



Final Report Short Version



FILES



Future-oriented Implementation of Local Employment Strategies



Pilot project



Transfer of Knowledge and Technology from the Hochschule Mittweida (University of Applied Sciences) to SMEs in the Döbeln region

Reporting period: 1st Oct 2005 – 30th Sep 2007



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1st Pilot project of the Hochschule Mittweida (University of Applied Sciences) “Knowledge and Technology Transfer to SMEs in the Döbeln District”

1.1 Goal of the pilot project

Intensification of the transfer of knowledge and technology to SMEs in the Döbeln region was the objective of the pilot project of the Hochschule Mittweida (University of Applied Sciences). Before the project was initiated, a striking lack of awareness existed among SMEs with regard to the research potential of the Hochschule, and insufficient transfer capabilities also existed on the part of the Hochschule. The intention of the pilot scheme is to strengthen the capabilities of the Hochschule and to make it easier for companies to gain access to the results of R&D. Focal points relevant to this issue included:

- support in R&D tasks,
- the transfer of expertise for the initiation of company-specific qualification processes,
- personnel transfer, placement of graduates and apprentices, and
- development of a cooperation portal as a future communication platform.

The pilot project was carried out on the basis of the following steps:

| SME Access to Research and Development “Transfer of Knowledge and Technology to SMEs” | |
|--|---|
| Jul - Sep 06 | Offers and requirements analysis concerning R&D expertise in the Döbeln region |
| Oct 06 | Evaluation and definition of offers to the SMEs to facilitate access to R&D results |
| Oct –Dec 06 | Development of a cooperation portal for the transfer of knowledge and technology using an Internet-based database |
| Nov 06 - May 07 | Development of individual solutions for technology transfer on the basis of the results of the offer and requirements analysis |
| Jan - March 07 | Conception and setting up of the cooperation portal |
| Jan - Jun 07 | Presentation of the benefits of technology transfer, for example, by means of individual solutions for SMEs |
| March - May 07 | Formative evaluation of the results and an optimisation of transfer activities and of offers by the Hochschule |
| Jun - Sep 07 | Project-internal evaluation of the pilot scheme and transfer of results in the pilot scheme “Döbeln District Economic Forum“ |

Table 1: Project steps of the pilot project

This resulted in the development of an Internet-compatible cooperation portal for the transfer of technology and examples of the transfer of knowledge and technology to SMEs by means of individual solutions.

1.2 Carrying out a transfer analysis

To carry out the transfer analysis, a company database containing the addresses of structurally important companies was compiled in cooperation with the Döbeln District Office and an overview of the research activities and educational offers of the Hochschule was drawn up. This latter is based on the information contained in the catalogue “Research and Laboratories” as well as on the annual research reports of the Hochschule Mittweida (University of Applied Sciences).



Illustration 1: Project database, overview of research activities, laboratory catalogue

In order to ascertain requirements, a questionnaire was compiled, with the contents as listed here below:

- Survey 1: Company data,
- Survey 2: Personnel development in the company,
- Survey 3: Knowledge and technology transfer needs, R&D services and the use of laboratories
- Survey 4: Educational needs and educational offers,
- Survey 5: Forms of cooperation.

About **90 SMEs** in the Döbeln district were integrated into the transfer analysis. Of these, 33 companies with strategic importance for the Döbeln district were selected for more intensive analysis by interview. **15 SMEs** came up with approaches which are particularly relevant to the project. The survey results show that needs exist in the following areas.

- R&D services,
- use of laboratory capacities,
- inquires about graduate work and apprenticeships,
- training needs in e.g. programming language C++/C#, databases, modelling of business processes, Internet programming, project management, English.

The database which was set up at the beginning of the transfer analysis was expanded and used to store project-relevant data.

1.3 Development of a cooperation portal

With the aim of expanding the IT Infrastructure in the Döbeln district, a cooperation portal has been set up to facilitate technology transfer. This portal can be accessed in the Internet at the following address <http://www.htwm.de/files>.

It provides the following functions:

- search function, news,
- several forums for the exchange of information (e.g. graduate and apprentice exchange, job exchange, educational offers and needs, technology transfer),
- inquiry forms,
- important links, and
- a newsletter.

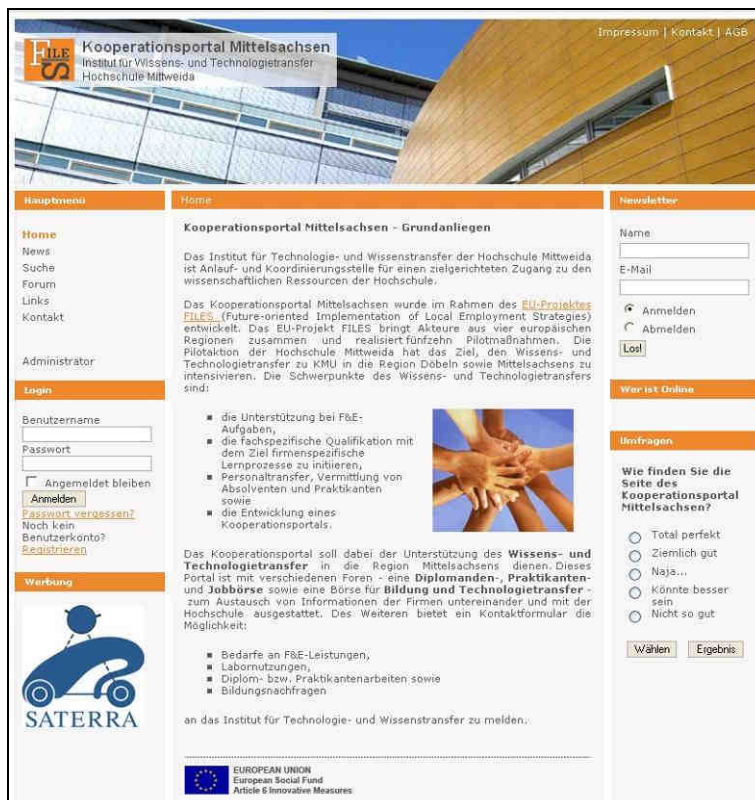


Illustration 2: Cooperation portal homepage

1.4 Carrying out the transfer of expertise

This project phase covers the initiation of the model solutions and their gradual implementation and perfection by means of on-going evaluation in the following focal areas:

- research and development,
- personnel transfer,
- consultation and education.

1.4.1 Transfer of expertise by means of research and development

Construction of a drive mechanism testing facility for R/D cooperation and expansion of business activities

In 2006, at the initiative of the project group “FILES” within the Hochschule Mittweida (University of Applied Sciences) and with their assistance in project management, a modern test facility for the electrical drive systems of lifts and conveyor equipment was implemented as a common project by the Hochschule Mittweida and the ZFA gGmbH Roßwein. The investment costs came to approx. 120,000 € (funds provided by the Free State of Saxony to the Hochschule Mittweida), plus the costs for the transfer of expertise by the Hochschule to the Institute (ZFA) in the range of approx. 0.2 man-years.

The project group “Files” and the specialist group for energy system technology in the HS Mittweida provided targeted support in terms of project management and with the scientific guidance of students. As a result, it was possible to put the joint investment “Drive Mechanism Test Facility” into operational use in September 2007. This forms the basis of further scientific cooperation between the Hochschule and ZFA Rosswein and provides:

- the ZFA with the opportunity of opening up a new business field and the expansion of its product portfolio on a cooperative basis with the HS Mittweida,
- the HS Mittweida with an improvement and expansion of its research portfolio, thereby resulting in increased eligibility for third party funding.



Illustration 3: Test status – drive mechanism test technology

Development of new products

- **Coating on and with functional glasses for the manufacture of chemical sensor systems**

In conjunction with the Kurt-Schwabe Institute for Measurement and Sensor technology e.V. Meinsberg and the Sensortechnik Meinsberg GmbH, the Hochschule Mittweida / Faculty of Mechanical Engineering is carrying out a research project in the field of the coating of functional glasses for the manufacture of chemical sensor systems. The aim of the project is the development of sensors with new performance parameters.

- **Health-promoting school as all-day offer**

A project for the development of all-day schooling was carried out in the reporting period by the specialist area of social sciences in the area of social education. The Körnerplatz School in Döbeln, the Döbeln District Office and the Techniker Krankenkasse (health insurance company) are involved in this project.

1.4.2 Transfer of expertise by means of consulting

Transfer of expertise for the burr-free laser cutting of thin sheet metal

In May 2007, the laser centre of the Hochschule Mittweida carried out an expertise transfer on the burr-free laser cutting of thin sheet metal for the company Max Knobloch Nachf. GmbH Döbeln.

Transfer of expertise for energy efficiency

The Hochschule Mittweida carried out the appropriate intermediation between the company ZFA and the local energy provider, in order to optimize the energy costs in the company in connection with tariff-related regulations for long-term tests. An agreement was reached between the energy provider and the ZFA for a scaling of energy consumption costs for the years 2006/2007 based on test duration.

Transfer of expertise in the acquisition of research and development projects

In 2007, the ITWM of the Hochschule Mittweida submitted two joint applications for subsidisation by the SMWK on behalf of the ZFA with regard to the topics:

- development of competence regarding energy efficiency at the Zentrum der Förder- und Aufzugstechnik Roßwein,
- theoretical and experimental investigations into mass force factors in calculating the load-bearing capacity of lifts.

1.4.3 Transfer of expertise by means of workshops and training courses

Workshops and training courses for 12 SMEs succeeded in transmitting current knowledge requirements.

Organisation of a theme evening (project kick-off)

As opening event, a theme evening was carried out which focused on the issue of knowledge and technology transfer in the context of the initial results of the analysis. The agenda contained the following points:

- public offer of the Innovation Prize of the Döbeln district,
- information on the new Bachelor and Master study degree programs
- cooperation offers by the Hochschule Mittweida (University of Applied Sciences) for the transfer of technology and knowledge.



Illustration 4: Theme evening on 20th Sep 2006 in Roßwein

Organisation of a workshop “Energy from Biomass”

Within the framework of the 18th Scientific Conference, a workshop “**Energy from Biomass**” was carried out by the Specialist Group for Regenerative Energies of the Hochschule Mittweida. Various experts gave lectures on the following topics:

- **Biogas** and
- **Biogenous solid fuels.**

One of the results of this workshop is that a joint initiative for a “Technology and Energy Region for Central Saxony” is currently being prepared under the coordination of the ITWM of the Hochschule Mittweida. The objective here is to combine the economic skills of the three districts of Döbeln, Mittweida and Freiberg with the potential of the colleges TUBA Freiberg and of the Hochschule Mittweida.

Organisation of a workshop “Fuel Cell as Energy Supplier?”

The workshop on the topic “**Fuel Cell as Energy Supplier?**” took place within the framework of the EU project FILES on 22nd March 2007 in the Zentrum für Förder- und Aufzugstechnik Roßwein gGmbH (ZFA) under the direction of the Hochschule Mittweida. This topic was selected at the suggestion of several SMEs from the electricity and heating sector during the evaluation of the requirements analysis on technology and knowledge transfer which was carried out in the course of the project.

On the basis of long-standing cooperation between the research group for energy systems engineering in the HS Mittweida with developers of fuel cells, experienced specialists were recruited as speakers. Under the title “**Alternative Energy Supply Using Fuel Cells - Fundamentals, Chances and Developmental Status**”, Ms Grosser from the TU Bergakademie Freiberg presented the Saxon fuel cell project of the Technology Centre Riesa-Großenhain. Mister Mehlich from the TU Chemnitz reported on the latest developments in **power electronics for fuel cell applications.**



Illustration 5: Workshop “Fuel Cell as Energy Supplier?” on 22nd March 2007

Provision of training courses and consultations in SMEs

As a result of the evaluation of the requirements analysis, consultations or training courses in the following areas were carried out:

- business processes / data modelling and databases,
- programming language C/C++,
- English.

The course “Business Processes and Data Modelling / Databases” provided employees with special training support in the compilation and structuring of data which arise in the course of business processes. The course on the programming language C/C++ helped to pave the

way for the introduction of an ERP system. An advanced course in technical English was carried out to encourage business activities on an international level.

The relevant working materials were provided for the training courses.

1.4.4 Transfer of expertise by means of graduate work and apprenticeships

On the basis of targeted support supplied by the FILES project, the Hochschule Mittweida was able to extend and deepen its contacts to companies. In 2006 and 2007, more than 20 graduate programs and apprenticeships were carried out in approximately 10 companies in the Döbeln district. The focal areas included sensor technology, biotechnology, business processes, software development, control technology, energy technology, drive systems engineering, lift technology and economic management topics. This exemplifies the high level of interaction between business and science in the region.

1.4.5 Conceptual support of the initiative “Innovation Prize”

The Hochschule Mittweida – University of Applied Sciences provided technical assistance in the evaluation of applications and in the awards procedure of companies with the innovation prize. The technical assistance for the awards ceremony included:

- participation in establishing the criteria of the innovation prize,
- evaluation of company applications, and
- giving the presentation speech at the award ceremony.

Furthermore, the companies who were awarded the innovation prize each received a short video film about their company and about the innovation project. These videos were produced by the media department of the Hochschule. In addition, the Hochschule was able to establish further contacts with companies in the Döbeln region during the course of the award ceremony. Visits by representatives of the companies to the relevant departments are planned.



Illustration 6: Awarding of the innovation prize to the companies AEL Apparatebau Leisnig , ZFA Roßwein and Beyer Maschinenbau Roßwein

1.4.6 Participation in paving the way for support programs on the micro-level (Innovation Fund)

The Döbeln district project group was assisted by the HS Mittweida in initiating and providing technical consultation for the following individual solutions to the issue of technology transfer:

| | |
|---------|---|
| Company | Elektro Roßwein GmbH |
| Project | Development of EMC-safe cabling technology for propulsion systems fed by static converter |
| Benefit | Attainment of specific expertise with regard to the installation of power converters |
| Company | IQ-Software GmbH |
| Project | Development of an operational data logging connector for the mobile compilation of operational and process data in structural steel engineering companies |
| Benefit | Application of mobile radio technology for process control |
| Company | ELAU Systems GmbH |
| Project | Decentralization of mechanical vertical shafts by means of synchronous servo technology under consideration of current safety requirements |
| Benefit | Application of modern automation systems in SMEs |
| Company | Sensortechnik Meinsberg GmbH |
| Project | Study on the development of the fundamentals of mini-potentiostats |
| Benefit | Expansion of market position in laboratory technology |

Table 2: Individual solutions to technology transfer

1.4.7 Public relations for the project

The pilot project was presented at the 18th International Scientific Conference Mittweida (IWKM) during the course of a lecture in the conference group "Transfer of Information and Knowledge Using New Media".

In addition, the SMEs in the Döbeln region were involved in the scientific lecture program of the 18th International Scientific Conference Mittweida, as well as in the company presentation of SMEs from Central Saxony within the framework of the Career and Company Conference of the Hochschule Mittweida (University of Applied Sciences). The conference took place from 9th to 10th Nov 2006.

1.5 International cooperation

Within the framework of the project FILES, guests

- from the Linköping University in Sweden, and
- from the De Nayer Institute, as well as from the Catholic High School in Mechelen in Belgium

were able to exchange information on the structures and experience regarding the topics of knowledge and technology transfer as carried out by the Hochschule Mittweida, as well as regarding entrepreneurial start-ups. The partners outlined their current activities and agreed to exchange best practice examples within the framework of the FILES project and in its

stabilisation phase. Furthermore, the multi-college approach by the Free State of Saxony for the integration of electronic media into future academic education was presented to the project partners in the Media Design Centre of the TU Dresden, in the which the Hochschule Mittweida has played a leading role since 2000. The focus here will be on future job-related Internet-aided courses of study, which provide SME employees with the opportunity to attain lifelong qualifications.

As a result of the meeting, an agreement was reached with the Department of Foreign Affairs of the Hochschule Mittweida to sign student exchange contracts with Linköping University, the De Nayer Institute and with the Catholic High School.



Illustration 7: Members of the delegation from Sweden and Belgium

1.6 Brief summary

Intensification of the transfer of knowledge and technology to SMEs in the Döbeln region was the objective of the pilot project of the Hochschule Mittweida (University of Applied Sciences). Before the project was initiated, a striking lack of awareness existed among SMEs with regard to the research potential of the Hochschule, and insufficient transfer capabilities also existed on the part of the Hochschule. The intention of the pilot scheme is to strengthen the capabilities of the Hochschule and to make it easier for companies to gain access to the results of R&D. Focal points relevant to this issue included:

- support in R&D tasks,
- the transfer of expertise for the initiation of company-specific qualification processes,
- personnel transfer, placement of graduates and apprentices, and
- development of a cooperation portal as a future communication platform.

In evaluating the offer and needs analysis for structurally important companies, 15 SMEs came up with project-relevant approaches to research topics, apprenticeships and graduate work, special qualification needs, and the use of Hochschule equipment. These results were prepared and made available to users by means of a database.

Individual solutions to technology transfer were carried out for 7 SMEs. Particularly worthy of note here are the construction of a drive mechanism test facility, the production of EMC-safe cabling technology, the development of a BDE data connector, as well as of chemical sensor systems.

Workshops and training courses for 12 SMEs, including a theme evening on knowledge and technology transfer, workshops on “Energy from Biomass” and “Fuel Cell as Energy Supplier?” as well as training courses on “Business Processes and Databases”, “Programming C++” and “English” served to supplement current knowledge requirements. More than 20 degree, Bachelor and apprenticeship programs were carried out in more than 10 companies in the Döbeln district.

A cooperation portal (<http://www.htwm.de/files>) for the stabilisation of technology transfer was developed, and which contains the following functions – *search function, news, forums for the exchange of information, inquiry forms, important links*.

In addition, the Hochschule Mittweida provided conceptual and organisational support in the initiation of the Innovation Prize.

Through FILES, structural innovations (stabilisation of the central transfer institute (ITWM) of the Hochschule Mittweida), long-term research cooperation programs with SMEs, and the transfer of expertise were implemented. The project provided a notable contribution in stimulating product innovation and in securing the supply of specialist labour for companies through graduate work programs and special technical consultancy on software systems, laser technology and intercultural communication.

Further strengthening of the network between the Hochschule Mittweida and SMEs in the Central Saxon region took place. The cooperation portal – as a future communication platform between the college and business – raised the quality of the networking and exchange processes, and its long-term viability is guaranteed by the ITWM.

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