IONMET

A Step Change in Metal Finishing

4 year Integrated Project

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Genacys

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Munich

Introduction

- AIM: To develop new techniques for the deposition and dissolution of metals using ionic liquids.

- EU funded project worth €12.3M with €7.1M of actual funding
- There are 34 partners involved in the project
- Industrial SME's 19 (58%)
- Research Organisations (ROR) 4
- Higher Educational Institutes (HEI) 5
- Trade Associations (ASS) 2
- Industrial non-SME's (IND) 3

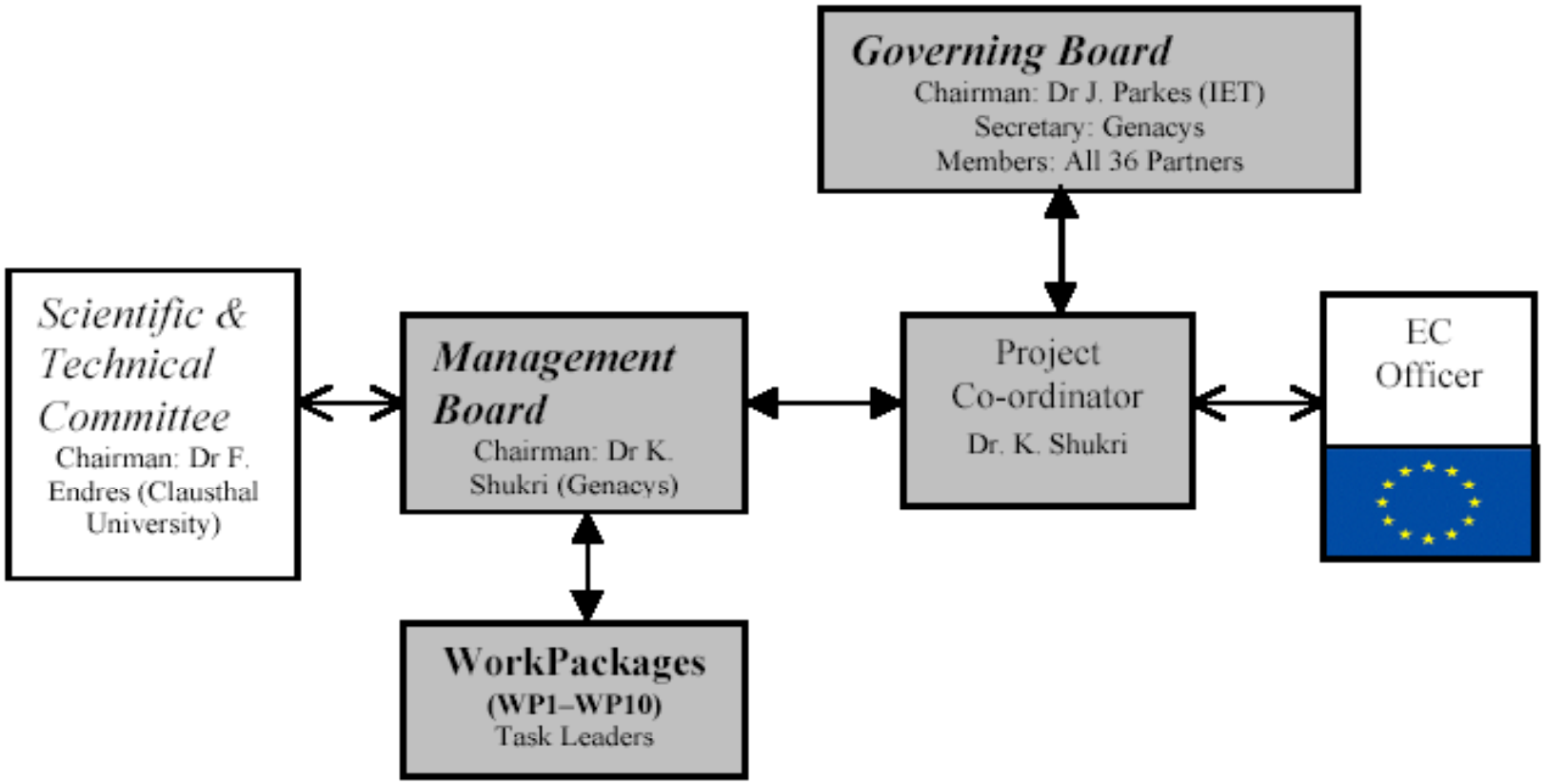
Introduction

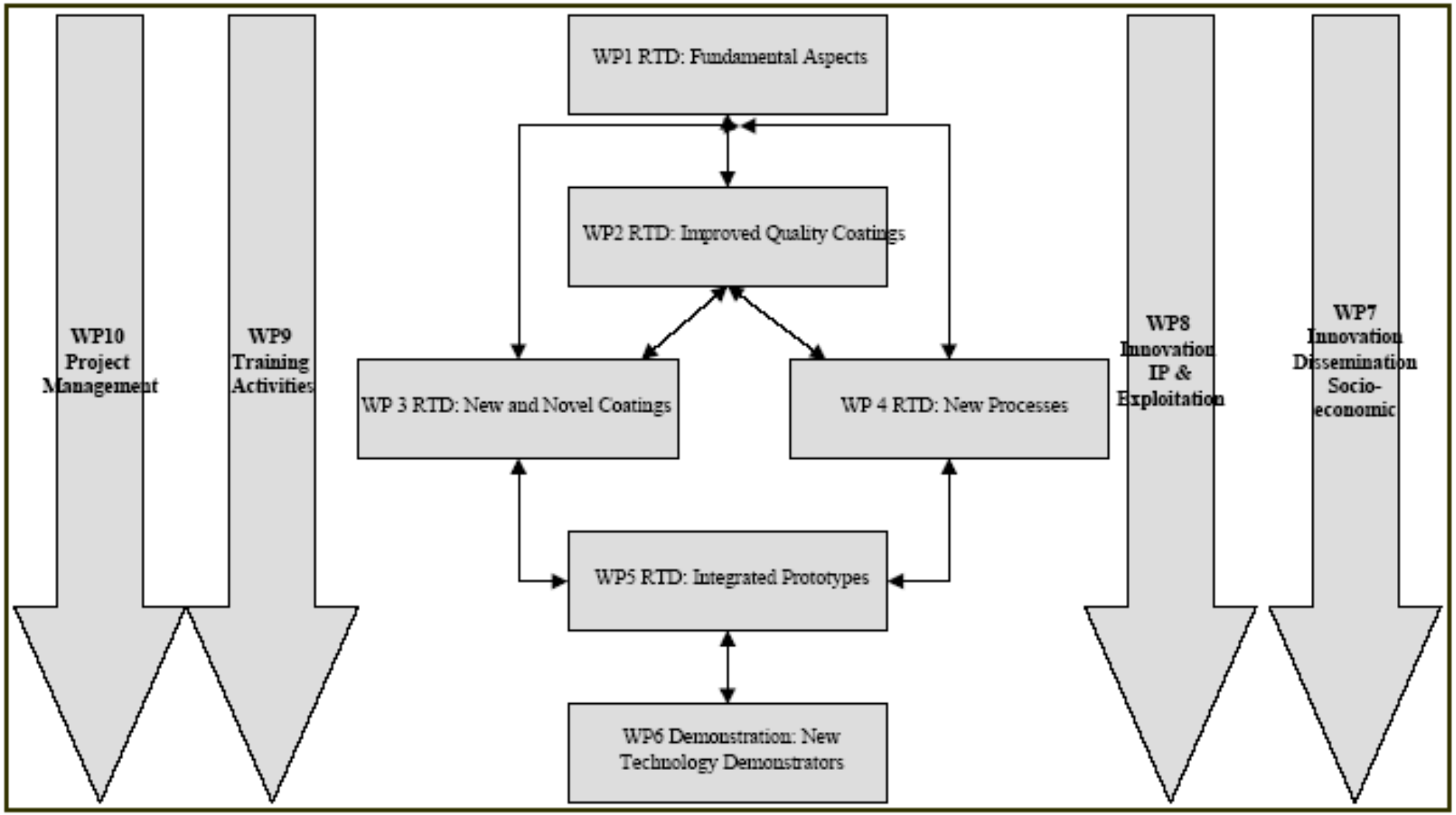
IONMET Project

- United Kingdom 7
- France 7
- Germany 6
- Spain 4
- Ireland 3
- Belgium 2
- Cz Rep 1
- Italy 1
- Netherlands 1
- Poland 1
- Portugal 1

34 Partners

11 Countries


Governing Board
Chairman: Dr J. Parkes (IET)
Secretary: Genacys
Members: All 36 Partners
Scientific & Technical Committee
Chairman: Dr F. Endres (Clausthal University)
Management Board
Chairman: Dr K. Shukri (Genacys)
Project Co-ordinator
Dr. K. Shukri
EC Officer
WorkPackages
(WP1–WP10)
Task Leaders


WP10
Project
Management
WP9
Training
Activities
WP1 RTD: Fundamental Aspects
WP2 RTD: Improved Quality Coatings
WP 3 RTD: New and Novel Coatings
WP 4 RTD: New Processes
WP5 RTD: Integrated Prototypes
WP6 Demonstration: New
Technology Demonstrators
WP8
Innovation
IP &
Exploitation
WP7
Innovation
Dissemination
Socio-
economic

Objectives

- To develop new techniques for the deposition and dissolution of metals using ionic liquids

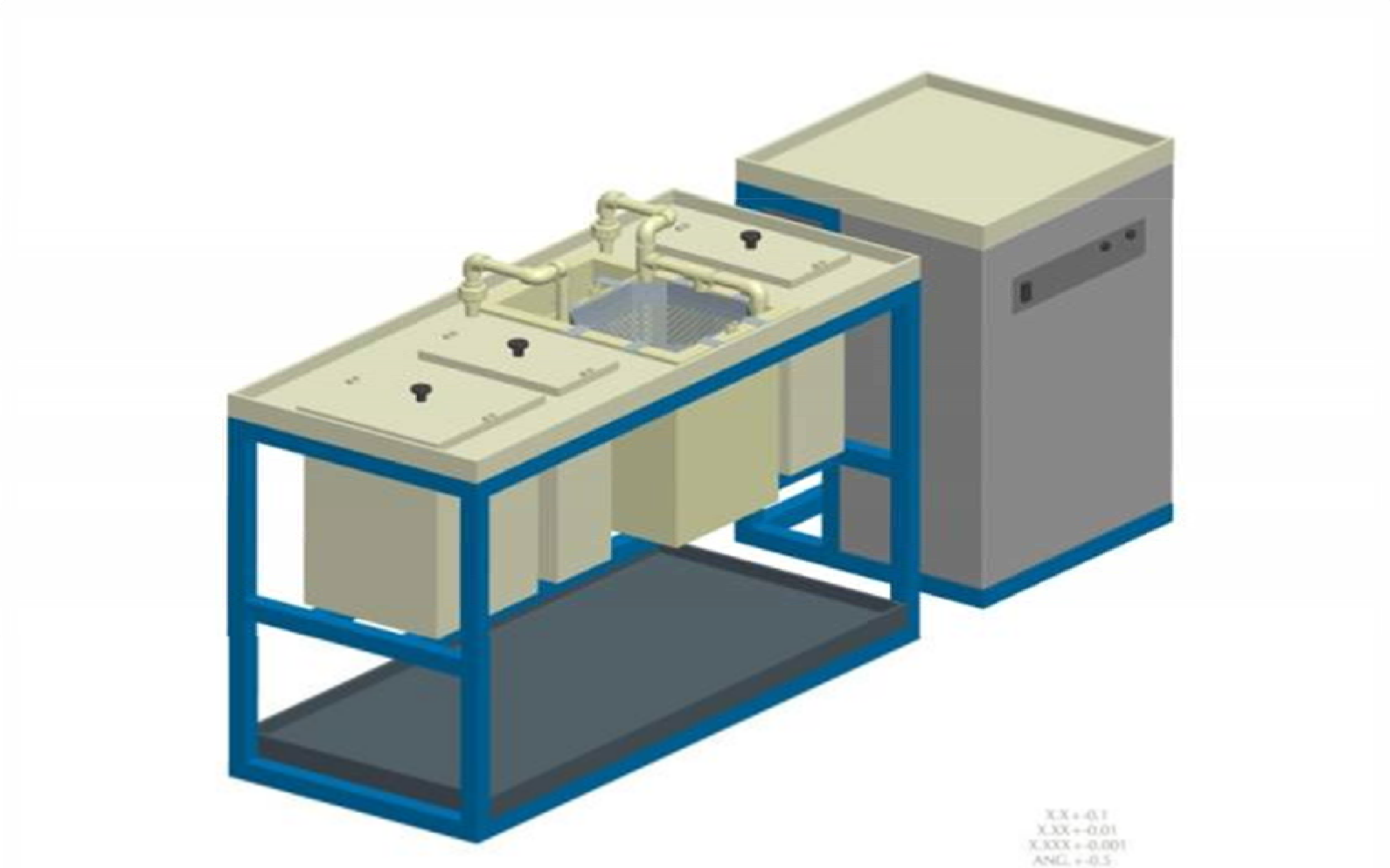
- To comercialize a new group of ionic liquid solvents as drop-in replacement technologies

Objectives

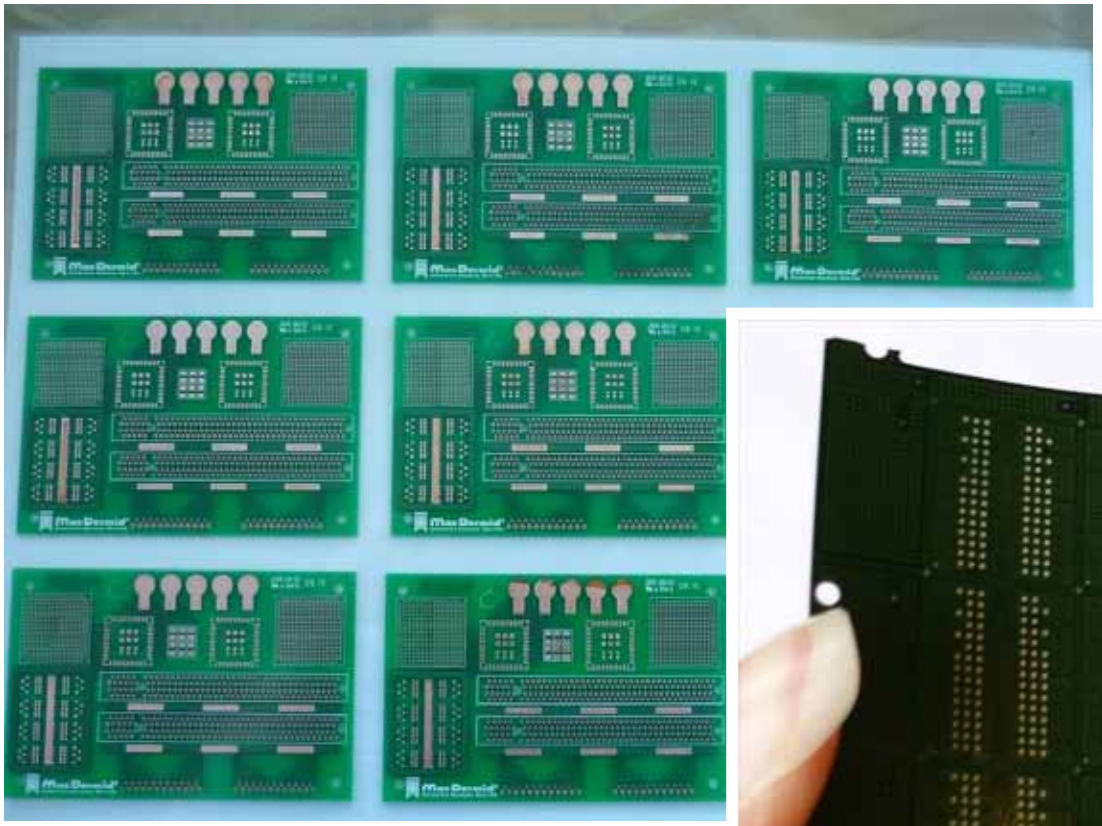
- Fundamentals
  - Understanding ionic liquids, metal nucleation, developing new liquids
- Improved coatings
  - Application of ionic liquids to coatings currently deposited from aqueous solutions
- New materials
  - Deposition of new coatings that can not be obtained from aqueous solutions
- New Processes
  - Use of ionic liquids for new metal finishing processes e.g. electropolishing, electroless deposition

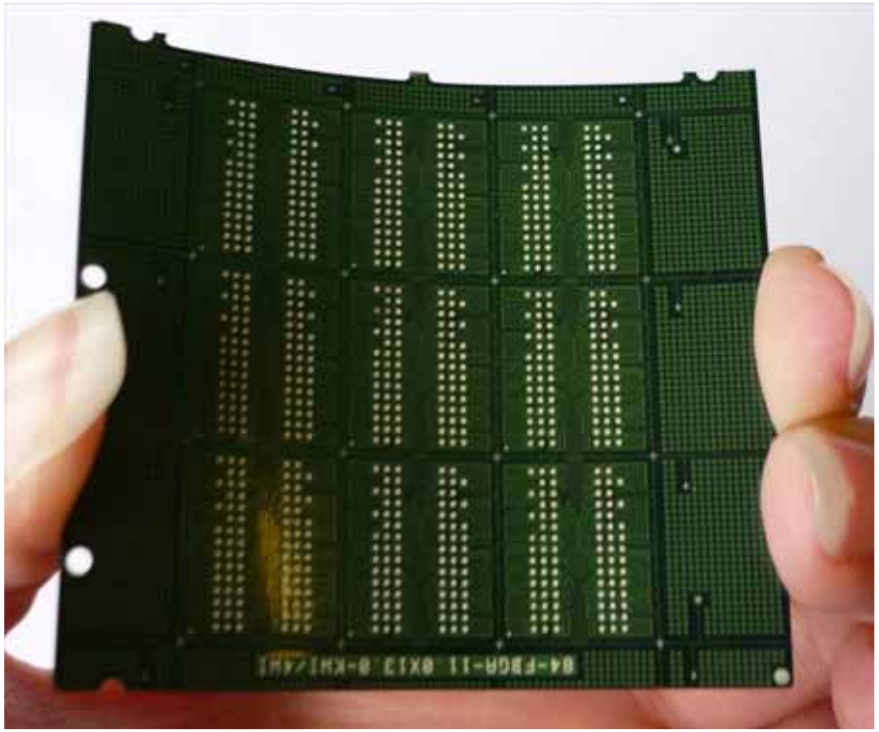
Electropolishing: Demonstration unit

Cr Plating



Immersion coatings





Summary of progress

- A very strong network established between partners
- Results show great potential for commercialisation
- New liquids have been made on a large tonne scale
- five pilot plants being built for silver coating, Cr, Al & alloy plating and electropolishing processes
- Nano-silver electroless deposits (100 nm) for PCB : improvement in solderability, reduction of corrosion and process temperature.
- Cr coatings using Cr(III) salts have been successfully produced. Thick and hard chrome deposits developed.
- Electrodeposition of Zn and a number of commercially Zn containing alloys: Zn/Ni, Zn/Sn, Zn/Fe and Zn/Cu.
- Electropolishing stainless steel which produced better finish on cast steel pieces than on sheet steel
- Al coating on steel with good adhesion and cohesion
- Three training events successfully run