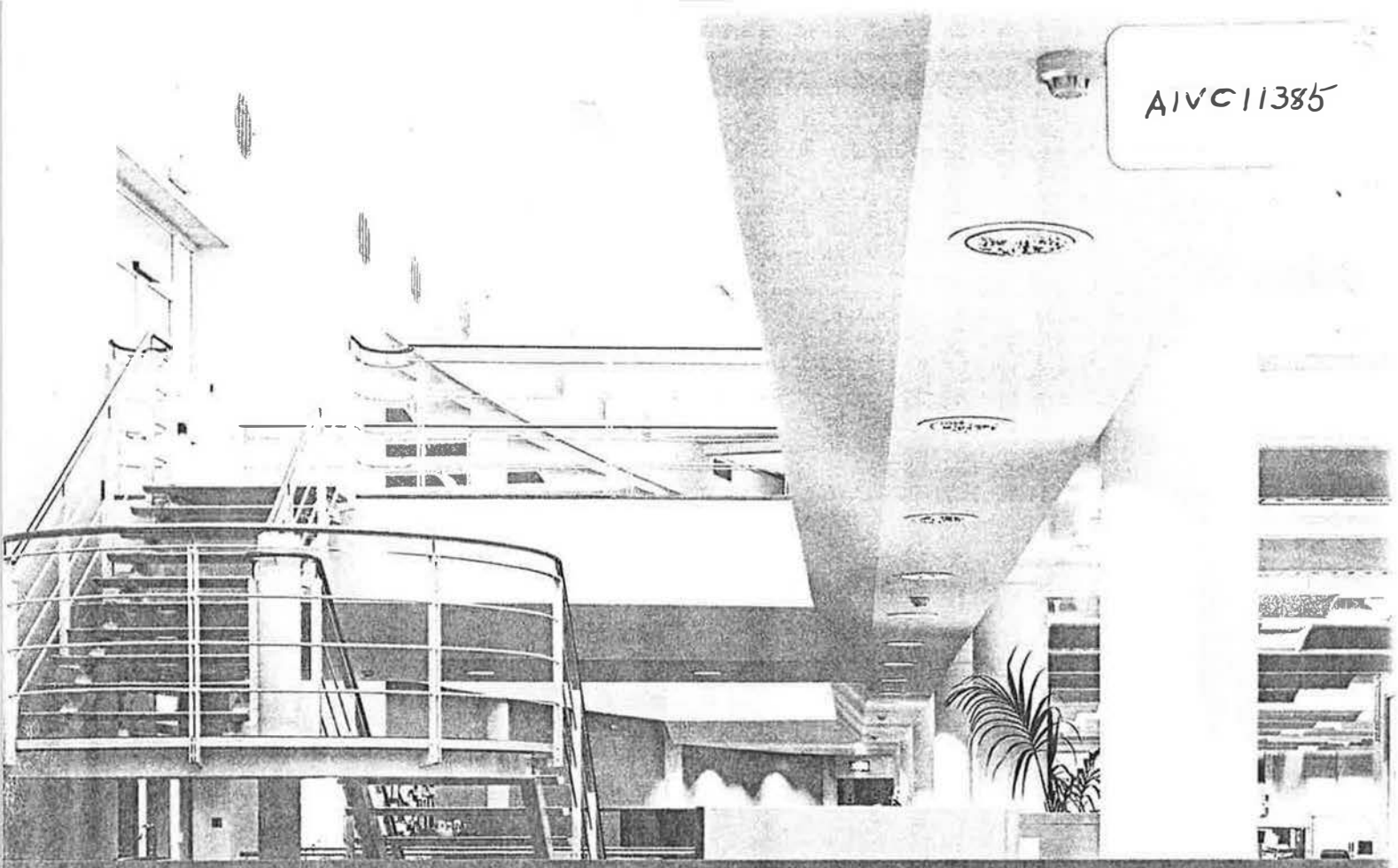


NatVent

A better way to work

Overcoming barriers to natural ventilation

Co-ordinator

Building Research Establishment (Great Britain)

Contractors

Belgian Building Research Institute
Danish Building Research Institute
TNO Bouw, (Netherlands)

Associated Contractors

AB Jacobson & Widmark (J&W) (Sweden)
Technical University, Delft (Netherlands)
Willan Building Group (Great Britain)
Norwegian Building Research Institute
Sulzer Infra Laboratory (Switzerland)

JOULE

Programme 1994-98

The project

NatVent is a European project which is being carried out by a consortium of nine partners, across seven countries - Great Britain, Belgium, Denmark, the Netherlands, Sweden, Norway and Switzerland. The work, which is being co-ordinated by the Building Research Establishment, will achieve three major tasks. It will:

Identify barriers: perceived barriers are being identified through an in-depth study amongst leading designers, architects, building owners and occupants

Assess current practice: the environmental/ performance parameters of buildings are being monitored to provide case studies

Provide solutions: 'smart' natural ventilation technology systems and component solutions will be developed to overcome the identified barriers.

The benefits

Recent surveys indicate that 90% of building occupants prefer naturally ventilated buildings. Naturally ventilated buildings provide benefits for owners, occupiers and the environment.

Save money

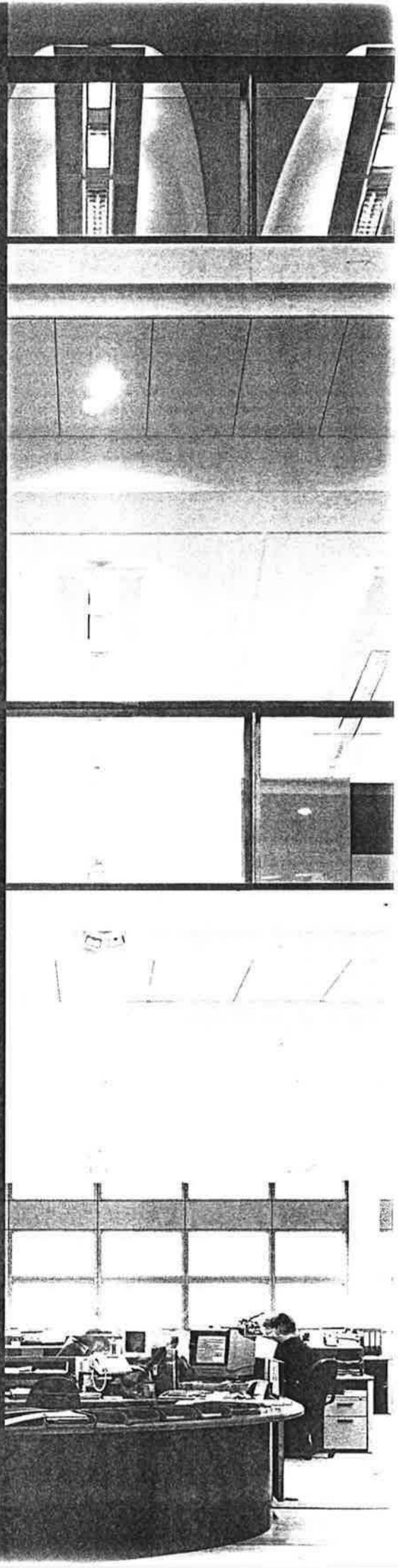
- naturally ventilated buildings typically consume less than half the energy consumed in air-conditioned buildings
- operating costs are 40% less in terms of energy
- initial capital costs are cheaper by about 15%
- costs are spread over a longer life-time period
- less space is required for plant rooms and service distribution
- maintenance costs are 75% lower

Improve productivity

- fewer incidents of sick building syndrome are reported
- occupants have control over their immediate environment
- productivity and comfort are enhanced

Be environmentally sound

- minimise emissions of the greenhouse gas carbon dioxide (CO_2)
- avoid using ozone-depleting substances.



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Breaking down barriers and providing solutions

Misconceptions surrounding natural ventilation are impeding its take-up by architects and developers in and around Europe. As a result, many building owners and occupants are missing out on the benefits that it provides – benefits that range from the financial to those concerning health, comfort, productivity and the environment.

If this situation is to be corrected, the market needs to be convinced of the viability of natural ventilation and be confident that generalised and tested solutions to technological barriers are available. NatVent will do just this. It is studying the issues involved and providing the technology and guidance that will promote take-up amongst those who might otherwise contemplate air-conditioning.

Natural ventilation - a better way to work

Identifying barriers

Perceived commercial, institutional and technical barriers are being identified through in-depth structured interviews with leading designers, architects, building owners and developers in seven European countries. The results will be summarised in individual national reports and a common, final report.

The national reports will describe the knowledge, viewpoints, experience and perceived problems in each country as well as decisions actually taken in specific building projects. There will be a short explanation showing how building regulations, occupational health regulations and other standards may appear to impede uptake of natural ventilation, together with a description of typical ventilation systems.

The final report will summarise the national reports, identify common problems, highlight solutions used to date and give recommendations on how to overcome the identified barriers.

Case studies

To get a picture of current practice in Europe, NatVent is monitoring a number of buildings across the seven participating countries and compiling case studies of these. The buildings provide good examples of natural ventilation application and represent a balance of retrofit and new build, of typical designs and more sophisticated strategies.

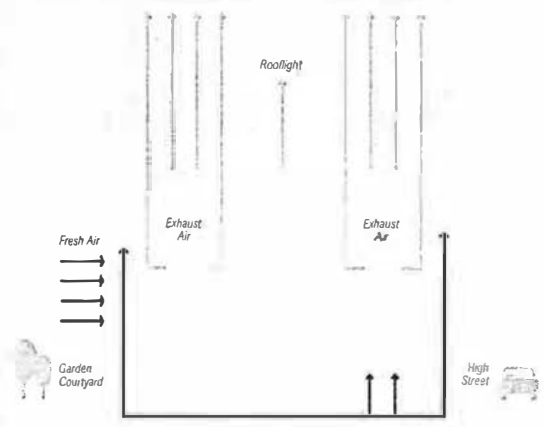
The advantages and shortcomings of purpose built, naturally ventilated buildings will be identified and the required conditions will be set out for achieving successful natural ventilation systems. In particular, the study will consider the control of indoor air quality, the control of summer thermal comfort and the prevention of overheating.

Providing solutions

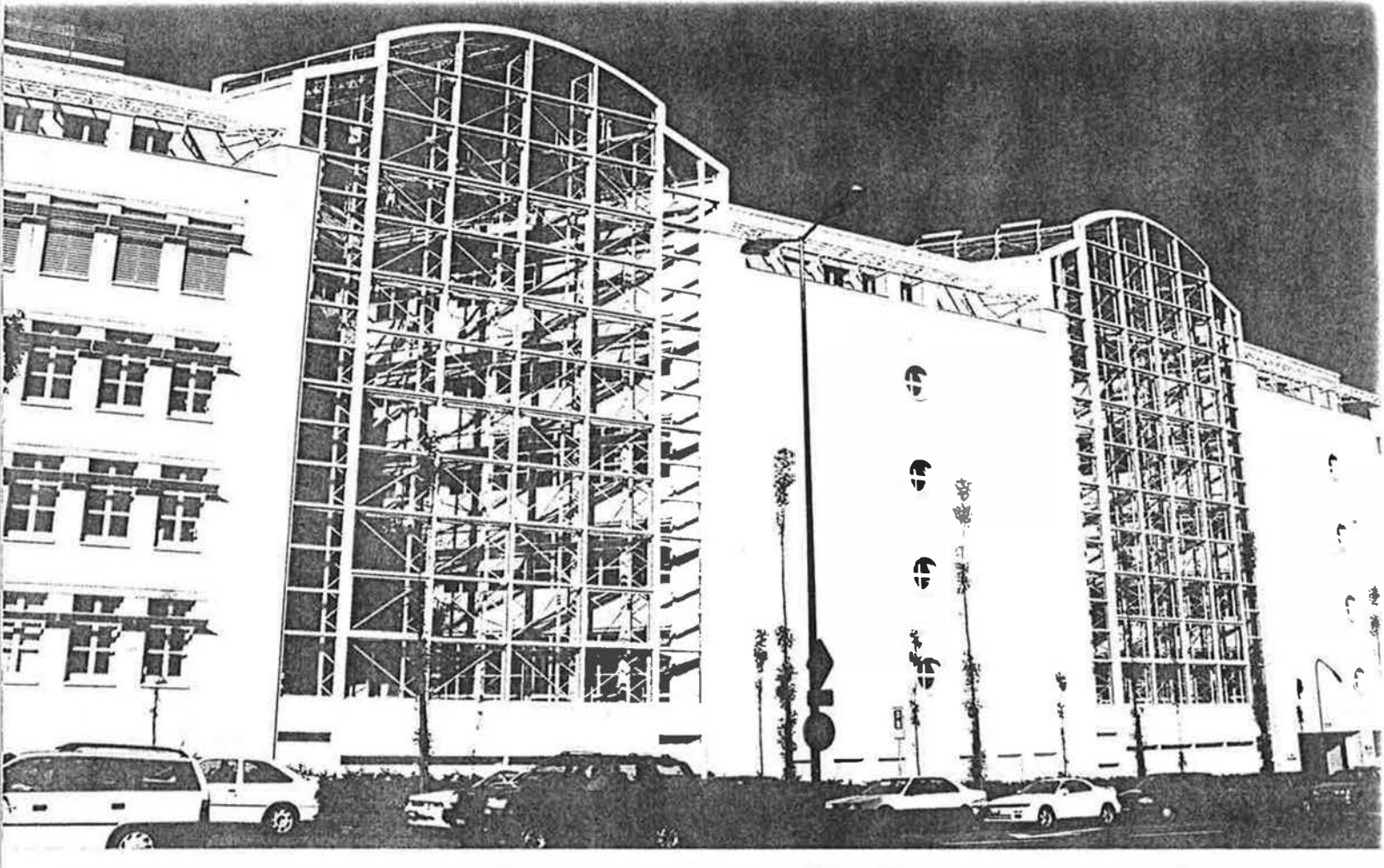
NatVent will provide the market with a number of practical solutions which will take the form of 'smart' technology systems and component solutions. There will be a guide book describing the solutions and showing how they can be applied in an integrated method for year-round occupant comfort. The information will cover five major topics.

Air filtration and the control of noise

Solutions will be developed for effective filtration of particulate matter, air pollutants and noise. Guidance will be published on the requirements, performance and availability of filtration systems.



Ventilation Strategy in Polluted Area



Courtesy of EW2 Betriebsgebäude Örlikon, Zürich. Architect: Atelier WW, Zürich.

Guideline values for the parameters associated with indoor air quality will be provided together with a report on the requirements and performance of constant but controlled air flow inlets. Solutions will be specified and benefits demonstrated through a series of workshops.

Existing systems will be evaluated and will include design and cost considerations. Advanced systems suitable for office-type buildings in cold climates will be developed and tested.

A state-of-the-art review will be prepared covering the availability of hardware suitable for night cooling and the benefits and limitations of control strategies. Suitable control systems, including adaptive algorithms will be designed.

A robust, user friendly, interactive design model will be produced incorporating all the above technologies. Maintenance and the cost of optimum year-round use will be addressed.

For more information

If you would like more information about the NatVent project, its findings and solutions, please contact:

Dr Earle Perera
Building Research Establishment
Garston
Watford
Herts WD2 7JR
Great Britain
Telephone: + 44 (0)1923 664486
Fax: + 44 (0)1923 664796
e-mail: pererae@bre.co.uk.

NatVent

Overcoming technical barriers to low energy natural ventilation in office-type buildings in moderate and cold climates

Participants

Maria Kolokotroni, Vina Kukadia & Earle Perera*
Environment Group
Building Research Establishment
Garston
Watford WD2 7JR
Great Britain
Tel: +44 1923 664486
Fax: +44 1923 664796
e-mail: pererae@bre.co.uk

David Ducarme & Peter Wouters*
Belgium Building Research Institute
Rue de la Violette 21-23
1000 Brussels
Belgium
Tel: +33 2 653 8801
Fax: +32 2 653 0729
e-mail:wouters@bbri.be

Soren Aggerholm* & Niels C Bergsoe
Danish Building Research Institute SBI
Energy & Indoor Climate Division
PO 119, DK-2970, Horsholm
Denmark
Tel: +45 42 86 55 33
Fax: +45 42 86 75 35
e-mail:soa@sbi.dk

Willem de Gids
TNO Building & Construction Research
Department of Indoor Environment
PO Box 29, 2600 AA Delft
The Netherlands
Tel: +31 15 2 60 84 72
Fax: +31 15 2 60 84 32
e-mail:w.degids@bouw.tno.nl

Johnny Kronvall* & Charlotte Svensson
AB Jacobson & Widmark (J&W)
Slagthuset
S-21120 Malmo
Sweden
Tel: +46 40 108226
Fax: +46 40 108201
e-mail:johnny.kronval@malmo.jacwid.se

Ake Blomsterberg
Swedish National Testing & Research Institute
Tel: +46 33 165505
Fax: +46 33 131979
e-mail:ake.blomsterberg@sp.se

Hong Liem & Dolf van Paassen*
Delft University of Technology
Lab. of Ref. Eng. & Indoor Climate Tech.
Mekelweg 2, 2628 CD Delft
The Netherlands
Tel: +31 15 278 6675
Fax: +31 15 278 7204
e-mail:a.h.c.vanpaassen@wbmt.tudelft.nl

Paul Ajiboye, Mark Hesketh & Peter Willan*
Willan Building Services
2 Brooklands Road
Sale, Cheshire
M33 3SS
Great Britain
Tel: +44 161 973 1234/6262
Fax: +44 161 969 5345
e-mail:peterwwillan.demon.co.uk

Peter Blom, Jorn Brunsell* & Eimund Skaaret
Norwegian Building Research Institute
Forskningsveien 3b
PO Box 123, Blindern
N-0314 Oslo 3
Norway
Tel: +44 22 96 5500
Fax: +44 22 96 5725
e-mail:jorn.brunsell@byggforsk.no

Rene Cotting & Peter Kofoed*
Sulzer Infra Lab Ltd
Zurcherstrasse 46
8401 Winterthur
Switzerland
Tel: +41 52 262 4745
Fax: +41 52 262 0002
e-mail:sinfra@dial.eunet.ch

Expert adjudicator
Martin Liddament
Air Infiltration and Ventilation Centre
University of Warwick Science Park
Sovereign Court
Sir William Lyons Road
Coventry CV4 7EZ
Great Britain
Tel: +44 1203 692050
Fax: +44 1203 416306
e-mail:airvent@aivc.org

European Commission Scientific Manager
Georges Deschamps
Commission of the European Communities
DGXII-F JOULE Programme
Rue de la Loi 200
BE-1049 Brussels
Belgium

**Asterisk indicates the lead contact.*