

MINUTES OF SPECIAL DISCUSSION AND STRATEGY MEETING EFCE WORKING PARTY ON DRYING

Karlsruhe, Germany

Friday January 11, 2001, 15.00-18.00 and Saturday January 12, 2001, 09.00-10.30

Persons present:

Dr. Odilio Alves-Filho (N)
Prof. J.J. Bimbenet (F)
Dr. Catherine Bonazzi (F)
Dr. Carl-Gustav Berg (FIN)
Dr. ir. W. Jan Coumans (NL)
Dr. Iva Filkova (CZ)
Dr. Ian C. Kemp (UK)
Prof. Matthias Kind (D)
Dr. Zdzislaw Pakowski (PL)
Prof. Michel Roques (F)
Prof. Dr.-Ing. Ernst-Ulrich Schlünder (D)
Dr. Alberto M. Sereno (P)
Prof. Czeslaw Strumillo (PL)
Prof. Dr.-Ing. Evangelos Tsotas (D)

Apologies received from:

Dr. Julien Andrieu (Fr)
Ir. Karl Anthonissen (B)
Prof. István Farkas (H)
Dr.-Ing. Dietrich Gehrman (D)
Dr. Anders Hallström (DK)
Prof. Dr. Gligor Kanevce (MAC)
Prof. Dr. Markku Karlsson (FIN)
Dr. E. Korin (ISR)
Prof. R. Lavie (ISR)

Prof. Norvald Nesse (N)
Prof. G.D. Saravacos (GR)
Dr. Milan Stacic (YU)
Dr. Stig Stenström (S)
Prof. Ingvald Strommen (N)
Mr. Tom Taylor (UK)
Prof. Radivoje Topic (YU)
Mr. Willy Van Herck (B)
Prof. Roland Wimmerstedt (S)

No apologies received from:

Prof. J. Bueno De Las Heras (E)
Dr. Bojan Cermák (CR)
Mr. Bianchi Janetti Claudio (I)
Prof. Anatoly A. Dolinsky (UKR)
Dr. Ing. Roberto Faucitano (I)
Dipl.-Ing. V. Gnielinski (D)
Mr. Martin Gronlund (DK)
Mr. Heikki Jaakkola (FIN)
Prof. Dr.ir. P.J.A.M. Kerkhof (NL)
Prof. D. Marinos-Kouris (GR)
Dr. Ir. Gerrit Meerdink (NL)
Prof. B.S. Sazhin (RUS)
Dr. W. Schumann (CH)
Mr. Christian Schwartzbach (DK)
Dr. Ansgar Sorensen (DK)
Prof. Dr. Dimitrije Voronjec (YU)

SUMMARY

It was agreed that the main aims of the group were as follows:

1. To promote face-to-face networking between drying experts across Europe in both academia and industry, including the generation of joint EU-funded projects where possible
2. To provide useful information and knowledge on drying to workers in research and industry.

Both aims would be assisted by a programme of regular annual technical meetings, relatively small-scale and low-cost, designed to appeal to a wide audience and

including the WP Business Meeting. In addition, any possibilities for developing groups such as thematic networks should be explored.

A key feature for the second aim is the development of a website. This presents a very attractive way to disseminate lots of useful knowledge to a wide variety of people, at low cost – important given the lack of funding from EFCE. The site could include: contact details for WP members; a newsletter; forthcoming events; recommendations for best practice in nomenclature, terms and definitions, and basic theory; and numerous links to other useful websites, e.g. IDS and national organisations.

DETAILED MINUTES

1. Opening remarks

The new Chairman, Ian C. Kemp, opened the meeting at 1500 on Friday and expressed - on behalf of all attendants - his gratitude to Professor Matthias Kind and the German organizers for making the practical arrangements and hosting the meeting. He also expressed his thanks to the members and guests who had made the special effort to attend this additional meeting, and those who, while unable to attend in person, had sent suggestions and proposals for future work, all of which will be very valuable in planning the way forward for the Working Party.

2. Aim of the meeting

The Chairman outlined the current situation. In the last few years, three International Drying Symposia have been held in Europe (1996, 1998, 2000), but IDS will not return to Europe until, at the earliest, 2006. Also, there has been good collaboration between several groups under the EU-sponsored “QUID” (Quality in Drying) project, but this comes to an end on 31 January 2001. EU rules also did not allow Central and Eastern European countries to participate in this project.

It is therefore important to plan how to maintain and extend the good networking between drying researchers in Europe, and to increase the involvement of industry. It is noteworthy that some of the other EFCE Working Parties have also been active in other areas, e.g. generating websites, recommending best practice, and influencing university courses. The aim of this meeting was to discuss all possible ideas for useful activities for the Drying Working Party, and to plan a practical way forward.

3. Ideas for the activities of the WP

A “brainstorming” session was held to generate ideas on what the Working Party should be doing. Sources of ideas included the article written by Jan Coumans in January 2000 on “The need for a stronger identity”, and submissions of various Working Party members, both in person and via e-mail. Also we considered some of the successful work done by other EU Working Parties. The following ideas were generated, and have been classified into sub-categories;

1. Meetings

- (a) Restore regular technical meetings, approximately once a year, to bring researchers together

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- (b) Make meetings relevant and attractive to industry; possibly concentrate on specific industries at different meetings, e.g. chemicals/pharmaceuticals, food/agriculture.
 - (c) Organise joint meetings with national groups and with other EU Working Parties; assist in publicising national meetings on drying to interested people in other countries
 - (d) Co-operate with existing symposia and conferences e.g. Nordic Drying Conference, CHISA
 - (e) Support the International Drying Symposia and encourage more industry participation
 - (f) Organise short technical courses on drying (though this is now a competitive market)
2. Other networking activities and collaborations
- (g) Look for closer co-operation with industry (both individual companies and working groups, e.g. SPIN), encourage industrial participation and look for sponsorship of projects and seminars
 - (h) Encourage representatives of all countries in the EU to participate actively in the WP
 - (i) Investigate whether we could develop a EU thematic network, funding travel to meetings
 - (j) Seek opportunities for other large EU drying proposals (like QUID), with industry participation and funding; also look at other possible funding sources e.g. NATO
 - (k) Look to the future and encourage the development of young researchers and industry experts in drying (generate our own replacements!)
3. Website
- (l) Develop the new website of the WP as a major source of drying information to all
 - (m) Recommend a unified nomenclature and make a list of terms and definitions for drying, including translations into different languages
 - (n) Consider including simple calculation routines (e.g. for wet bulb temperature) and the standard entry form for entry of solids drying properties into a database
 - (o) Generate links to other useful websites and to WP members' companies and universities, also to manufacturers (a list is already being generated on the IDS website) and consultants (via EFCE?)
 - (p) Create a newsletter or bulletin for the Drying Working Party
 - (q) Encourage feedback, discussion forums and interchange of ideas on the website
4. Other ideas and strategies
- (r) Try to improve the image of drying, and emphasise its importance in product quality, formulation and achieving end-use properties. It was suggested renaming the WP, one suggestion being to "Drying and Solid Shaping".
 - (s) Form links, hold meetings or develop joint projects with other EU Working Parties and look at cross-disciplinary problems, e.g. how upstream processing affects drying
 - (t) Address real industrial problems e.g. selection and operation of dryers for granulation, viscous or sticky feeds, fragile products, deagglomeration.
 - (u) Also look for links to people in emerging technologies and "non-standard" drying applications.

Clearly there is an enormous amount of potential work here and we need to identify what can be done realistically with our current resources, as a group, of people and money. The lack of funding by EFCE for meetings or other activities was identified as a significant problem.

Professor Tsotsas summed up the main activities for the WP under three headings:

Promoter – of projects, co-operation, and development of knowledge

Lobby – to the EU for appropriate recognition and funding for drying-related projects

Forum – for networking and dissemination of best practice in drying.

4. Practical plans for future activity

It was agreed that there was a need for a long-term strategy, and also for immediate short-term action on valuable projects which could be implemented quickly and at low cost, to demonstrate that the WP is an active and viable forum.

Top priorities were identified as:

- i. Organisation of a technical meeting in summer 2001.
- ii. Development of the website; getting something usable “up and running” as soon as possible to act as a platform for building further useful items.
- iii. Exploration of further opportunities for EU collaborative projects.

5. Proposal for next meeting

Karl Anthonissen, the Belgian industrial delegate, has offered to help organise a meeting in the Antwerp region in autumn 2001 with the assistance of KVIV, a Belgian industry support organisation. There is a large concentration of chemicals and pharmaceuticals companies in the Antwerp region who would be interested in an industrial seminar on drying. There was unanimous support for this idea. A combined meeting including research posters could help to bring industry and drying research together very effectively. The meeting would include the WP Business Meeting. Dates of 3/4 or 6/7 September were suggested. Unfortunately these dates were not convenient to KVIV and the meeting will now have to be postponed to late October or early November 2001.

6. Development of the website

The Chairman has made inquiries and the UK Institution of Chemical Engineers (IChemE) are prepared to develop and host the website free of charge, as part of the UK's contribution towards EFCE. A proposed address has been given for the site, which would be: http://efce_dryingwp.icheme.org.

There is no indication on the exact timescale when the first version of the site could become active, but it should be within the next couple of months. At this stage, a simple site containing the most useful details is the main priority, e.g. listing the members' names and contact details, building links to other groups, advertising the Antwerp seminar. This corresponds with item (o) in the list in Section 3. Formal permission is requested from each member to include their contact details on the website (see the letter enclosed with these minutes).

All Working Party members are invited to contribute a short (one-paragraph) statement on the current work of their university or company, which can go on the website, and are requested to provide links from their own websites where possible. Publicity of the work of the WP in their own country would be useful. It was suggested that the Summary from these minutes could be translated into their own language and disseminated by each member.

In the medium and longer term, we can add lots of relevant information on drying to the site, as in items (m), (n), (p) and (q). Members are invited to offer any suitable material which could be added to the website. For example, Prof Pakowski already has a simple program for calculation of wet bulb temperature on his existing website. An article on processing drying curves data was written jointly under the QUID project, and Prof Sereno has data on sorption isotherms of foods.

Full details of the suggested specification for the website are given in the Appendix. Members' views are welcome on any changes or additional items required.

An excellent example of what can be done is the website of the WP on Mixing, which can be accessed via the main EFCE site (<http://www.dechema.de/efce.htm>). It includes aims of the group, names and addresses, minutes of meetings, and a complete recommended nomenclature for mixing and related operations (which is similar in many ways to the unified drying nomenclature proposed some years ago by Strumillo and Kudra); the Chairman will try to get hold of the source files to reduce the effort necessary to produce our own nomenclature. Similar terms and formulae are also tabulated as part of the newly revised British Standard BS 1339. A list of important terms will be compiled and it was suggested that members provide translations of terms in their own languages.

7. Membership of the WP – Delegates and Guests

Changes to delegates:

Dr. Jean-Jacques Bimbenet (F) announced that he will be retiring as a delegate and will be replaced by Professor Andrieu. Dr Catherine Bonazzi will continue to attend regularly as a guest.

Prof. Radivoje M. Topic has been officially appointed as a delegate for Yugoslavia

Guest participation:

Dr Carl-Gustav Berg (FIN), Dr. Catherine Bonazzi (F), Prof Matthias Kind (D, host), Prof Ernst Schlunder (D, former member) all attended this WP meeting.

Mailing list:

An updated address list of all members and guests of our WP was completed in October 2000 but was not distributed at the time. The complete mailing list is now attached with these minutes.

Members are requested to check that their entry is correct and supply any missing details (phone, fax, e-mail etc) to the Chairman. Guests who do not wish to remain on the list should also notify the Chairman.

At this moment there are 51 members on the mailing list: 23 delegates, 6 delegates industry, 1 personal member, 16 guests, 2 guests industry and in addition 3 EFCE-officers.

8. Closure of the meeting

The Chairman thanked delegates for their valuable contributions and closed the meeting at 10.30 on Saturday.

9. List of Actions from the meeting

ACTIONS FOR THE CHAIRMAN:

- (a) Write and distribute minutes of the meeting, both by e-mail and normal post
- (b) Confirm proposals with IChemE for hosting and development of the website
- (c) Investigate the possibility of funding a thematic network on drying under EU Framework V or VI
- (d) Contact the Mixing WP chairman to try to obtain nomenclature source files; collect a list of useful drying terms; disseminate details of BS 1339 recommended nomenclature and formulae
- (e) Liaise with Karl Anthonissen about the next WP meeting in Belgium in September 2001

ACTIONS FOR ALL WORKING PARTY MEMBERS:

- (f) Provide e-mail and website address, phone and fax numbers to the Chairman where he does not already have these
- (g) Confirm willingness to have contact details publicised on the website
- (h) Supply contact details of national organisations involved in drying, including website address, to the Chairman
- (i) Publicise the Drying Working Party and website address in their country
- (j) Provide a short description of their group and its work, for the website (optional, but useful free publicity!)
- (k) Consider what contribution they could make to supplying knowledge for the website, providing terms and definitions etc.

Ian C. Kemp
Chairman of WP on Drying

APPENDIX: SUGGESTED CONTENTS OF WEBSITE FOR EFCE WORKING PARTY ON DRYING

To be hosted by the IChemE, Rugby, UK

Proposed website address: http://efce_dryingwp.icheme.org

Items to be divided into:

Administration – names and addresses, aims, history, minutes of meetings

Technical – links to other websites, best practice, terms and definitions, newsletter

A brief statement of the objectives of the WP and a summary contents list for the website can be given on the front page.

Administration

Information about the WP

- Current chairman – contact point
- Aims and objectives of the WP
- List of members' names – see below for more detailed link
- Group photograph(s) from Karlsruhe (and previous meetings if available)
- Minutes of business meetings
- History of the WP

Names and addresses.

- Chairman (I C Kemp) – with direct link to e-mail address (ian.kemp@hyprotech.com) and website; note – some uncertainty about best address at present due to internal reorganisations
- Working Party Members – may have links to their e-mail if they choose, and to their university websites; can also include a short description of their interests. Can the address details be linked to the standard database on Word or Excel (held by the Chairman and/or Dechema) so that we don't have to do separate updating? Needs to include name, country of origin, status of representation, and some contact details, so that people in their own countries can contact them.

Forthcoming events

To include the meeting at Antwerp, Belgium in September, plus links to other international events:

Teesside meeting 28 Feb (or access via IChemE) and other events organised by national groups

- 1st Nordic Drying Symposium
- Inter-American Drying Conference
- Asia-Pacific Drying Conference
- IDS 2002, Beijing

Technical

Links to other websites:

- IChemE main site – icheme.org
- IChemE Solids Drying Subject Group - http://solids_drying.icheme.org
- Dechema main site – dechema.de
- EFCE site - <http://www.dechema.de/efce.htm>
- Other EFCE working parties?
- EFCE list of consultants and recognised experts in drying etc.
- SCI, France
- National Organisations e.g. working parties in different countries (national representatives to provide information?)
- IDS Advisory Panel site - <http://wipos.p.lodz.pl/idsap/>
(Includes: list of dryer manufacturers, instructions for authors for Drying Technology)
- Arun Mujumdar's website
- Drying Technology magazine / Marcel Dekker
- British Standards Institution – for BS 1339?
- AIChemE?

Reports and technical information

- Interesting news or summaries of articles; a working party newsletter with contributions from various members or groups throughout Europe?

Other items to include – as they are developed and as time permits (several of these can be effectively done by collaboration between WP members from different countries)

- Terms and definitions for drying and psychrometry (former could be partly compiled from the WP on Mixing, latter could be lifted from BS 1339 Part 1 with slight modifications)
- List of proposed nomenclature for drying (cf. Strumillo and Kudra but with one recommended alternative in each case) – could be shared with the IDS website and Drying Technology to act as their standard nomenclature
- Dictionary of drying terms in different languages? (e.g. drying - sechage – trocknung etc)
- List of the WP members and also of consultants on drying, with links to their websites, and with an optional short description by each of what they are doing (may not be needed, EFCE already has this but it needs to be checked that it is working fully reliably)
- List of recommended books on drying and on-line material e.g. CD-ROM's – the Handbook of Industrial Drying contains a good book list
- List of seminal papers on drying in various areas – could be shared with the IDS and Drying Technology websites to try to prevent people reinventing the wheel or missing important papers!
- Recommended procedures or sources for drying experimental methods, e.g. a summary or link to the QUID joint paper on processing of drying curves
- Instrumentation manufacturers? (probably better in the IDS bit)

Note: An excellent example of the level and range of information required and a good basic layout (although the appearance of the front end is a bit dull) is given by the website of the EFCE Working Party on Mixing, accessed via the EFCE website (<http://www.dechema.de/efce.htm>).

Standard items

- Date of last update
- Disclaimers, acknowledgements etc

Other thoughts

We will try to ensure that these sites are one of the first seen by people with a query in one of the following areas and using them as a search keyword – this requires registration with search engines:

Drying; Solids Drying; Moisture Content; Humidity; Psychrometry; Dehydration;
Terms/Definitions;
Recommended Symbols/Nomenclature