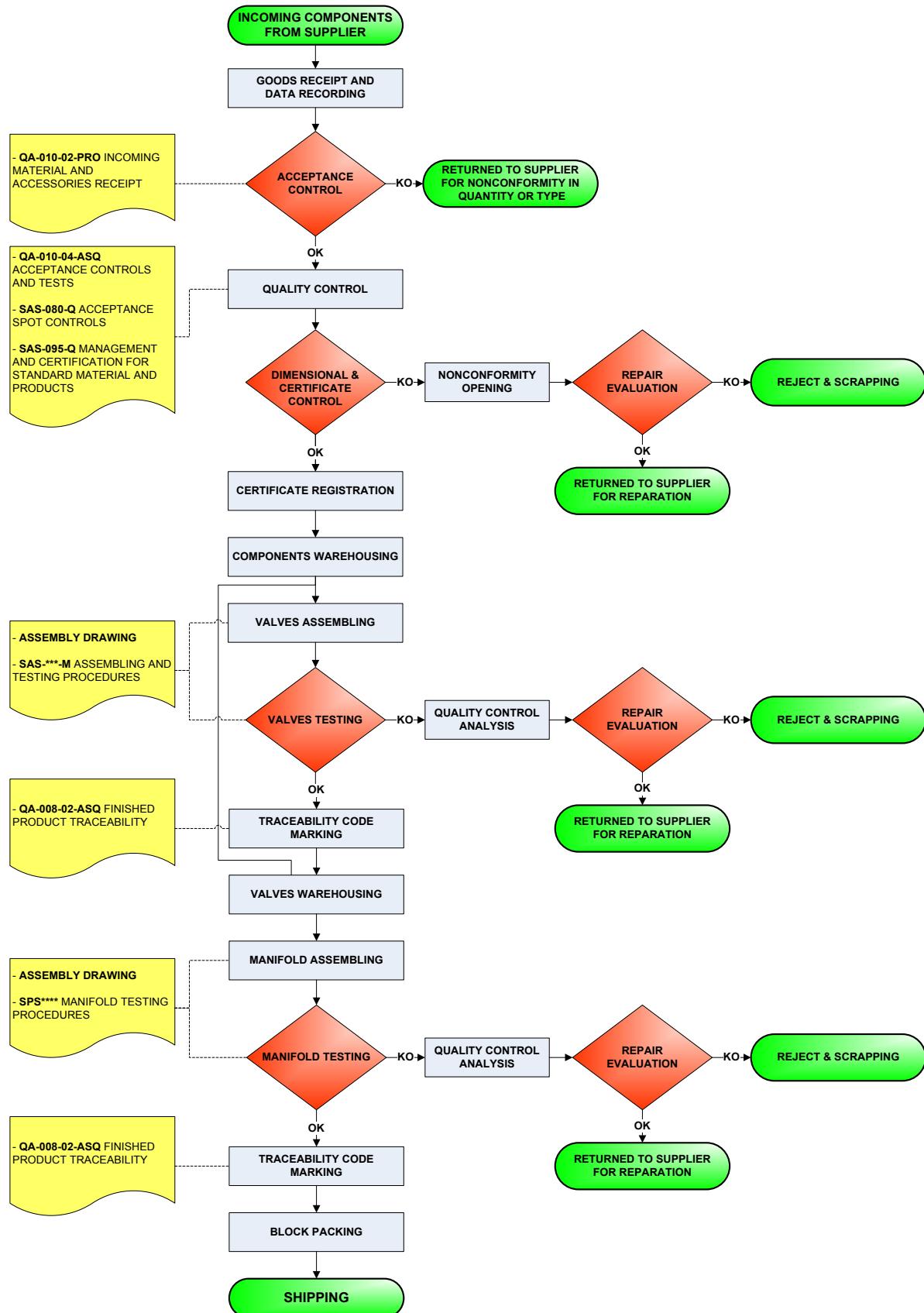
In order to raise awareness and involve personnel at any company levels, quarterly the survey charts of the most significant quality indexes are displayed in the relevant showcases present in all production areas.

Corrective and preventive actions come out from the analysis of product or service nonconformities that are registered through internal and external nonconformity claims as well as form audits carried out by the Notified Body. The accomplishment and effectiveness of the engaged corrective action is planned and monitored in subsequent audits.

Quality reference documents: QA-017-01-ASQ, QA-014-02-ASQ, QA-020-01-ASQ

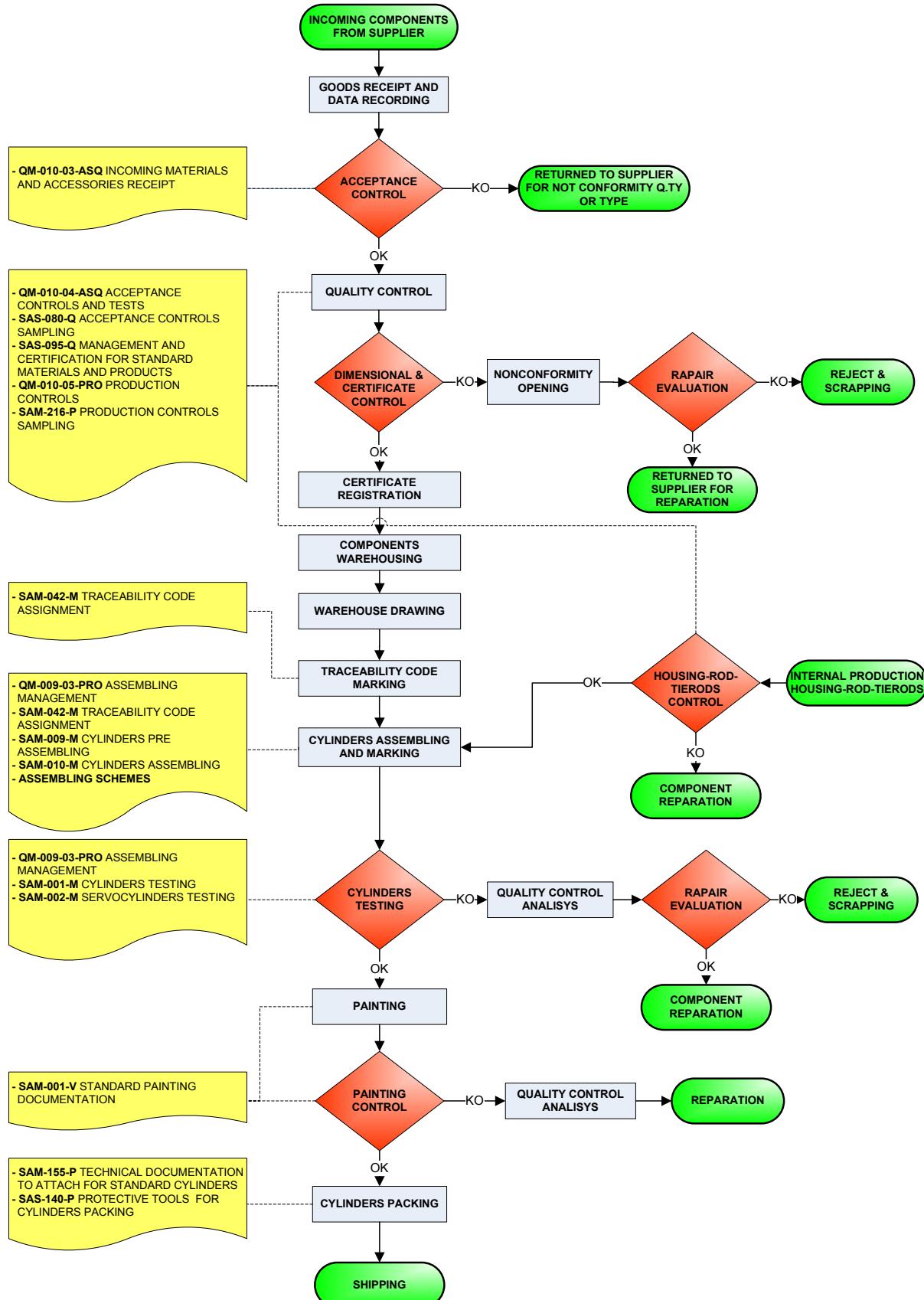
18 Flowchart of the standard production process

18.1 Valves and manifolds division: production flowchart



Standard Quality Plan

18.2 Cylinder division: production flowchart



18.3 Electronic division: production flowchart

