



**ADEME**



**LIFE05 ENV/F/000053**

**AMELIE Project :**  
**RELIABILITY AND INDUSTRIALISATION OF PROCESSES AND**  
**EQUIPMENT IN ELECTRONIC ASSEMBLY.**  
**COMPLIANCE WITH WEEE & RoHS EUROPEAN DIRECTIVES**



**L'UNION TECHNOLOGIQUE**

**CONTACTS**

**Alexandre VAL (SOLETRON – Technical leader) / Olivier FOUASSIER (ADERA - Financial leader)**  
**Vincent RIBES (ADEISO - Dissemination leader)**

**SNESE présentation – 23 Février 2006**



## EUROPEAN DIRECTIVES

- **EUROPEAN DIRECTIVES**
  - WEEE (WASTE OF ELECTRICAL AND ELECTRONIC EQUIPMENTS)
  - ROHS (REDUCTION OF HAZARDOUS SUBSTANCES)
- **WHITE ELECTRONIC GOODS, COMPUTERS, TELECOMMUNICATIONS, ELECTRONIC CONSUMER, AUTOMOTIVE, ....**
- **EXCEPTION UP TO 2010**
  - NETWORKS – INFRASTRUCTURE
  - **AERONAUTIC – MILITARY - AVIONIC - SPATIAL**
- **INTERNATIONAL**
  - JAPAN : PRECURSOR
  - USA : NO LEGISLATION EXCEPTED FOR FEW STATES [CALIFORNIA....] - EXPECTED 2007
  - CHINA : DIRECTIVES CLOSED TO EUROPEAN DIRECTIVES - EXPECTED 01/07/06



# AMELIE



## PARTENAIRES

### COMPONENT MANUFACTURERS :

ALENCON PLASTIC (Plastic for connectors)  
PHILIPS FRANCE (IC Packaging)  
SGCI / CIRE (Printed Circuit Board)  
TEMEX (Passive components)

### END USERS :

GAIA CONVERTER (Aeronautic, Military, Niche markets)  
THALES AIRBORNES SYSTEMES (Aeronautic, Military)

### AMELIE PROJECT MANAGEMENT

SOLETRON (Technical leader)  
CNRT MCS/ADERA (Financial leader)  
ADEISO (Dissemination leader)

### LABORATORIES :

CNRT BN (Plastic materials)  
ISPA (Plastic materials)  
IXL (Expertise and FEM)

### ELECTRONIC MANUFACTURING SERVICES :

SOLETRON FRANCE (Assembly)

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## ACTIVITES PRINCIPALES

- **TO DEFINE, DEVELOP & VALIDATE SOME TECHNIQUES & TECHNOLOGIES COMPATIBLES**
  - PRINTED BOARD – PASSIVE COMPONENTS – INTEGRATED CIRCUIT COMPONENTS
  - SMD, PTH, REWORK PROCESSES FOR HIGH RELIABLE ASSEMBLIES (CLASS 3)
  - BACKWARD ASSEMBLY RELIABILITY & MANAGEMENT
  - REPAIR PROCESS
- **INDUSTRIAL VALIDATION WITH FUNCTIONAL BOARDS**
  - NEW DESIGN WITH LF CONSIDERATIONS
  - RETROFIT on LEAD PRODUCTS / BACKWARD
- **TO ANALYSE THE RELIABILITY**
  - HIGH ACCELERATED TESTS + MODELISATION / SIMULATION
- **HUMIDITY MANAGEMENT (MSL)**
- **DUALE WAREHOUSING MANAGEMENT**
- **TO DEVELOP & REINFORCE SKILLS**
  - INTERNAL for EACH PARTNER
  - DISSEMINATION in EUROPE
  - TRAINING for SMEs
- **TO ANALYSE THE CONSEQUENCES for ENVIRONNEMENT & HEALTH**
- **TO ANALYSE THE TECHNICAL & ECONOMICAL CONSEQUENCES**



## VEHICULES D'ESSAIS

### VEHICULE DE TEST Polyimide version (VTP)

Name	Finish	Solder paste alloy	Components	Solder wave alloy	Rework
VTP_SnPb_SnPb_WSnPb	SnPb reflowed	SnPb	None RoHS	SnPb	NO
VTP_Backward_WSnPb	SnPb reflowed	SnPb	RoHS	SnPb	NO
VTP_405_ENIG_W305	Ni/Au	SAC405	RoHS	SAC305	NO
VTP_405_Sn_W305	Sn chemical	SAC405	RoHS	SAC305	NO
VTP_405_ENIG_W305_R	Ni/Au	SAC405	RoHS	SAC305	YES
VTP_405_Sn_W305_R	Sn chemical	SAC405	RoHS	SAC305	YES
VTP_305_ENIG_W305	Ni/Au	SAC305	RoHS	SAC305	NO

### VEHICULE DE TEST FR4 version (VTF)

Name	Finish	Solder paste alloy	Components	Solder wave alloy	Rework
VTF_SnPb_ENIG_WSnPb	SnPb reflowed	SnPb	None RoHS	SnPb	NO
VTF_405_ENIG_W305	Ni/Au	SAC405	RoHS	SAC305	NO
VTF_405_Sn_W305	Sn chemical	SAC405	RoHS	SAC305	NO
VTF_305_ENIG_W305	Ni/Au	SAC305	RoHS	SAC305	NO

## Enjeux, Motivations

- CIRE

Anticiper le  
comportement des CI

- Technologies

- Matériaux FR4 / Polyimide
- Finitions Sn Chimique / Ni Au / OSP
- MC rigides, flex rigides, drains, cuivre épais, SMI
- Trous traversants , vias laser, trous enterrés, borgnes, pad on hole
- etc...

- Paramètres Process

- Etuvage
- Refusion / Vague / Réparation
- Compatibilité Backward
- Impact sur l'environnement

- Paramètres de qualification

- Brasabilité
- Tenue mécanique (choc , VRT, coupes)
- Critères visuels CI nu



## Planning

	T4 05	S1 06	S2 06	S1 07	S2 07	S1 08
Définition et spécifications						
1ère phase d'essais - évaluation						
2ème phase d'essai - Qualification						
Analyse impact nouveaux process						
Dissémination						

jan	fév	mar	avr	mai	juin	juil	aout	sept	oct	nov	dec
Spécifications Design VT		Appros		Réalisation VT FR4 et PI		Assemblage VT FR4 et PI		Tests VRT... Analyses résultats			
Echantillons étuvage				Essais étuvage							
Echantillons techno + qualification technos											

