About an accomplished Eurostars™ project

aSpect || cryogenic || spectrometers ||®

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Prepared for: FFG-Akademie: Eurostars - Was macht einen guten Antrag aus?
10 Mai 2017, ITG, WIFI Salzburg

LÖSUNG DURCH TECHNIK

Outlook

- Overview of the ASPE!CT project
  - About the project
  - Implementation method
  - Results
- Must not and don't miss during:
  - ✓ Application phase
  - ✓ Project Implementation
  - ✓ Post activity and reporting
- Payr Group Company Profile

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About the ASPE!CT project

- Adaptable SPectrometer Enabled by Cryogenic Technology
- Main Goal: Development of a bench-top cooling device optimized for low temperature applications and spectroscopy operating at about 1K (-272,15°C)
- Technical Area: Micro- and Nanotechnology
- Market Area: Analytical and Scientific Instrumentation
- ASPE!CT Application (March 2014, COD-1, Eurostars-2)
    - 3 Partners (2AT, 1DE), 24 months, ca. 1MEuro costs
    - EU Ranking 30
    - Kick-Off in Nov14; Accomplished in Dec17

About the Consortium

- PAY: Payr Engineering GmbH (Main Partner, R&D performing SME, AT)

  Core Business: Engineering services, customized plant construction and prototyping
  Manufacturing advanced engineering components (Payr Production GmbH)

  Main project tasks: Coordination, Project Management and documentation
  Driving the characterization, IPR and commercialization agenda
  Manufacturing of the machined components; post-project pilot batch

- LTS: Low Temperature Solutions UG (R&D performing SME, DE)

  Core Business: Consulting and prototyping in ultra-low temperature technology (ULT)
  Customers support for standard ULT devices

  Main project tasks: Development of the Cooling Device sub-module
  Supporting the commercialization phase; post-project customer support
  Driving the IPR agenda

- SMI: Stefan-Meyer-Institute (Research institute, AT)

  Core Business: Experimental sub-atomic physics
  DAQ and Academic networking

  Main project tasks: Development of the Detector Platform sub-module
  Driving the dissemination and new collaboration agenda
  First Beta user; post-project owner of the prototype

About the Targets of the project

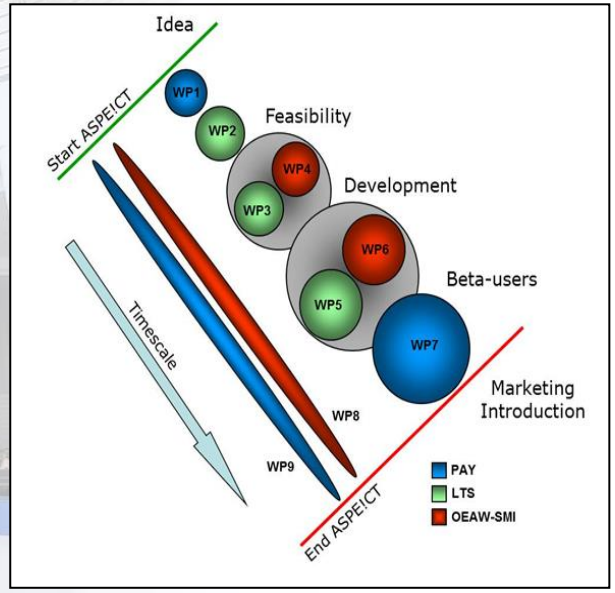
- Scientific Targets:
  - ✓ 0.5-1K user friendly cryogenic platform for detectors
  - ✓ Compact superconducting magnet
  - ✓ Scientific publications in the field of sub-atomic physics and low-temperature

- Commercial Targets:
  - ✓ Product introduction at the end of the funded period (in a regulated ramp-up phase)
  - ✓ IP generation and exploitation
  - ✓ Middle-term Revenue, personnel and profit generation in DE and AT

Implementation Method

- New product development (well-defined development stages)

WP	Title	2014										2015												2016											
	ASPE!CT Gantt Chart, Master Plan	Mär.14	Apr.14	Mai.14	Jun.14	Jul.14	Aug.14	Sep.14	Okt.14	Nov.14	Dez.14	Jän.15	Feb.15	Mär.15	Apr.15	Mai.15	Jun.15	Jul.15	Aug.15	Sep.15	Okt.15	Nov.15	Dez.15	Jän.16	Feb.16	Mär.16	Apr.16	Mai.16	Jun.16	Jul.16	Aug.16	Sep.16	Okt.16	Nov.16	Dez.16
WP 1	Specification [WP leader: PAY]											M1.1																							
WP 2	Overall Conceptual Design [WP leader: LTS]													M2.1																					
WP 3	Feasibility gate of the Cryogenic Module [WP leader: LTS]																			M3.1	M3.2														
WP 4	Feasibility gate of the Sensors Module [WP leader: OEAW-SMI]																				M4.1														
WP 5	Development gate of the Cryogenic Module [WP leader: LTS]																										M5.1	M5.2							
WP 6	Development gate of the Sensors Module [WP leader: OEAW-SMI]																					M6.1						M6.2							
WP 7	Integration, Applications and System Verification [WP leader: PAY]																													M7.1	M7.2	M7.3			
WP 8	Dissemination and Exploitation [WP leader: OEAW-SMI]																	M8.2				M8.1						M8.3							
WP 9	Project Management and Documentation [WP leader: PAY]	Appl						M9.1																		M9.2				M9.3	M9.4				



Appl	Application submitted
M1.1	Specification identified and released
M2.1	Overall conceptual design defined
M3.1	Technical feasibility of the cryogenic module proved
M3.2	Technical feasibility of the thermal-switch element understood
M4.1	Technical feasibility of the sensor module proved
M5.1	Combined 4K platform and J-T module successfully tested
M5.2	Combined 4K platform and ADR module successfully tested
M6.1	All material acquired and parts produced
M6.2	Detector modules and DAQ developed
M7.1	Detector and DAQ integrated and tested in ASPE!CT
M7.2	Performances of the ASPE!CT cooling device identified
M7.3	Integration and Verification plan finished
M8.1	First patent and/or trademark registration submitted
M8.2	First scientific publication submitted
M8.3	First product demonstration at an industrial exhibition
M9.1	Consortium agreement signed by all partners
M9.2	Risk analysis finished
M9.3	Access Rights document updated and released
M9.4	Main Technical Documentation finished

PAY
LTS
SMI

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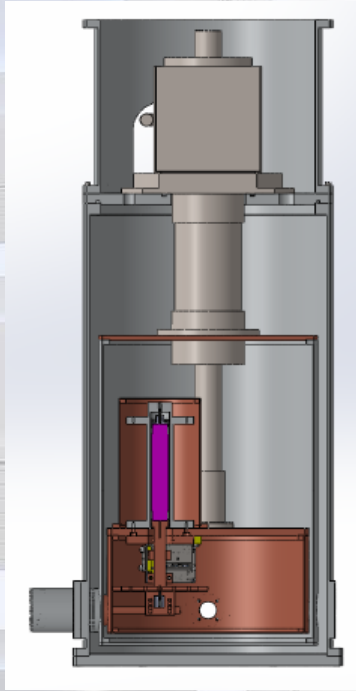
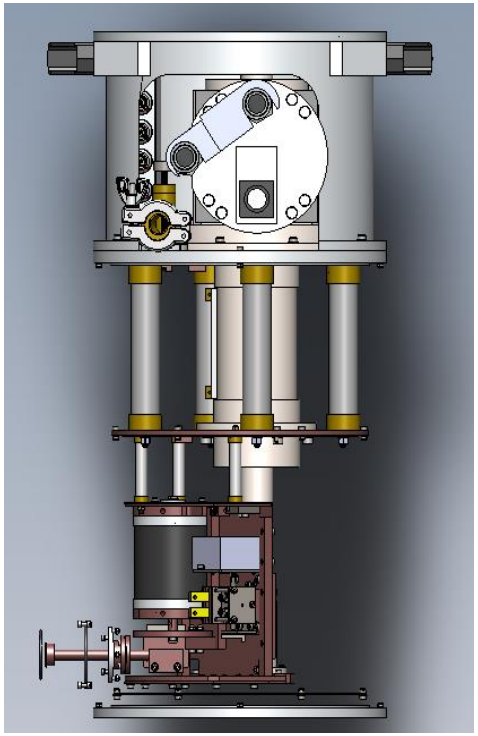
From idea to the first prototype…

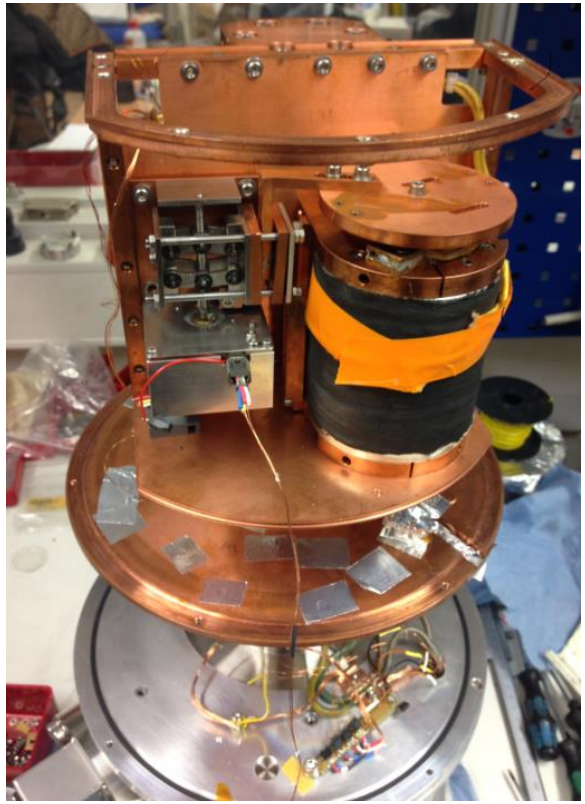


Feasibility

ASPE!CT ©



Development



Prototyping

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Project Results

- Orientation-free and energy efficient sub-kelvin (<500mK) cooling device demonstrated in a working prototype (ALL)
- Design and manufacturing of a superconducting magnet and heat switch (LTS, SMI)
- BOM (Bill of Material), machined components and supply chain released (PAY)
- ASPE!CT trademark registration and ongoing IPR (LTS)
- Acquiring vacuum technology know-how (PAY)
- Scientific outcome published in a peer-reviewed Journal (SMI)
- High-visibility in international conferences, trade show and research institutions (ALL)
- Start-up of the company Kaon GmbH, CEO and Owner Kevin Phelan (ex SMI)

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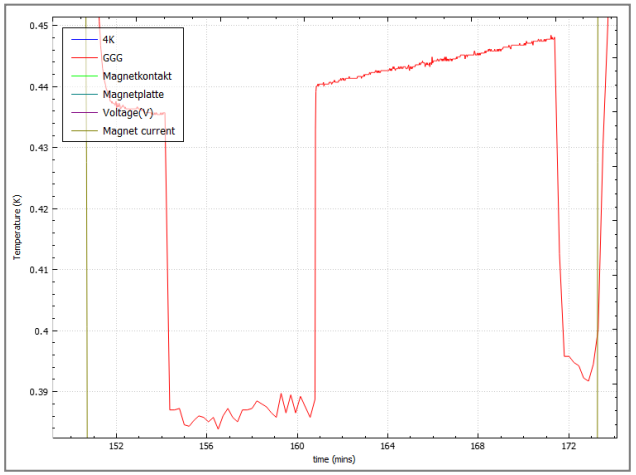
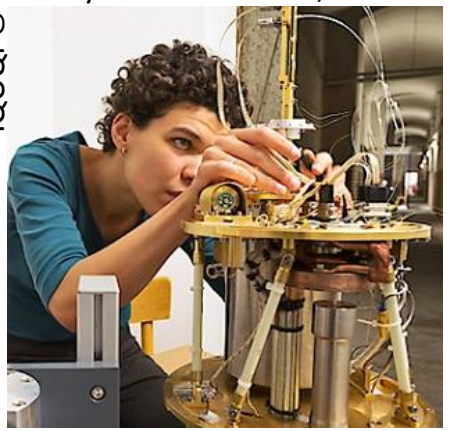


Phys. Rev. Lett. **115**, 250401



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Must not and don’t miss: Application

- Don’t promise the moon! The project must have risks but still it must be achievable

- Agreed and Signed Consortium Agreement already at a very early stage (especially on IPR)
- Project costs table must be unambiguous (minimise “other costs” or subcontractors)

- Please, invest enough time in the project plan (i.e. milestones, risk mitigations, resources)
- WPs, Tasks and Milestones must have one responsible (also for common activities)
- Don’t sum up the milestones at the project end (but well-distribute them over the time)

- Intended commercial targets must be clear (i.e. product cost, selling price, time-to-market)
- Please, update the IPR status on the subject (you may get an expert having IP on it)

Must not and don’t miss: Implementation

- The Coordinator acts according with the CA on behalf and in the interest of the consortium

- Communicate to FFG/Eurostars™ project baseline deviations (i.e. schedule, costs, workload)
- Milestones which are not achievable must be communicate (Eurostars™ Progress Reports)

- Meeting with the partners at each significant project progress (i.e. closing feasibility stage)
- Update on a regular basis the IPR, technical and risks documentation

- Generate clear “time-sheets” record with signature and date for each involved employee
- Generate BEFORE the project end an agreed “Exploitation of the project results document”

- Eurostars™ may agree a “cost neutral project prolongation” (but less than 36 months)

Must not and don't miss: Post activity

- Eurostars™ final report about 6 months after the official project end

- Who is the owner of the prototype(s)?
- Who is doing what? Is that still in agreement with the exploitation document?
- Are the IPR issues well regulated? Who is supporting the patents costs?

- Who is investing in the further development till the serial introduction phase?
- Who is investing in the standard regulation issues (i.e. CE-Mark)

- Who is investing in the market introduction phase?
- When will be the product introduced to the market?
- Are the market and commercialization channels ready?

PAYR Company Profile

- ✓ Middle-size R&D performing SME
- ✓ 100% Private Company (Ing. Peter Paul Payr, CEO and Owner)
- ✓ Located in Austria (Carinthia, Graz and Salzburg)
- ✓ Consolidated High-Technology company (founded in 1998)
- ✓ Engineering services and manufacturing (Payr Production GmbH) in the fields of:
  - Aeronautic, Automotive, Semiconductor and Renewable energy
  - Plant Engineering, Automation and Precision Mechanics

… and thanks to FFG/DLR/Eurostars™ Program

- Medical Technology, Radiation Protection (ASCAS acquired know-how)
- Cryogenic Technology (ASPE!CT acquired know-how)
- Vacuum and Pressurized Systems (ASPE!CT acquired know-how)
- Supporting R&D project application & implementation

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PAYR GROUP
Headquarter Patergassen, Carinthia

Local contact person in:
- Salzburg Area
- Graz Area

- Office area up to 800m²
- Manufacturing area 600m²
- ca. 40 Employees
  - ca. 20 Payr Engineering GmbH
  - ca. 20 Payr Production GmbH

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PAYR Engineering PAYR Production

eurostars™

DLR

FFG
FORSCHUNG WIRKT.

!!! Danke !!!

!!! Thanks !!!

!!! Grazie !!!

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