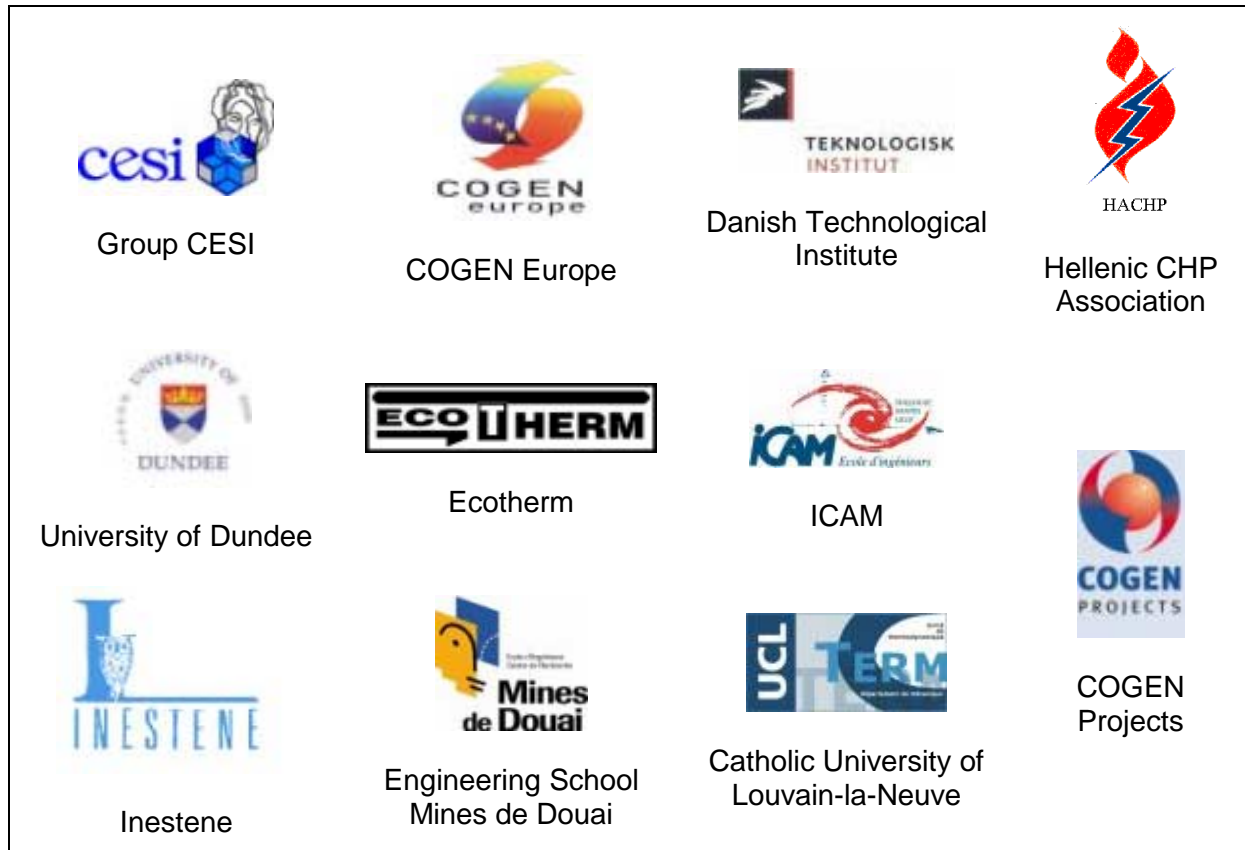


EDUCOGEN

The European Education Tool on Energy-Efficiency
through the Use of Cogeneration



Final Report - Publishable Summary - March 2002



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- Two different modules should be developed to satisfy both the demand for detailed knowledge and "easily digestible" explanations on cogeneration.
- There is a need for more exchange and networking.
- Any training module or tool on cogeneration should allow for some flexibility in a sort of "pick-and-mix" style.

Taking into account these conclusions the project partners developed material for an introductory course (the "Guide to Cogeneration") and a full course (the "Educogen Tool") on cogeneration. The Educogen Tool has initially been based on the course used by the National Technical University of Athens (Prof Frangopoulos). The Cogeneration Guide has been written by COGEN Europe with comments from other partners.

Closely related to the Educogen project, some of the project partners were using small-scale cogeneration units which either belong to them or to the schools and universities where they teach in order to provide students with access to real life examples of cogeneration. Also, UCL could purchase a new small-scale cogeneration unit during the project period.

1.2 Pilot Implementation

In 2001, through their education and training courses, the Educogen partners brought the Educogen Tool and the Guide to Cogeneration to first use within their universities and engineering schools.

Teaching on the concept of cogeneration and the installed unit was sometimes embedded into a broader action on energy-efficiency for each university/training body.

Practical experiments around the units complemented these activities in a number of cases, including analyses of technical features, efficiencies, of emissions, and the impact of load requirements onto the micro-cogeneration unit.

There were also a number of case studies undertaken. These were supervised by UCL, DTI, ICAM, CESI, Cogen Projects, and Ecotherm.

1.3 Evaluation

An evaluation of "Educogen Tool" and the "Guide to Cogeneration" was undertaken in late 2001 to help improve the content, design and applicability of these publications, and initiate their dissemination. A two-step approach was pursued, including evaluation with a questionnaire and an evaluation workshop in Brussels. The following conclusions could be gathered:

- The main outcomes of the Educogen – the Educogen Tool and the Cogeneration Guide – were considered a very useful means to educate and train students at different levels of their university career and other persons on cogeneration. The Tool has been characterised as complete, detailed and extensive reference book.
- The free availability of these publications on the Internet is very positive.

- Contrary for calls for more simplicity, there were also suggestions to include a number of additional subjects in the book, including thermodynamic analysis, hydraulic integration and regulation, electrical generators and grid interconnections², heat demand issues, market data on specific applications, emission standards for applications, and practical, hands on information (case studies and pictures).
- The Educogen Tool needs to be updated in the future, particularly in relation to markets, legislation and policies. An updating service could include a mailing list with subscription on the website.

1.4 Dissemination

Dissemination of Educogen allows multiplying the outcomes of the project and obtaining a 'return on the initial investment' by reaching out to as many potential users as possible. A long-term dissemination strategy for Educogen has been developed with the aim to reach out beyond the funding period. It defines the key "products" of the Educogen project that are to be disseminated, the most important target groups, and the planned activities. Dissemination included:

- Teaching Activities. All Educogen partners used the Educogen Tool and the Guide to Cogeneration into their teaching programmes. It is estimated that more than 1000 students have obtained copies of the Educogen Tool or have been requested to use it. Another 2500 students at least have been given the opportunity to obtain the tool from libraries, or have been made aware of the Educogen webpage.
- Educogen Conferences. These were organised on the occasion of two of the regular meetings of the Educogen project team in Douai (29 November 2000) and Dundee (24 April 2001)
- Educogen Website. This site ³ provides information on the project to a wider audience and is a cost-efficient means of distributing publications created during the project. It also serves as a platform specifically dedicated to the academic world, where additional materials and publications are offered. The Educogen webpage was marketed extensively and has taken a central role in the dissemination of the project (1410 visits and 6463 downloads between September 2001- February 2002).
- Electronic Mailings. These included 350 e-mails to contacts from Ecole des Mines de Douai, 100 emails from the Hellenic CHP Association, 305 to a special Educogen mailing list with contributions from all partners, 800 mails to the mailing list of the addresses. A third mailing addressed the 170 members of COGEN Europe, bringing the total number of recipients of the mailing to almost 1500. The mailings resulted in a considerable rise in the visits to the Educogen webpage and the number of downloads from this page.
- Presentation of Educogen at Conferences. The Educogen project was presented to the delegates of COGEN Europe's Annual Conference in March 2002.

² A new chapter on electrical generators and interconnection issues has been created by the University of Dundee and was inserted into the second edition of the Tool in late November 2002

³ <http://www.cogen.org/projects/educogen.htm>

1.5 Outlook

The Educogen project established a network between the project partners, but also reaching out to other educational and training organisations across Europe. The final project meeting showed that all Educogen partners have an interest to maintain contact with a view to continue exchanging their experiences and knowledge, enlarge the network by adding other actors to the mailing list, initiate regular exchange of students between their respective organisations, and undertake study trips to cogeneration units operated by other partners.

The Educogen webpage has become a central tool for awareness rising, communication and dissemination of the Educogen Project. Its use for dissemination will therefore be continued. The will be kept up to date and further developed on a regular basis.

1.6 Lessons learnt and Conclusions

The experiences made during the Educogen show the following:

- There is an enormous potential to improve education and training on cogeneration in Europe both in terms of quantity and quality.
- International networking and exchange of experiences between different education and training organisations can greatly enhance the quantity and quality of training on cogeneration. It gives added value to existing individual efforts by bringing together knowledge, skills and experiences.
- Education and training on cogeneration has different aims. A comprehensive educational tool therefore needs to be flexible. If the objective is to prepare engineers for their future jobs in industry, the training can mainly focus on technological issues. If education aims to promote cogeneration, a different target group needs to be addressed, and issues such as economies, environmental impacts and institutional matters become more important.
- The Educogen Tool was a first step towards closing a gap in this respect. It effectively provided the first European reference books on cogeneration which address technological, economical, environmental, and institutional aspects of cogeneration.
- Materials such as the Educogen Tool and the Guide to Cogeneration can contribute to the achievement of the European cogeneration target of 18% electricity from cogeneration in 2010. They provide engineers with the necessary skills and technical know-how. At the same time, they facilitate a better understanding of the environmental and economic benefits of cogeneration, and the political and institutional mechanisms that bring about growth in this sector.
- Community policies and programmes should continue to support projects such as Educogen, because they enhance education and training on cogeneration. This in turn is beneficial for Community energy policy objectives, such as competitiveness, environmental protection, energy efficiency and security of supply.