ORIGINALE ARCHIVIO

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Titolo : *Title :*	AMS02 TCS DECLARED PROCESSES LIST				

	Nome & Funzione *Name & Function*	Firma *Signature*	Data *Date*
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REGISTRAZIONE DELLE MODIFICHE / *CHANGE RECORD*

EDIZIONE *ISSUE*	DATA *DATE*	AUTORIZZAZIONE *CHANGE AUTHORITY*	OGGETTO DELLA MODIFICA E SEZIONI AFFETTE *REASON FOR CHANGE AND AFFECTED SECTIONS*
1	Mar. 2008		First issue

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1. SCOPE

The scope of this document is to define all processes to be used in the Thermal Control System for AMS02 Program.
The document corresponds to contract deliverable DEL 027.

2. APPLICABLE & REFERENCE DOCUMENTS

Documents here below identified are applicable and/or reference for the activities described in the present document and are considered part of it to the extent specified herein.

2.1 APPLICABLE DOCUMENTS

AD	DOC. N.	ISSUE	TITLE
1	AMSCD-PL-CGS-001	1	AMS02 Product Assurance Plan

2.2 REFERENCE DOCUMENTS

RD	DOC. N.	ISSUE	TITLE
1	JSC 63164	-	Quality Management Plan for the AMS02 Experiment
2	ECSS-Q-70	B	Materials, mechanical parts and processes

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3. RESPONSIBILITY

CGS shall be responsible that all listed processes are in accordance with the applicable documents.

4. METHODOLOGY FOR THE COMPILATION OF THE DPL

The processes list consist of 11 columns which shall be completed as indicated below in according to [RD 1] document. Furthermore, the processes shall be classified as specified in table:

GROUP	PROCESSES
1	Adhesive bonding
2	Composite manufacture
3	Encapsulation/moulding
4	Painting/coating
5	Cleaning
6	Welding/brazing
7	Crimping/stripping/wire wrapping
8	Soldering
9	Surface treatments
10	Plating
11	Machining
12	Forming
13	Heat treatment
14	Special fabrication: processes developed specifically for the programme
15	Marking
16	Miscellaneous processes
17	Inspection procedures

Column 1:Item number
Sequential item number in each group. One only per process type.

Column 2:Process identification
Process name, title, standard identification.

Column 3:Specification Issue/Rev
Specification number with issue/revision status relevant the process.

Column 4:Process description
Brief description of the process.

Column 5:Use and location
Define location and use of process in the spacecraft/equipment.

Column 6:Manufacturer's name
This identifies the abbreviated name of the manufacturer and name of the supplier if different (the one who applies the process).

Column 7:Associated items in materials list
Corresponding materials list or mechanical parts list item number.

Column 8:Criticality of the process
Enter "C" for critical or "N" for non-critical. If a process is considered to be critical, references to the relevant Requests For Approval shall be entered.

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Column 9:Justification for validation approval
The purpose of this column is to enter any additional information that may be necessary in order to achieve customer's approval. This information comprises reference and issue of the Requests For Approval, processes justification file, evaluation reports and waivers.

Column 10:Contractor's approval (Prime val.)
A = Approved. All processes classified "A" may be used without restriction.
X = Approved with an Requests For Approval. These processes shall be subjected to an evaluation or validation programme. The Requests For Approval number shall be entered as a comment in column 9.
W = Approved with a concession. These processes do not meet the requirements but are used for functional reasons. The use of such processes shall be reduced to a minimum. All deviation requests shall be approved by the Customer. The concession number shall be entered as a comment in column 9.
P = Pending a decision. Processes for which an evaluation report or a concession is waiting for the contractor's provisional or definitive approval.
O = Open. New processes or processes for which investigations and validations are in progress.
R = Rejected.
D = Deleted. This classification is used for a process that is no longer used.
If approval cannot be given and one of the other codes are entered, comments shall be entered in column 9.

Column 11:Customer approval and comments (Customer App.)
This column will be completed by Customer in accordance with the codes listed in Column 10.

5. DECLARED PROCESSES LIST

In the following pages are listed the processes envisaged during the manufacturing phase.

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ANNEX 1: Declared Process List Form Sheets

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CARLO GAVAZZI SPACE SpA	AMS02-Thermal Control Ststem DECLARED PROCESSES LIST	Doc.No: AMSTCS-LI-CGS-002 Issue: 1 Date: March 2008

1	2	3	4	5	6	7	8	9		10
								9.1	9.2	
Item No:	Process identification	Specification Issue/Rev	Process description	Use and location	Manufacturer name	Associated items in material list	Criticality of the process	Justification for validation approval	Prime valid.	ESA valid.
Group 1: ADHESIVE BONDING										
01	Adhesion of identification label	PA072 Is.1	Adhesion of identification label with epoxide adhesive Eccobond 285 cat.11	Adhesion of identification label on external wall	CGS	Group:10 Item N.:01	Not Critical	Mixing rations (by weight): 4,5% of cat.11, cured 8h-82°C 50%R.H. PA072 is.1 MSFC-HDBK-527(05475)		
02	Adhesion of non-structural parts	Technical bullettin of manufacturer	Adhesion of non-structural parts with Scotch-weld 2216B/A	Adhesion for bonding and srew locking in the box	CGS	Group:10 Item N.:03	Not Critical	Mixing rations (by weight): 7pbw resin: 5pbw cat. cured 2h-70°C 50%R.H. ESA PSS-01-701, MSFC-HDBK-527(05066) ,		
Group 2: COMPOSITE MANUFACTURE										
Not present										

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1	2	3	4	5	6	7	8	9		10
								9.1	9.2	
Item No:	Process identification	Specification Issue/Rev	Process description	Use and location	Manufacturer name	Associated items in material list	Criticality of the process	Justification for validation approval	Prime valid.	ESA valid.
Group 3: ENCAPSULATION / MOULDING										
01	Potting of electrical components	GD-PR-CGS-011 Is.1	Potting of electrical components with RTV566A/B	Potting of electrical components on PCBs	CGS	Group:14 Item N.:01	Not Critical	Mixing rations (by weight): 0,2% part B cured 7 days 25°C 50%R.H. ESA PSS-01-701, MSFC-HDBK-527(03484)		

CARLO GAVAZZI SPACE SpA	AMS02-Thermal Control Ststem DECLARED PROCESSES LIST					Doc.No: AMSTCS-LI-CGS-002 Issue: 1 Date: March 2008				
1	2	3	4	5	6	7	8	9		10
								9.1	9.2	
Item No:	Process identification	Specification Issue/Rev	Process description	Use and location	Manufacturer name	Associated items in material list	Criticality of the process	Justification for validation approval	Prime valid.	ESA valid.
Group 4: PAINTING/COATING										
01	Conformal coating	GD-PR-CGS-063 Is.1	Conformal coating on assembled PCBs with URALANE 5750 A/B	Conformal coating on: PCBs in electronic box	CGS	Group:10 Item N.:02	Not Critical	Cured 7days 25°C or 9 hours 65°C 50%R.H. ESA PSS-01-701,		
02	Coating	EC 3924B	EPOXY Primer Coating	Radiator Inner skin (Crates side) surface treatmnet	3M		Not critical			

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1	2	3	4	5	6	7	8	9		10
								9.1	9.2	
Item No:	Process identification	Specification Issue/Rev	Process description	Use and location	Manufacturer name	Associated items in material list	Criticality of the process	Justification for validation approval	Prime valid.	ESA valid.
03	Paint		Painting with White Paint SG 121 FD	Radiator Outer Skin (Radiative side)	AIDC		Not Critical			

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1	2	3	4	5	6	7	8	9		10
								9.1	9.2	
Item No:	Process identification	Specification Issue/Rev	Process description	Use and location	Manufacturer name	Associated items in material list	Criticality of the process	Justification for validation approval	Prime valid.	ESA valid.
Group 5: CLEANING										
01	Cleaning	PA071 Is.1	Cleaning of Mechanical items		CGS	Group:20 Item N.:01, 02	Not Critical			
Group 6: WELDING										

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1	2	3	4	5	6	7	8	9		10
								9.1	9.2	
Item No:	Process identification	Specification Issue/Rev	Process description	Use and location	Manufacturer name	Associated items in material list	Criticality of the process	Justification for validation approval	Prime valid.	ESA valid.
01	Welding	UNI EN ISO 15614-1 UNI EN ISO 15614-2	Manufacturing of the Heat Pipes and the Loop Heat Pipes	CAB & Cryo TCS , Main and Tracker Radiators	IberEspacio	Group:1 and 2	Critical	UNI EN ISO 15614-1 UNI EN ISO 15614-2		

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1	2	3	4	5	6	7	8	9		10
								9.1	9.2	
Item No:	Process identification	Specification Issue/Rev	Process description	Use and location	Manufacturer name	Associated items in material list	Criticality of the process	Justification for validation approval	Prime valid.	ESA valid.
Group 7: CRIMPING / STRIPPING / WIRE WRAPPING										
01	Crimping	PA082 Is.1, PSS-01-726 Is.2	Crimping of high reliability electrical connections	Wires crimping on connectors conctact of the electronic box	CGS	Group:19 Item N.: 01	Critical for reliability	PA082 Is.1, PSS-01-726 Is.2		

1	2	3	4	5	6	7	8	9		10
								9.1	9.2	
Item No:	Process identification	Specification Issue/Rev	Process description	Use and location	Manufacturer name	Associated items in material list	Criticality of the process	Justification for validation approval	Prime valid.	ESA valid.
Group 8: SOLDERING / BRAZING										
01	Soldering	PA 061 Is.1,PSS-01-708 Is.1	Soldering of high reliability electrical connections	Electrical components on PCBs of the electronic box	CGS	Group:19 Item N.: 01 / Group:20 Item N.:01, 02	Critical for reliability	PA 061 Is.1,PSS-01-708 Is.1		
02	SMT Soldering	ESA PSS-01-738 is.1; GD-PL-CGS 016 (PID).	High-reliability soldering for surface-mount and mixed-tecnology printed-circuit boards	Electrical components on PCBs of the electronic box	CGS	Group:19 Item N.: 01 / Group:20 Item N.:01, 02	Critical for reliability	Process approved by ESA. See ESA Letter QM/02-440/BD/MH		

CARLO GAVAZZI SPACE SpA	AMS02-Thermal Control Ststem DECLARED PROCESSES LIST					Doc.No: AMSTCS-LI-CGS-002 Issue: 1 Date: March 2008				
1	2	3	4	5	6	7	8	9		10
								9.1	9.2	
Item No:	Process identification	Specification Issue/Rev	Process description	Use and location	Manufacturer name	Associated items in material list	Criticality of the process	Justification for validation approval	Prime valid.	ESA valid.
Group 9: SURFACE CONV. TREATMENTS										
01	Chemical conversion coating on aluminium alloy	MIL-C-5541C cl. 3 For electrical bondig, cl 1	Surface treatment of aluminium alloy to prevent corrosion	Aluminium alloy parts	AIDC	Group:1 Item N.:01, 02	Critical	MIL-C-5541C		
02	Anodic coating on aluminium alloy	MIL-A-8625 class 2 type I	Surface treatment of aluminium alloy to prevent corrosion	Aluminium alloy parts	AIDC	Group:1 Item N.:01, 02	Critical	MIL-A-8625 class 2 type I		

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1	2	3	4	5	6	7	8	9		10
								9.1	9.2	
Item No:	Process identification	Specification Issue/Rev	Process description	Use and location	Manufacturer name	Associated items in material list	Criticality of the process	Justification for validation approval	Prime valid.	ESA valid.
03	Anodic coating on aluminium alloy	MIL-A-8625 class 1 type I	Surface treatment of aluminium alloy to prevent corrosion	Aluminium alloy parts	AIDC	Group:1 Item N.:01, 02	Critical	MIL-A-8625 class 1 type I		
04	Passivation treatment for corrosion-resistant steel	AMS 2700	Surface passivation treatment for corrosion-resistant steel	Stainless steel parts	AIDC	Group:6 Item N.:01, 02, 03, 04	Critical	AMS 2700		

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1	2	3	4	5	6	7	8	9		10
								9.1	9.2	
Item No:	Process identification	Specification Issue/Rev	Process description	Use and location	Manufacturer name	Associated items in material list	Criticality of the process	Justification for validation approval	Prime valid.	ESA valid.
Group 10: PLATING										
01	Nickel plating (electro deposited)	QQ-N-290 A	Surface plating of copper alloy to prevent corrosion	Conductor bridge		Group:2 Item N.: 01, 02	Not critical	QQ-N-290 A		

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1	2	3	4	5	6	7	8	9		10
								9.1	9.2	
Item No:	Process identification	Specification Issue/Rev	Process description	Use and location	Manufacturer name	Associated items in material list	Criticality of the process	Justification for validation approval	Prime valid.	ESA valid.
Group 11: MACHINING										
01	Electronic box machining	PA 070 Is.1	Construction of electronic box	Mechanical parts of electronic box	SAAR Meccanica Srl	Group:1 Item N.: 01, 02 Group:2 Item N.:01, 02 Group:6 Item N.:01, 02, 03, 04	Not critical	PA 070 Is.1		
02	PCBs manufacturing	PSS-01-710 is.1 for double side,ECSS Q-70-10a for multilayer	Manufacturing of double side and multilayer PCBs	PCBs of electronic box	PRINTCA Denmark, ZINCOCELERE DIVISION CSI Italy	Group:20	Not critical	PSS-01-710 is.1 for double side,ECSS Q-70-10a for multilayer		
Group 12 : FORMING										
Not present										

CARLO GAVAZZI SPACE SpA	AMS02-Thermal Control Ststem DECLARED PROCESSES LIST					Doc.No: AMSTCS-LI-CGS-002 Issue: 1 Date: March 2008				
1	2	3	4	5	6	7	8	9		10
								9.1	9.2	
Item No:	Process identification	Specification Issue/Rev	Process description	Use and location	Manufacturer name	Associated items in material list	Criticality of the process	Justification for validation approval	Prime valid.	ESA valid.
Group 13 : HEAT TREATMENT										
	Not present									
Group 14 : SPECIAL FABRICATION : PROCESSES DEVELOPED SPECIFICALLY FOR THE PROGRAMME										
	Not present									

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1	2	3	4	5	6	7	8	9		10
								9.1	9.2	
Item No:	Process identification	Specification Issue/Rev	Process description	Use and location	Manufacturer name	Associated items in material list	Criticality of the process	Justification for validation approval	Prime valid.	ESA valid.
Group 15: MARKING										
01	Identification of mechanical assembly	PA 070 Is.1	Engraving for electronic box and mechanical assembly identification			Group:1 Item N.: 01,02	Not critical	PA 070 Is.1		

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1	2	3	4	5	6	7	8	9		10
								9.1	9.2	
Item No:	Process identification	Specification Issue/Rev	Process description	Use and location	Manufacturer name	Associated items in material list	Criticality of the process	Justification for validation approval	Prime valid.	ESA valid.
Group 16: MISCELLANEOUS PROCESSES										
01	Repair and modification of PCB and solder joints	PA063 Is.1, PSS-01-728 Is.2	See column 2	PCBs of Electronic box	CGS	Group:20 Item N.: 01, 02	Critical for reliability	PA063 Is.1, PSS-01-728 Is.2		

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1	2	3	4	5	6	7	8	9		10
								9.1	9.2	
Item No:	Process identification	Specification Issue/Rev	Process description	Use and location	Manufacturer name	Associated items in material list	Criticality of the process	Justification for validation approval	Prime valid.	ESA valid.
Group 17: INSPECTION PROCEDURES										
01	Incoming inspection procedure	PA049 Is.1	Incoming inspection of Mechanical parts	Mechanical items	CGS	All items	Not Critical	PA049 Is.1 Approved		
02	MIP and KIP inspection plan	GD-PL-CGS-003 Is.1	MIP and KIP inspection	Mechanical items	CGS	All items	Not Critical	GD-PL-CGS-003 Is.1 Approved		