Productivity Commission Submission

Standards and Accreditation

April 2006

Submitted by

Andrew Israel

On behalf of

FANS Direct

Fans Direct Pty. Ltd.
ACN 087 430 715 ABN 80 087 430 715

Introduction to Fans Direct

Fans Direct is a wholly Australian owned SME selling and manufacturing ventilation fan products and ancillaries for the construction and other industries in Australia and New Zealand. Fans Direct also exports products to Asia, the Middle East and North America.

Fans Direct is based in Melbourne and has sales offices in every State capital city and in Auckland. It employs 50 people and has been in existence for almost 7 years. In the short time in which Fans Direct has been in business it has spent a considerable amount of money and time working to ensure that it's products are certified to, and meet or exceed current and future Standards for the types of equipment we make, and for the applications for which they are intended in every day use.

Fans Direct is accredited to the ISO 9001 International Quality Standard by NCS International. Fans Direct has an active and successful R&D programme in place that has led to the patenting of new fan inventions and registration of various innovative product designs.

Reasons for Fans Direct Submission to the Productivity Commission

Of particular interest and importance to Fans Direct are the existence, nature and operation of the various electrical, mechanical, testing, certification and operating Standards referenced for ventilation products and Building Codes of Australia (BCA's). Fans Direct has an interest in how Standards are drafted, reviewed and published, and how alterations to them are made.

Fans Direct is making this submission to the Productivity Commission in order to identify what it sees as serious flaws and failures in the current operation of the Standards Australia processes for the development, review and promulgation of Standards.

Fans Direct also wishes to take this opportunity to present some ideas for consideration by the commission in terms of making changes to and improving upon the current structure of the Standards setting process, and the responsibilities for this process and for the Standards themselves.

Contact Details

The Managing Director of the Business, Andrew Israel, has prepared this submission. Correspondence should be addressed to:

Andrew Israel
Fans Direct
2/63 Wells Road
Chelsea Heights
VIC 3196

Or via email at andrew.israel@fansdirect.com.au

Submission

This submission has selectively sought to answer only some of the questions posed in the Issues Paper dated *2 February 2006* and *(signed) Peter Costello*. The narrow submission is a deliberate attempt to focus the readers mind on what Fans Direct sees as the critical issues needing attention.

This submission will also take the opportunity to provide a bare-bones framework for discussion of an alternative model for Standards setting and accreditation in this country.

This submission will not focus on laboratory accreditation issues, but rather it will focus on the Standards elements, which are perceived as the primary opportunity for improvement.

This submission also takes the opportunity to identify an area of particular concern for Fans Direct in relation to the operation of a particular committee of Standards Australia, ME-062, and in relation to one of the Standards it manages, AS1668. This concern was the catalyst for the alternative ideas and framework contained in this submission.

Discussion and answers to various question posed in the Issues Paper

P10.
Participants may wish to nominate what they currently consider to be society's and industries objectives for standards setting and laboratory accreditation services. Should these objectives be changed?

Answer:
Standards setting and laboratory accreditation services must seek to promote a culture of innovation and excellence in management, design and delivery of services, manufactures and facilities (including public and private infrastructure), both in Australia and overseas, that ensures Australia is in the Top 10 nations in the world for;

Economic growth rates
Standards of living
Built environment impacts on population health and energy consumption
Education standards (Literacy rates and Trade and Tertiary qualification levels)
Intellectual Property (IP) development (and ownership of revenue streams for IP)
Safety of the population at home, at work, in transportation and in the community
Cost efficient delivery of such services, products and facilities
Cost Competitive manufactures, services and facilities
Fair, open and transparent operation of markets in manufactures, services and facilities

P10.
Is the current mix of public and private involvement in standard setting and laboratory accreditation efficient?

Answer:
This submission only addresses the standards setting element of this question. The answer is an emphatic **NO** in this context.

Fans Direct Pty. Ltd.
ACN 087 430 715 ABN 80 087 430 715

The experience of Fans Direct is that Standards Australia is an opaque and inefficient standards setting body, even when working at it's best. At worst, the current structure and operation of standards setting under the ownership of Standards Australia is actually a recipe for self-interest and anti-competitive behaviours (*inefficiency* in this context) and leads to the failure of standards setting processes to promote efficient and effective achievement of societal and industry objectives.

As an example of what is meant by this statement, representation on standards setting committees is not publicized well, if at all. Meetings are not well coordinated or planned or publicised and changes to meeting times are not well communicated. So attempts to understand the make-up and direction of draft standards, or track changes to standards and standard setting processes, are inefficient in themselves.

Attempts to make submissions on the direction, content or intent of a standard are fraught with bureaucratic and communication barriers. The processes by which submissions can be made is variable, depending on the nature of the submission and the standard in question – or more precisely the stage and status of a standard setting process.

Standards take far too long to be drafted and amended during committee stages, and yet timeframes for public and industry comment are far too short. Mechanisms for comment are also poorly conceived and managed. It is hard to know whether or not a submission has been received and what reception it has met. An interested party making a submission almost certainly only has any clue as to what is really going on if they know someone on the committee.

This leads to perceptions of biased committees, and the failure of the standards setting process to adequately listen to those parties likely to be impacted by a given standard or its requirements.

This of itself leads to the setting of standards that do not adequately address the range of issues confronted by society or industry, leading to the introduction of inefficient standards, many of which then do not get taken up in all jurisdictions due to these perceived failures. This again means that standards processes lead to inefficiencies and failures to adequately address society and industry objectives.

Whilst we are specifically basing our submissions on these issues on the Fans Direct experience with ME-062, this is also an anecdotally common frustration expressed by many Fans Direct customers and suppliers more generally. Similar comments could be made about AS4429 and processes such as the ABCB revisions to the BCA's in relation to energy standards and codes of practice.

To illustrate these points a little further it is appropriate to précis the Fans Direct experience with the ME-062 committee and sub-committees, and Standards Australia. This is a real example, unembellished and factual, of an industry participants experiences in relation to the standards setting process under the ownership of Standards Australia. *The full description is contained in the attached Appendix 1.*

Had this Productivity Commission study not been in progress the commentaries and observations made by Fans Direct in this submission would have been, and may still be, sent to Standards

Australia. This is because the same issues as described in Appendix 1 appear to be occurring once more in the current deliberations of the ME-062 committee.

Those private industry or industry-dependent members of committees with close ties to sections of industry are potential sources of anti-competitive advantage for those members of industry whom they deal with. Fans Direct experience with the ME-062 committee for AS1668 could be construed in this light, despite the best intentions or beliefs of the members of that committee.

In the case described in *Appendix 1,* a ruling was sought by a competitor to Fans Direct on an element of a Fans Direct product design that the competitor felt was not in conformance with the standard. The committee, without reference to Fans Direct or other industry bodies, simply published the ruling essentially as worded by the applicant, effectively eliminating Fans Direct from supplying complying product in one area of its range. This led to a lot of time wasting by Standards Australia, members of the committee and in particular Fans Direct, as we sought to overturn the ruling.

Initial representations to the committee and to the manager of the committee were met with stony indifference and indignation. The technical competence of the business was called into question without any attempt by the committee to clarify, quantify or understand the logic, design and performance of the device in question. Fans Direct was however successful in having the ruling temporarily withdrawn after representations to the senior Division Manager of Standards Australia.

Fans Direct was effectively being branded as a cheat by the ruling, when the ruling itself contained no definitive measurable technical or comparative grounds for the conclusions reached by the committee, according to any standard currently in operation at the time. The committee was effectively simply expressing an opinion. An opinion not based on technical standards of performance or objective testing of the product. On that basis one competitor was being advantaged over another as the applicant for the ruling had no such test applied to their products.

Finally and eventually the ruling was permanently withdrawn after the attached submission was made to Standards Australia (see *Appendix 1*). However the damage is done. This committee is now compromised in the eyes of Fans Direct. Fans Direct in turn is now a belligerent and self-interested industry competitor in the eyes of Standards Australia and the ME-062 committee members, and the costs to all parties (bar the originating complainant) were significant.

So, what failed in the process and why does this lead Fans Direct to make this submission?

Fair and open standards processes were not in place to ensure that any submission for a ruling against an industry participant's design was considered on its merits.

No corroborating or conflicting evidence was sought from the accused party. No opinion was distilled after appropriate and broad consultation, and no fair test was applied to the design in question or the other competing designs owned and sold by the complainant. In short, the process was biased and carried out effectively in secret.

The standards (ruling) process was subverted for the ends of one competitor without Fans Direct's knowledge and without Fans Direct being able to put their case prior to a damaging ruling being made. This is anti-competitive and inefficient behaviour. It was able to occur solely because of the

current monopoly powers of Standards Australia, its opaque methods of operation, and the lack of open and transparent processes for making rulings.

In fact, had the process been transparent and open in the first place it would have been recognised by all parties, including the committee, that the ruling as sought was actually a request for a design approval. This is outside the remit of a standards setting committee unless a given standard actually states and permits a standard test to be applied in a known manner to a known measurement, to ensure the performance of a device against the objectives of a standard. The AS1668 standard carries no such test method or standard in the case in question.

This is a failing of the standard itself, as there should indeed be a formal test of performance for such devices. This point would have been made, acknowledged and incorporated had the standard been written based on the current ISO standard relevant to AS1668.

This point would also have been realized and incorporated had the standards writing body been an industry body, such as AIRAH, which has a constitution and remit designed to promote excellence within the industry in order to achieve the objectives of industry participants and the wider society.

It is equally likely that had a body such as the RAIA, or one of many professional engineering representative bodies, been responsible for the standards writing process, such an issue would also have been recognised and the best possible solution found and incorporated into the standard. This would have resulted in a workable, efficient and effective standard that recognised best practice in product design and function.

As it is, the current AS1668 standard as written by Standards Australia is a mélange of good and bad; with some rigorous tests of function that are technically meritorious, yet with some hopelessly corrupted paragraphs on product and system performance that have no ability to be measured by any current test of performance as designated within that standard or any other.

Further issues of efficiency and effectiveness with Standards Australia and its processes

The cloak of privacy regulations also appears to be used by Standards Australia to frustrate attempts by outside parties, including industry bodies, members of the public and industry participants, to understand what is happening within the committees themselves, and to know what stage of the standard setting process is in motion, and what the timeframes are for completion of the various standards processes.

Standards Australia claims that it's website is a very interactive and informative tool. The experience of Fans Direct is that it is a complex, inaccurate and misleading tool that works to limit appropriate public, industry and competitor understanding of what is going on.

Attempts to understand committee workings through published proceedings are usually unsatisfactory at best as the meetings are not public events. The proceedings are usually sparsely written up and the processes by which a consensus is reached in committees are therefore murky and frustrating for the professional body or industry participant.

Fans Direct experience with ME-062 has delivered a stunning expose of the lack of efficient and timely information dissemination and control, and has identified that far from serving the best

interests of society or industry as a whole, vested interests are able to promote inefficient operations of committees to ensure that the ability of competitors to operate fairly in the market is always at risk.

Standards committees appear to operate without clearly defined societal and technical objectives and measures against each Standard they seek to draft, promulgate and manage. Of itself this is a direct cause of inefficiencies as Standards are drafted without testing along the way to ascertain their impact on, or ability to achieve, societal and industry objectives.

Inefficiency is created by the current structure of control and ownership of the Standards setting process and the mix of public and private involvement that that structure promotes in a monopoly business environment.

P10.
Are there market failures or weaknesses in standard setting and laboratory accreditation services that justify government involvement?

Answer:
This submission only addresses the standards setting element of this question and the answer is a most emphatic **YES** in this context.

If societal and industry objectives are to be met it is impossible to believe that a monopoly private enterprise can deliver them. Certainly not without substantial governmental oversight and input. *Again the reader is directed to the attached submission made to Standards Australia – Appendix 1.*

This document, *Appendix 1*, demonstrates that an opaque and inefficient private organization has no place as a monopoly authority in such a crucial area of the Australian economy, in a society that espouses fair and open market access and efficient allocation of resources in the most effective manner possible.

The only positive outcome from the Fans Direct submission to Standards Australia was the withdrawal of the dubious ruling made in relation to AS1668 by Standards Australia. The events that led to this outcome quite clearly show that Standards Australia has lost a clear opportunity to deliver an effective and efficient standards setting process for the achievement of society and industry objectives. It is a position from which they are unable to recover given their current structure and remit.

The original ruling was a clear and stunning example of the potential for inefficient and malicious diversion of focus of what is assumed to be an otherwise well meaning committee, standard and process.

The diversion was intended and devised solely to meet the needs of a single market competitor. This diversion was only possible because of the monopoly remit and structure of Standards Australia and the subversion of open and fair access to standards setting processes by vested interests.

Therefore there is an inherent structural weakness in the standards setting process that will continue to lead to market failures such as the one described in *Appendix 1*.

A standards setting structure and process that is truly open to public scrutiny at every stage, that has accountable management delivering Standards against agreed and published objectives, requiring technical meritorious measurement and testing, and requiring balanced societal and industry representation on standards drafting and review committees primarily funded and audited by Government, is required.

Government therefore has a policy, funding, policing and economic (societal and industry objectives-based) role to play in the structure and operation of standards setting in Australia.

P11.
What changes to current arrangements might improve the effectiveness of the standards and conformance infrastructure?

Answer:

- *Compliance with international obligations*

If economies of scale and time are used to help define appropriate conformance infrastructure that is truly *effective* then it is logical to provide a conformance framework that works initially by simply adopting International Standards (such as ISO, ANSI standards) as the starting point for the development of all Australian Standards.

The ability for Australian standards to comply with international obligations should therefore be dramatically enhanced, assuming the final resulting standard is largely based on the original international standard.

Local environmental performance standards and obligations, cultural nuances and climate-required elements can all be incorporated in the Australian version of the international standard.

- *Interaction and collaboration with other elements of the standards and conformance infrastructure*

&

- *Governance and process*

The structure of the standards setting process should be modified to effectively manage this new starting point. A new government legislated and funded peak body comprised of representatives of each Federal, State and Territory government, should have control over the standards setting process. This would be the new peak body for standards setting in Australia, replacing Standards Australia in this capacity.

This peak body should consist of an 8-member committee made up of eminent persons from the Public Services of each State or Territory who have a demonstrated track record in both research and commercial enterprise fields.

The Chair of the organization should be the chief of the CSIRO or his or her nominee. This is the Federal Government representative. This person should have a dual voting right. One vote may be cast in circumstances where a simple majority prevails. Where a deadlock occurs the Chair has a

casting vote in addition to their normal vote. This should reduce the potential for procrastination and deadlock in the peak body.

The role of the new peak body is primarily to decide what Mandatory standards and processes will apply in order to effectively and efficiently achieve well-defined society and industry goals.

The peak body should have an audit arm that is funded to oversee the standards writing, publishing and review process. The remit of this audit arm could include a role for dispute resolution, complaints and appeals against standards or outcomes of processes.

Audits would address the efficiency and effectiveness of operation of standards writing bodies and the effectiveness and operation of the standards that standards writing bodies provide to the peak body. The audit process, by definition, would identify if the funding and operation of the new infrastructure meets the society and industry objectives of the process.

The peak body would choose standards that it wished to review or introduce based on the society and industry objectives that are defined in the legislation, or on advice from the audit body or as a result of the conclusions of any appeal or review processes managed by the audit body.

Standards would then be commissioned by the secretary to the peak body and written, based on the relevant international standard as a starting point, after competitive tender, by the chosen standards writing body. In Australia today there are any number of relevant industry, community and government bodies that are capable of writing effective and efficient standards.

These bodies should all be able to participate in the tender process for writing the standards that are of interest to them and their members. This approach is adopted in many countries, and in the USA in particular it appears to result in technically rigorous and effective working standards.

These standards writing bodies by their very present existence, definition and constitutions tend to have balanced representation as part of their mode of operation. They also tend to possess the technical and financial resources required to ensure that a standard is well constructed, technically rigorous, focused on the objectives set for the standard, and free of intended bias by vested industry or community interests.

Participation in these industry and community bodies is funded on a fee-for-membership basis and this guarantees that the costs of the standards setting process will be met largely by the industry the body represents. Tendering bodies will be able to deliver cost effective and timely standards, incorporating the balanced views of the body and its members.

It is likely under this type of structure and free-market process that input costs of government will not increase above current costs, and will in all likelihood fall as the system shakes out inefficient providers and realizes the gains to be made from delivery of effective and efficient standards setting processes.

The peak body would set certain criteria for the “qualification” of potential standards writing bodies. These should include such things as having a formal democratic constitution, legally binding management processes overseen by formal committees of management, external financial and governance audits annually, sufficient financial resources, and staff that are technically

qualified to write the given standard, being able to prove that the standard writing process was open to public scrutiny at both committee and drafting stages, and that the membership of the standards writing body was a balanced sample of the industry or sector it purports to represent.

Coming from the HVAC industry there are 2 quite well resourced bodies that would fit this bill in every measure. These are AIRAH and AMCA. Other possible bodies, and there are many more, are the RAIA and some of the professional engineering associations.

Overseas there are clear examples of the effectiveness and efficiency of this approach. If the commission looks to the US model in particular it is easy to find a variety of standards writing bodies that have demonstrated the ability to deliver good, technically meritorious and balanced standards that have replaced and improved upon previously vested-interest-ridden standards. ASHRAE is one clear example of the success of this type of standards writing capability.

Industry associations are well equipped to provide draft written standards for review and acceptance by the peak body itself. Prior to the peak body reviewing and formally signing off on any new standard, the audit arm would conduct a review against the objectives of the standard, set at the beginning of the process, and then pass the final draft standard to the peak body for promulgation and publication.

The monopoly of Standards Australia should be abolished and their work should consist of being the publisher and archivist of standards and processes, for which they are paid on a fee-for-service basis by either the public, industry or the Government, depending on the tasks they are performing.

Of course this does not remove the ability for Standards Australia to tender or compete for Standards writing responsibilities. Nor does it remove the more commercial element of their business operations based around QA auditing and certification. In this area they are already subject to competitive forces and their services, in this area, are well respected as a result.

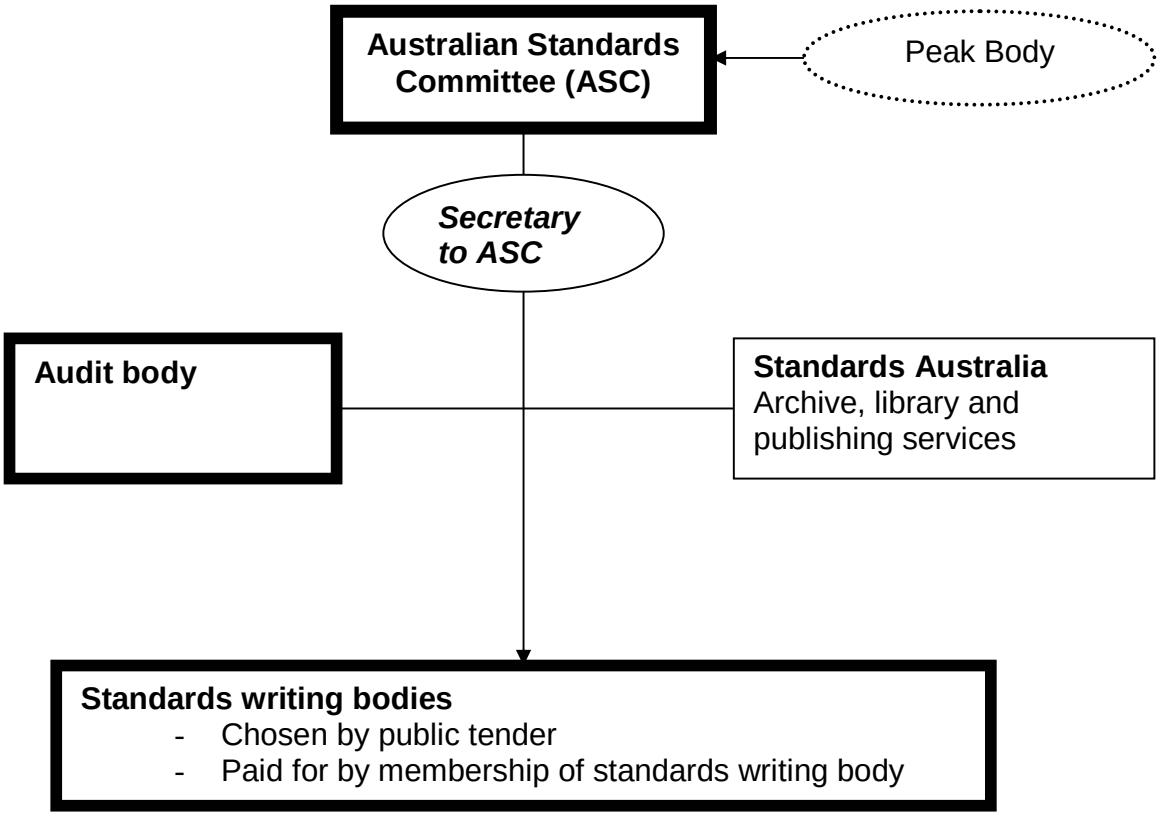
This new approach would however see Standards Australia forced to conform to open, accountable and technically rigorous standards writing processes and measures. It would eliminate the potential for closed-shop committee behaviours and outcomes that are biased towards particular industry participants or players.

The peak body would administer and consider only Mandatory standards. There is no point, in the view of this submission, for the existence of standards that are voluntary or which are only promulgated in limited numbers of States and Territories.

In diagrammatical form the new standards setting structure could look like *Figure 1*. below

Figure 1.

New Australian Standards Setting Structures



Conclusions of this submission

This submission provides direct evidence of the inefficiencies and lack of effectiveness of the current standards setting process.

The current monopoly authority of Standards Australia is directly challenged in the context of the objectives of society and industry in Australia today. Standards Australia is shown to be producing outcomes that are not open to appropriate public or industry scrutiny or input and which do not appear to lead to effective and technically meritorious standards.

The opportunity for subversion of the current standards setting process is identified and explained. The loss of efficiency and effectiveness of standards that can result from this is demonstrated.

Society and industry objectives in the setting of standards, whatever they may be, are shown to be unlikely to be best achieved using the existing monopoly structure and authority vested in Standards Australia and a more appropriate structure is proposed.

Little detail of the interrelationships between the public, society and industry – and the standards setting process is expressed in this submission under the proposed new structure.

The new structure is simply proposed as a method of demonstrating that there are clear alternatives to the current processes and structures and that by their very nature they will lead to more efficient, effective and open achievement of society and industry objectives – including reduction of costs to governments.

This submission does not address in any substantive manner the laboratory accreditation processes that are also the subject of the commissions study. However, it is likely that similar outcomes could be being delivered by the current laboratory accreditation processes, for the same reasons as given above.

It is likely therefore that the same new structure suggested in *Figure 1.* above, could accommodate a revised laboratory accreditation services model that would lead to more effective and efficient delivery of society and industry objectives.

Dated April 19, 2006

Andrew Israel
Managing Director
Fans Direct Pty Ltd

Appendix 1.

This Appendix accompanies and should be read in conjunction with the submission by Fans Direct to the Productivity Commission Study on Standards and Accreditation.

A Division of NuAire Pty. Ltd.
ACN 087 430 715 ABN 80 087 430 715

FANS Direct

Mr Boris Krastev
Projects Manager
Standards Australia
GPO Box 5420
Sydney
NSW 2001

Cc: Mr Colin Blair
General Manager Building and Utilities
Standards Australia

October 15th, 2004

Dear Boris

Re: Response to Ruling RUL AC.1-2004

Firstly let me begin this response by thanking you, Colin and Simon for your professional approach to this issue. It was gratifying that common sense prevailed in the original withdrawal of the ruling RUL AC.1-2004, and we have a high level of confidence that the position detailed in this response will continue to justify your actions in this regard.

The enclosed response to the ruling, and the issues raised by it, is split into 2 parts. Part 1 deals with the ruling and our response to it. Part 2 deals specifically with the broader issues it has raised in relation to AS/NZS 1668.1.1998.

Taken together the two Parts will ideally achieve 2 separate but consistent results. The first result should be the permanent withdrawal of the ruling RUL AC.1-2004. The second result should be the clear identification of some of the issues we believe need to be considered by ME-062 in the preparation of the next draft of AS/NZS 1668.1.

As a consequence of the need to firmly establish the merits of our arguments in the eyes of the relevant parties, we have used direct language in this document. However, we wish you to understand that regardless of the language used, we do not seek to offend any individual, any members of ME-062, nor Standards Australia itself. We are simply stating a strongly held position. We are hopeful that the relevant parties can see the merit in our arguments and not be distracted by our choice of words.

Indeed, subsequent to the first conversations with Simon and yourselves, we have appreciated the fact that all parties are honestly and earnestly seeking to arrive at an appropriate outcome. This professional, objective and courteous approach from you and Simon has actually given us good reason to temper our response. For this we are very grateful.

A Division of NuAire Pty. Ltd.
ACN 087 430 715 ABN 80 087 430 715

Finally, this is a lengthy document. Of course this is appropriate given the serious nature of the issues raised. However, we wish to take this opportunity to thank you and the committee in advance for your patience in dealing with the issues raised and our wordy responses to them.

Of course we expect a number of questions from you once you have read our responses. The committee may also require clarification of the meaning, wording or potential impact of some of the arguments developed in the document. Some objections to our positions may also become evident.

We would therefore be disappointed not to have an opportunity to engage in the subsequent discussion of any objections, and to discuss your responses to this document prior to any further decisions being made by the committee or Standards Australia; either with regard to the ruling that has been withdrawn, or to the operation or effect of the Standard.

We now look forward to hearing from you in this regard especially, once you have digested and considered this document and its contents.

Yours truly,

Andrew Israel
Managing Director
Fans Direct

Confidentiality Clause.

This letter and document have been prepared and submitted in good faith based on the information available to Fans Direct at this time. This information does not include the original request(s) for the ruling that is in dispute at this time. This information and the exact number, nature and content of the conversations and correspondences between the relevant committee, its members, employees of Standards Australia and requesting party(s) is not available to us.

Any and all information presented in this letter and accompanying document is to be treated with and held in strictest confidence by those parties to whom it is addressed and it is not to be reproduced in whole or in part without the express written agreement of Fans Direct. Members of Committee ME 062 are assumed to be addressees to this letter unless they have direct employment, commercial or other links to Elta or Fantech.

A Division of NuAire Pty. Ltd.
ACN 087 430 715 ABN 80 087 430 715

Part 1. RESPONSE TO *Ruling RUL AC.1-2004*

Introduction

It is our understanding that the ruling in question was arrived at after a number of discussions between various parties; namely Paul De Bruin of Fantech, Simon Hill of ME-062 and Boris Krastev of Standards Australia.

This immediately raises the question as to whether Paul was acting in his capacity as an employee of Fantech (Elta UK is the parent or holding Company in this regard), or was he otherwise acting as a concerned individual or as a member of an Industry or other interested body?

Our current assumption is that he was acting in his capacity as a senior employee of Fantech Pty Ltd. If this is not the case we would of course wish to learn of the correct position he stated on his request for a ruling, so that we could redraft our response in a more correct manner if this was appropriate.

It is worth noting, particularly in the context of the origin of the ruling, that Fantech are the dominant supplier of HVAC ventilation fans in the Australian and New Zealand markets. Fans Direct is the only consistent market presence as a competitor to Fantech in its entire HVAC customer markets in Australia and New Zealand.

In particular, to the best of our belief, there are no suppliers of Smoke Spill fans certified to AS4429 other than Fantech and Fans Direct in all these markets who have, use or promote the latching/fail open devices referred to in the ruling.

At no time between the discussions held between Paul de Bruin and others, and the promulgation of the ruling, was input asked for, or verification of the concerns of Paul De Bruin sought, from Fans Direct. Despite this fact it is our understanding that direct reference was made during those conversations to a Fantech competitor being the originator and user of the fusible link-device method.

In these circumstances it is very easy to understand why we were so distressed to only learn of the existence of the ruling via receipt on the fax machine, from a customer, of the Fantech article detailing the ruling that had been made, and promoting the fact that only Fantech could supply the (ruling) approved devices.

We have taken the liberty of including the ruling itself here *(in Italics)* for ease of reference. If you wish to view the Fantech article we are referring to, please contact Max Lane, General Manager, or Paul De Bruin of Fantech. We believe they have also posted this information on their website.

A Division of NuAire Pty. Ltd.
ACN 087 430 715 ABN 80 087 430 715

RUL AC.1—2004
Ruling
Rulings to ventilation and airconditioning Standards
Ruling 1: Use of discharge damper latching devices
(Ruling to AS/NZS 1668.1:1998)

Clause 2.4.7 Non-return discharge dampers
Enquiry: Do the following three design arrangements comply with the requirements of the Standard?

1 Manual release damper latches (typically for dedicated smoke spill fans). When fan is started up damper flaps will lift and be in the open position. Closure of damper flaps is by way of manual release of latch at or near the fan.

2 Electric damper latches (typically for dual purpose ventilation/smoke spill fans).
Ventilation mode: electric latch release device is continuously powered so latches are disengaged and discharge dampers will lift open and drop closed when fan is turned on and off respectively.
Smoke spill mode: electric latch release device is de-activated, spring return engages latching which will hold the discharge dampers in the open position if fan stops running.

3 Fusible link latching design. Damper flap latching involves a fusible link with a cable attached to the damper flaps at one end and a weight at the other. The fusible link is situated within the windband on the discharge side (roof side) of the fan cowl. This design requires hot gas/smoke (to be present at the fan discharge) to melt the link, which would then allow the weight to drop. The weight and cable assembly would then hold the dampers open.

Ruling: *Manual release damper latches and electric damper latches comply with the requirements of the Standard which is: '…dampers installed on smoke spill systems shall mechanically latch open or be arranged to fail open during system operation'. The above requirement addresses smoke spill systems or dual purpose systems operating in smoke spill mode and both arrangements have the provision of latching the dampers during system operation and in smoke spill mode.*

Fusible link latches whether powered by weight, spring or other form of stored energy, may not be able to ensure that the damper is latched open at system failure as the temperature at the discharge damper may not be sufficient to activate the fusible link and to enable damper latching.

End of Ruling

Having established what we believe to be the background to this ruling, we will now seek to show cause why the ruling should be permanently withdrawn.

Part 1A. Flawed Processes Irrevocably Compromise the Ruling

It is comparatively easy in the context of the events described in the Introduction, to make out a very strong case of inappropriate and prejudicial bias in the formulation and promulgation of the ruling. This is not a statement intended to offend any party. It is a simple statement of the result created by the processes adopted in arriving at the ruling.

A Division of NuAire Pty. Ltd.
ACN 087 430 715 ABN 80 087 430 715

Had the committee taken the opportunity to objectively assess the request for the ruling and its origins in the competitive market place, it would no doubt have caused the committee to ask for comment from Fans Direct and other parties before any ruling was formalised or promulgated. The failure of the process to do so in this case immediately permits Fans Direct to claim that the ruling is prejudiced and that it must be permanently withdrawn.

This is a simple argument. If the ruling process is faulty, regardless of any merit it may have contained in it, then it must be withdrawn. However, we have heard discussion from various parties since learning of the ruling, that we may have no rights to claim that this should be the correct position on the processes that should be followed by Standards Australia and ME-062 on this matter; Especially in regard to our clearly expressed expectation of fairness and involvement in the discussion on the request for a ruling or in the formulation of a ruling.

Boris Krastev recently pointed us in the direction of *SG-013-Publications of Lower Level Transparency and Consensus*. This document contains a very brief outline of the various processes that can occur in relation to Standards and other publications. It contains a couple of points worthy of note in respect of this response to the ruling in question.

A. In section *1.3 Selecting the right option*, we see that there are a number of concerns expressed in relation to the development and publication of lower level transparency documents. We refer you specifically to the highlighted sentences in bold, below…

1.3 Selecting the right option

In some situations, a document supported by a lower level of consensus and transparency, resulting from a simpler and much quicker process, will meet the needs of stakeholders, provided that the document is clearly differentiated from an Australian Standard.

While there is some level of risk with documents that have this lower level of transparency and consensus—a document may be incomplete (e.g.. it may not address all valid technical solutions) or it may be biased in some way (e.g. it may be slanted towards the views of one sectional interest)—the consequences of those risks can be minor. *For example, the document may only be explanatory in nature to assist readers in using an Australian Standard and, in such cases, the Standard will always be the principal point of reference and the supporting document will not introduce any additional measures. In the case of some documents, the content is simply public disclosure of information, such as a list of accredited gas cylinder test stations.* ***Alternatively, it could be that the risks of incompleteness or bias are outweighed by the risk associated with any delay. Examples could include the identification of a new hazard to health and safety and steps to deal with it need to be put in place as soon as possible;*** *or when a new technology has emerged and there are significant benefits in industrial efficiency in having guidelines in place at an early stage.*

The various products described in this Standardization Guide are tailored to the different needs of users who, for whatever reason, require documents that do not meet the strict requirements of a national standard.

Fans Direct argues that sectional interests (Fantech) were in fact seriously advantaged by the ruling, and that Fans Direct was therefore seriously disadvantaged by the ruling, in contravention of this element of Rulings' guidelines.

Any potential risks to public health that might otherwise justify such a bias on behalf of a sectional interest are not explained, justified or examined in the ruling. If they were to be used as a justification for such a bias being needed, then a clear analysis of likely failure modes and effects for all 3 devices should have been present in the ruling to explain any such "appropriate" bias - in terms of the relevant guidelines.

As we shall show later in our responses, the ruling may unintentionally ignore real or potential risks posed by those devices that are given the "all clear" in the ruling.

B. In section *7. Rulings and Interpretations*, there again appear to be strong grounds for the ruling to be withdrawn. This is because the ruling appears to go well beyond the guidelines set down as to the purpose for which they are intended. We have included the relevant clauses here for clarity once again…

7.1 What is it?

A Ruling is a publicly available document providing clarification on a technical matter relating to a Standard, (including adoptions of ISO or IEC Standards), the official meaning of a Standard's requirements, or the applicability of Standard to a specific practical situation. Rulings do not contain additional normative requirements since these are published as an amendment to the Standard.

Rulings are country specific, i.e. separate rulings have to be issued for Australia and New Zealand when the subject is a Joint Standard.

7.2 What is the Process?

Standards Australia may be asked to provide clarification on a technical matter relating to a Standard, the official meaning of the standard's requirements, or the applicability of the Standard to a specific practical situation. The enquiry is circulated to the responsible technical committee for assessment and resolution. Once the answer to the query is agreed upon and supplied by the committee, a formal response is sent to the person who made the initial enquiry. Generically such 'one-off' responses are termed ***Interpretations*** *and apply to matters that are not regarded as having a wide area of application.*

When a committee provides an interpretation on a matter that has a wide area of application but does not contain specific requirements suitable for inclusion in the relevant Standard, the committee may decide to publish the interpretation as a ***Ruling****. Rulings are formally endorsed by the relevant committee either by mail or at a committee meeting. In certain circumstances formal agreement on Rulings is also sought from the appropriate authority.*

"…" A Ruling may be withdrawn following the revision of the relevant Standard if the matters referred to in the ruling have been clarified in the new edition of the Standard.

A Division of NuAire Pty. Ltd.
ACN 087 430 715 ABN 80 087 430 715

i. When reading these clauses and comparing their stated intention and effect to the ruling in question, it is appears clear that the ruling is actually ***normative*** in its impact on the Standard. In this case, regardless of the merits or otherwise of the information contained in the ruling, it fails the test of what constitutes a valid ruling. I draw your attention to the sentence in Italics below; contained in clause *7.1 What is it?*

"*Rulings do not contain additional normative requirements since these are published as an amendment to the Standard."*

The content of the ruling in question could hardly be interpreted as anything other than a normative requirement. It is clearly prescriptive, not interpretive or descriptive. It seeks to define a 'standard' that must be met and it excludes certain designs and approves others for inclusion in the operation of the Standard. In this case the ruling guidelines and processes require an amendment to the Standard, not a ruling at all, and the ruling itself must be withdrawn.

ii. We also draw your attention to the following sentence in *7.2 What is the Process?..*

"*When a committee provides an interpretation on a matter that has a wide area of application but does not contain specific requirements suitable for inclusion in the relevant Standard, the committee may decide to publish the interpretation as a* ***Ruling****."*

This is effectively the corollary to the normative requirements element of rulings and interpretations as stated above. The ruling in question clearly contains specific requirements that, for the sake of this illustration of the purpose of rulings, would normally be considered suitable for inclusion in the Standard.

The ruling is a prescriptive engineering and design statement, which means that, a specific norm for such devices as mentioned in the ruling, has been set. In both cases i. and ii. above therefore, the ruling is invalidated and a process of amending the Standards should be used instead.

We would also argue that regardless of what the SG-013 document says in respect of the broad authority of a committee to issue rulings such as the one in question here, we have clearly demonstrated in this document a process and a result that could not be claimed to meet an objective test of equity, fairness and opportunity.

This is in contrast to the publications on the relevant website at ….
https://committees.standards.com.au/POLICY/SG-001/STANDARDIZATIONGUIDE-SG-001.HTM

These publications specifically identify that the processes and procedures surrounding Standards are designed to ensure that all affected and interested parties should be able to participate in the formulation of Standards, either by direct participation or through the efforts of individuals representing industry, community or other bodies; acting in the interests of all of their constituents.

The processes followed in arriving at ruling **RUL AC.1—2004**, as we have shown in various examples above, did not achieve this objective.

A Division of NuAire Pty. Ltd.
ACN 087 430 715 ABN 80 087 430 715

Therefore they do not appear to pass the test of meeting the organizations own standards and objectives for participation and equity, and benefit to the community they are designed to serve.

It must be stated here that it is a very strong endorsement of your professional integrity as individuals and as an organisation, that in the absence of any conflicting documentation or submissions from other parties apart from Fans Direct, you agreed to withdraw the ruling at this point in time.

This action alone demonstrated to Fans Direct that you are willing and able to make decisions based on equity, fairness and due process, and also that there is merit in our arguments that deserves consideration.

Of course if any new ruling or amendment is to be fairly formulated and promulgated it should now be necessary for the committee to hear from a broad spectrum of potentially affected parties, not just Fans Direct or Fantech, in order to arrive at a position that is consistent with the philosophy, objectives and operation of Standards Australia and the Standard in question.

To finalise this element of our response:

We cannot emphasise too strongly the seriousness of the current situation. It is very important in our view that Standards Australia, and ME-062, understands that a serious misadventure in the rulings process has occurred and that as a result the ruling is impossibly compromised and must now be permanently withdrawn.

Any response from Standards Australia that does not lead to this result in the first instance would need to be extremely clearly detailed and convincingly justified in order for us not to continue to pursue this matter; regardless of any *technical* merits of any responses that may come back from the committee.

Turning then to the merits of the ruling….

Part 1B. (i). Challenges to technical and other elements of the Ruling

1. Scope and language of the ruling

The ruling mentions 3 devices requested to be ruled upon. In the case of the first 2 devices (manual release damper latches and electric damper latches), the ruling makes no attempt to assess conditions or circumstances under which these 2 devices can fail and otherwise not achieve the stated objectives of AS/NZS 1668.1.1998 during smoke spill system operation.

The ruling language appears to accept what we have assumed are the formal and informal submissions from the requestor, Paul De Bruin, that these devices operate correctly under smoke spill system operation at all times. To our current knowledge there was no request for proof of these claims.

A Division of NuAire Pty. Ltd.
ACN 087 430 715 ABN 80 087 430 715

We base this statement on the fact that no request for proof of operation of the 3rd device reviewed, the fusible link device, was made to Fans Direct. If it had been we would have been in a position to understand the process that was then in train. We would then have been able to provide our own input into the process and have a direct impact on any ruling or amendment to the Standard that may have been arrived at.

As this did not occur we are assuming it also did not occur with respect to the Fantech devices. If however this process did take place with Fantech then it would be further proof of unintended bias.

It is in fact our view that the first 2 devices are certainly not adequately 'tested' in the language of the ruling, yet they are accepted. This leads to the publication of what we believe is a technically flawed opinion.

The tone, structure and content of the language used in the rulings on the first 2 devices is in stark contrast to the language of the ruling on the 3rd device reviewed, the fusible link device. Once again, as in Part 1A, there is therefore an implied, if not expressed, bias in the ruling against the fusible link device.

Just as for rulings on devices 1 & 2, there is of course no test method and test standard referenced in the ruling on the fusible link device, and there is no proof offered that the opinions as expressed were developed after scientific review of the performance of the devices and the application of the observed or verified evidence to the objectives specified in the Standard.

It would very much appear therefore that the language contained in the ruling is lifted directly from the original request for the ruling, without a truly objective assessment as to the merits of the language used, the operation of all 3 devices and designs involved, and the stated objectives and logic contained in the Standard.

This is in stark contrast of course to the very detailed and well-expressed standards laid out in AS4429 for example, detailing the performance standards and test methods required for certification of Smoke Spill Fans themselves. AS/NZS 1668.1.1998 too, contains detailed test methods and performance standards to be met for various items and elements, and yet the same level of proof is not apparent for devices referred to in the ruling.

It strikes us as odd in the extreme therefore that if the fans themselves can be assessed and certified for conformance relative to the objectives and Standards of AS/NZS 1668.1.1998, then why too cannot the fail safe open devices contained in the ruling also be tested?

As stated above, this 'tested' approach was not adopted in the ruling and there is no discussion or reference to this thought process in the ruling. This is clear evidence in our view that the ruling is based on a too-narrow view of the wording of the request and the discussions held prior to publishing it. The ruling fails to adequately consider the objectives of the Standard to which it refers and the standards of proof that should be required in the application of it.

A Division of NuAire Pty. Ltd.
ACN 087 430 715 ABN 80 087 430 715

Certainly, AS/NZS 1668.1.1998 talks about the need for a manufacturer to assure themselves that the device they use will function in accordance with the requirements of the Standard. Taking this action would surely meet the deemed-to-satisfy needs of the Standard, especially in the absence of other methods or certification standards being required by AS/NZS 1668.1.1998, for these devices.

However, the ruling does not address these points. Surely it must do so if it is to adequately explain why a ruling is required and what effect it should have on the design and function of all such devices, not simply those on which the ruling was sought. Of course, in this case a ruling of this nature would take on the function and purpose of being an amendment to the Standard, and the ruling itself would not be published.

The actions of the committee in publishing the ruling appear to invalidate the specific element of AS/NZS 1668.1.1998 to which it refers, and the associated processes and documentation standards, without replacing it with a verifiable test method and standard of performance.

The action in publishing the ruling in this form also appears to lead to the making of new Standards policy in isolation from, and in apparent conflict with, the complete objectives of AS/NZS 1668.1.1998.

These are strong words, but they have a purpose. If rulings are to be held as 'infallible' interpretations of the Standard, as this one was originally put to us in terms of the defence of it, then this infallibility needs to be verifiable. This is not possible in this specific case.

To go further down this important path, what design advice or evidence did the committee consider in reaching the conclusions drawn in the ruling? How was each design assessed for conformance to the requirements of AS/NZS 1668.1.1998?

As stated previously in Part 1A. above, the ruling as it was made has the appearance of a design review and approval process, without the necessary objective test methods and performance standards that would ordinarily attach to such an assessment and approval process.

By contrast again, AS4429, for example, gives a very definite set of proofs, methods and processes that must be independently witnessed and verified before certification is issued for a Smoke Spill Fan. The fail-safe open devices face no such test, other than the deemed-to-satisfy requirements, which are at the manufacturers discretion.

The ruling therefore sets itself up as a design approval forum, where no such design review appears to have occurred to a reasonable and measurable level of proof.

Is this the purpose of a ruling process - to pass judgement on designs in the absence of the manufacturers advice? We very much doubt that this was the intention of the committee in promulgating the ruling, but it is its effect.

So, how should any ruling have been worded at that point in time?

A Division of NuAire Pty. Ltd.
ACN 087 430 715 ABN 80 087 430 715

Any ruling or amendment to the Standard would most likely have served its best purpose if it did not in fact make a ruling on the devices in question, but instead required manufacturers to provide proof to a specified standard of test method and performance; that the devices used met the fail-safe open (FSO) requirements evident in the objectives of the Standard.

If it was not possible in the context of the ruling process to deliver this result then the committee was surely required to meet and define any new such methods and standards, as it should for all other appropriate elements contained in AS/NZS 1668.1.1998. A new draft Standard or an amendment to the existing Standard should then have been formulated for comment.

To leap straight from consideration of a narrow issue received from an interested party, to design approval as expressed in a ruling, without going through a rigorous process of review and standard setting against a reliable test method, is, to the trained eye, a process prone to error and one likely to fail to achieve its intended outcome.

All of these elements taken together, and singly, provide yet more compelling reasons for the ruling to be permanently withdrawn. Let us now further review the technical merits of the devices in question.

2. Review of the first 2 devices

Having made the points above it is appropriate to illustrate why they reflect our beliefs. To this end we will now review the first 2 devices for our assessment of their ability to fail open as required by the Standard, in order to demonstrate our concerns more clearly.
Let us take the first device, the mechanical latching device.

2.1 Mechanical Latching Devices

The ruling states the device is intended to operate by holding the non-return discharge damper flaps open when the fan operates. It must be manually reset every time the fan operates assuming the device functions during smoke spill system operation.

How does this device function?

In terms of the equivalent designs tested by Fans Direct, the device requires that the discharge dampers reach a pre-set height from their resting or non-operating position; in order to be “latched” open by the mechanical device that performs this function. Once latched the theory is that the device cannot be unlatched accidentally, it must be manually reset by human intervention.

If you understand that roof mounted smoke spill fans, as for general roof ventilation and duct mounted fans, come in a very broad range of diameters, motor powers, speeds and impeller types and densities, you will understand that there is a very strong likelihood of the dampers on many fans not opening very far at all, let alone during a smoke spill event when environmental conditions within and external to the building may create additional forces acting to restrict the range of travel of the dampers from their resting position.

A Division of NuAire Pty. Ltd.
ACN 087 430 715 ABN 80 087 430 715

Our own testing led us to abandon the approach of using strictly mechanical latching devices, based on these concerns and based on analysis that showed that many smoke spill fans sold are low speed, relatively low power and relatively large diameter (usually a combination employed to obtain required airflow volumes at specified duct resistances and lower noise levels simultaneously).

When large diameter flaps are employed in conjunction with these types of fans, the flaps themselves, being relatively heavy, often do not rise to sufficient height to enable effective latching to be reliably obtained. The use of aluminium and other lightweight damper materials does not lead to a dramatic improvement in success rates.

Under smoke and fire conditions it was therefore considered that this approach (mechanical latching) did not meet the reliability and deemed-to-satisfy criteria contained in AS/NZS 1668.1.1998.

We do not know what the actual design of the Fantech unit is in this regard, but our opinion would be that that design would not meet the operational reliability criteria across all fans in the available diameter, power, motor speed and blade combinations.

This logic, looking at motor power versus diameter versus weights of dampers and likely environmental factors, does not appear to be present in the ruling.

Our opinion, regardless of this particular shortcoming in the ruling however, is that the mechanical latching device therefore fails the standard of proof evident in the ruling itself, with respect to the likely ability to meet the requirements of the Standard for this device to FSO.

2.2 Electric Damper Latches

Similarly the second device, the electric damper latching device, in our opinion has obvious flaws of application in many of the same areas as for the first device we reviewed in the last few paragraphs, but the reasons for them being a cause for failure against the specified clauses in AS/NZS 1668.1.1998, may be slightly different.

How does the second device function?

If we do in fact assume that the electric damper latching device actually operates during a smoke spill or fire event, we should also look at what its limitations are in terms of assessing whether or not it truly fails open.

Using the same fans as described in the mechanical latching example above, the electric latching device will only theoretically latch the dampers open at the point of highest rise of the dampers during system operation – at the time of failure.

In many instances this will mean that dampers are only ‘slightly’ open. There is an implied intent in AS/NZS 1668.1.1998 that open means “fully open”. This is certainly the clear wording and intent of the clauses in the Standard that reference smoke and fire dampers.

A Division of NuAire Pty. Ltd.
ACN 087 430 715 ABN 80 087 430 715

The electric damper latching device will not achieve this result in every event, if for any event, and certainly not for every fan it is applied to.

If this “fully open” definition of fail-safe opening is the intent of AS/NZS 1668.1.1998, and it is used to assess whether or not a design or device is acceptable, then this electric damper latching device does not meet that criteria.

This device also should therefore be “not approved” according to the standards of proof evident in the ruling, and in the intent and wording of the various clauses of the Standard.

Actual device function versus the method of device function claimed in the ruling?

One more very important issue in relation to this electric latching device is the actual nature of the function of the Fantech device as described in the ruling, versus the nature of the same (?) device described in both the Fantech catalogue and the relevant Patent documentation available in respect of the said device; its function and its application to smoke spill fans.

A simple reading of these 3 documents appears to show a major discrepancy between the function of the device as described in the ruling and the function of the device as described in both the Fantech catalogue and patent literature.

The ruling does not appear to describe the true mechanism of operation of the Fantech device as claimed in Fantech’s literature. In fact, it could be construed when reading the Fantech documentation that the device actually functions in the reverse manner to that described in the ruling.

It may well be of course that Fantech have recently modified their device or recognised a flaw in the logic of its operation, and replaced it in their fan systems, but this is not explained in either the ruling or the very new Fantech catalogue to the best of our belief.

It would be sensible to argue on this basis alone therefore that the ruling is compromised and it should be withdrawn. Of course we could be wrong in our interpretation of the wording of the ruling, but our several readings of the available literature does not appear to provide a consistency of function of the device.

Of course we are making a broad assumption here that electromechanical devices used in smoke spill and fire events in the airstream of a vertical discharge fan do not fail for reasons associated with either electrical failure or mechanical failure due to heat or mechanical distortion of components.

We also cannot currently hold these devices to that test because there is presently no test method or performance standard stated in the Standard or the ruling that these devices are required to pass in terms of this application for such devices – beyond the deemed-to-satisfy provisions.

A Division of NuAire Pty. Ltd.
ACN 087 430 715 ABN 80 087 430 715

The arguments developed in our assessment of devices 1&2 should also have triggered another thought process in your minds. That is, what is the definition of "open" in terms of the intent and effect of a smoke spill fan in the smoke spill system?

Rather than deal with this issue here however, we will leave that discussion to Part 2 of this response. That part will deal with those issues that we believe will aid in the development of a more effective and better-defined AS/NZS 1668.1.

Conclusion on devices 1&2

We believe, based on the assessments of the first 2 devices we have described herein, that the ruling is shown to be substantially deficient in logic and proof, and without due consideration being given to the holistic elements that go into assessing whether or not a device or design will meet the intent of the Standard.

3. *In contrast to the Fusible Link device*

If you look closely at our assessments of these 2 devices and contrast their mode of operation and potential failure to "fail open" during system operation; with the 3rd device, the fusible link device, then a different story emerges in favour the 3rd device – which is a very strong endorsement of its ability to achieve the intent and objectives of the Standard.

The fusible link device is a weight, held in place by the fusible link, that, on activation drops into a position holding the flaps fully open, no matter what diameter the fan is, no matter what motor power the fan is and no matter what the airflow of the fan is. The only requirement for it to operate is that during system operation the temperature of the vertically discharging air-stream rises above 72 degrees Celsius.

The device can also be modulated, by varying weights attached, to ensure that the flaps will only fail fully open if the fan has actually successfully run during a smoke or fire event and the fusible link is activated. This is a subtlety of operating logic that may aid future system designers.

If the temperature of the airstream does not rise above 72 degrees Celsius for some reason then in effect the fire or smoke event is behaving as it would for a fan system equivalent to a sprinklered building in terms of the wording and intent of the Standard. In this case no fail-safe open device is required for the smoke spill fan non-return discharge dampers.

In smoke spill system mode therefore the fusible link device will always operate to the intent and objective of AS/NZS 1668.1.1998. This is in dramatic contrast to the likely performance of the first 2 devices mentioned in the ruling.

In Part 2 of this response we will go over a little of this ground again from the perspective of smoke spill fan failure and the European approach to it. The European approach appears to contain a requirement for fans to fail closed. Fail-safe open devices are not called for.

A Division of NuAire Pty. Ltd.
ACN 087 430 715 ABN 80 087 430 715

This leads us now to the direct defence of our position with respect to the fusible link device itself.

Part 1B.(ii). Defence of the Fusible Link device according to AS/NZS 1668.1.1998

AS/NZS 1668.1.1998 has 2 specifications for fan performance in relation to smoke spill systems. The first is for 200 degrees Celsius fans to operate for 2 hours according to type test certifications of those fans to AS4429. In the case of these fans there is no requirement for the fan to have fail safe open devices on non-return discharge dampers.

The expressed logic for this position is that buildings using these certified fans must be sprinklered and therefore the temperature of any smoke or fire event is likely to be “low”.

In fact the *Australian Building Codes Board BCA 2004 Volume One* reference, on *page 287*, when dealing with “*Specification E2.2b Smoke Exhaust Systems*”, details in *3(a)* that the 200 degrees Celsius fan only needs to achieve 200 degrees Celsius operation for not less than one hour, not 2 hours as required by AS4429.

We make this point to show that the BCA focus is on temperature and the relatively short interval of time they specify for a fan to operate before they expect temperatures to rise to levels above those that humans can safely tolerate.

The second requirement is for 300 degrees Celsius fans to operate for 0.5 hours according to type test certifications of those fans to AS4429. In the case of these fans there is a requirement for the fan to have fail safe open devices on non-return discharge dampers.

The expressed logic for this position is that buildings using these certified fans are not sprinklered and therefore the temperature of any smoke or fire event is likely to be “high”. *(See C2.4.7 page 16 of AS/NZS 1668.1.1998.)*

Unfortunately there is no definition of what constitutes high or low temperatures in AS/NZS 1668.1.1998. However it is entirely reasonable to believe that the fans exposed to a fire and smoke event in a non-sprinklered building will face temperatures in excess of 72 degrees Celsius in the vertical discharge air stream.

We can take a direct quote from AS/NZS 1668.3-2001 on Hot Layers here in establishing why we hold this belief.

1.6.9 Hot layer

A buoyant layer of hot smoky gases contained by a ceiling or roof above it, and characterized by a relatively clear smoke-free zone beneath it.

A Division of NuAire Pty. Ltd.
ACN 087 430 715 ABN 80 087 430 715

The Standard makes specific reference to Hot layers in describing why smoke spill systems need to function in a specified manner. Hot Layers occur at the ceiling line of a building or compartment in which a fire occurs. In the case of smoke spill system operation it is reasonable to assume that the point at which the hot layer is “hottest” therefore is the point of entrapment directly below the roofline or below the fan or the ducted fan inlets that exhaust the gases from the compartment or building, to the atmosphere.

This means that all else being equal, a roof mounted smoke spill fan will see the hottest part of an event during its operation, meaning that the fusible link will also see these same temperatures. Provided those temperatures are above 72 degrees Celsius the fusible link will operate and the smoke spill fan flaps* will remain fully open during operation and after failure of the fan.

Note on terms used to describe non-return or weather flap discharge dampers.

For the sake of clarity and effect we will now introduce an element of definition in the scheme of the operation of our fans and the relationship to the terms used in AS/NZS 1668.1.1998.

The Standard consistently refers to non-return discharge dampers. The flaps on all of our vertical discharge fans, whether smoke spill or not, are not in the true sense of the word, ‘non-return’. They are in effect simple weatherproofing devices that stop rain and some animals from entering the fan itself. They are not sealed or otherwise held in place to affect a non-return or no-backflow condition. If the strict interpretation of “non-return discharge dampers” is used then the fans we provide actually do not require the use of fail-safe open devices. This would also seem to be true for all Fantech smoke spill fans using weatherproof dampers.

If we take the logic of the fusible link device a little further we can in fact see a potentially significant reason for this approach (air leakage past the dampers or flaps from the duct or compartment or building) to be employed in all smoke spill fan systems.

In this case if the smoke spill system fails to operate and there is a fire event, then the fan and smoke spill ductwork may operate as a natural channel for heat and smoke to egress the compartment and/or building. In this case an air stream temperature above 72 degrees Celsius will be seen by the fusible link due to exhaust gases exiting the non-airtight weatherproof dampers and passing over the link.

The link will then operate and the weatherproof flaps will open. Neither of the first 2 devices referred to in the ruling meet this standard of performance in the event of a smoke spill system failure occurring prior to the smoke spill system being activated (for example due to a failure resulting from an explosion or fire in the switchboard itself).

It is now instructive to look again at the logic of the ruling, in contrast to the logic being provided here and in both AS/NZS 1668.3-2001 and AS/NZS 1668.1.1998.

The ruling as written would mean that the Standard requires fail-safe opening on smoke spill system operation or activation regardless of the circumstances of the event.

A Division of NuAire Pty. Ltd.
ACN 087 430 715 ABN 80 087 430 715

But this is not the fact or the logic expressed in the construction and wording of the Standard, especially with reference to the 200 and 300 degrees Celsius specifications for smoke spill fans to AS4429.

Initial discussions on the ruling with the relevant members of the committee appeared to indicate that the committee believed this logical interpretation of the Standard was wrong and that it was not the logic being expressed in the ruling; and that FSO devices *should* operate immediately on system activation, not *during* an event, regardless of event temperature or nature. However we firmly believe our position to be the correct one and we will further demonstrate this belief.

The adoption of any changed logic would substantially alter the thrust of the Standard and the specified requirements of the Standard for system design and performance.

The Standard currently explicitly accepts that a low temperature fire or smoke event does not require the smoke spill fan system and "dampers" to fail open. This is the logic that allows a 200 degrees Celsius to AS4429 fan to be used without fail open devices. It is also the logic that allows a 300 degrees Celsius fan to have its non-return discharge dampers fail open "during" system operation, not on system activation.

This focus on the word *during* is very important for a number of reasons. We believe that the committee got it right in the Standard and that they had assumed that some devices, such as fusible link devices used in fire dampers in smoke spill systems, would be applied in respect of FSO devices for flaps and non-return discharge dampers.

The logic of these devices (fusible links) is that they are "test-able", reliable and proven, especially in circumstances where their operation as non-return or no-flow activation devices is critical. They are not readily subject to mechanical failure, they are simple and they react to a definite and unique set of circumstances. They are not complex and they are easy to maintain.

They therefore have a high degree of reliability, are predictable when events themselves are not, and they are a proven technology path that delivers all of the objectives of the Standard in providing certainty in given event conditions.

The use of the term *"during"* therefore, rather than *"immediately upon"* system operation, clearly expresses our belief that it was always intended to permit the use of such devices that could detect, and react to, circumstances relating to the specific events being experienced. Events that required them to operate to achieve the objectives of the Standard – remote from and independent of other systems that could fail for reasons unrelated to the actual method of function of the FSO device itself.

It is accepted by the construction and wording of the Standard itself that low temperatures of smoke and flame exhaust gases due to sprinkler operation or a no-fire smoke event will ensure that the fan will operate long enough to enable all occupants to exit the building or compartment safely, which is the intent and objective of the Standard. In this case a fail-safe open device is considered unnecessary and is not required.

A Division of NuAire Pty. Ltd.
ACN 087 430 715 ABN 80 087 430 715

The ruling however does not take this logic and holistic approach into account when assessing whether a smoke spill fan with a fusible link will meet the objectives and intent of the Standard.

It is therefore our contention that fusible link devices, whether applied to a 200 degrees Celsius smoke spill fan or a 300 degrees Celsius smoke spill fan, meet every objective and intention of the Standard.

If there is a fire or smoke event that threatens the integrity of the smoke spill fan itself due to the existence of temperatures above either 200 or 300 degrees Celsius, the fusible link will operate – every time. In fact, above 72 degrees Celsius the link will operate regardless of the final temperature of the exhaust air stream.

Further to this action, it will also ensure and assure that the maximum possible opening of the duct at the point of exhaust to atmosphere is obtained regardless of fan size, speed and weather conditions.

If there is no threat to the integrity of the fan and motor itself due to the absence of high temperatures, then the Standard clearly expresses the logic that in those circumstances the fail-open device is not required.

We believe that the reason for this position as expressed in the wording and logic of the Standard (200 versus 300), is that it was considered by the committee when writing the Standard that low temperature events are not such a threat to the integrity of the fan, and thus in theory to the occupants of the building or compartment, that the exhaust gas path is required to remain fully open during any activation of the smoke spill system and then during its potential subsequent failure.

A low temperature event (smoke or fire caused) in a non-sprinklered building or compartment is logically therefore effectively equivalent to a sprinklered building in terms of the needs of the operation of the smoke spill system. This also appears to be the focus of the BCA codes in this area, as previously stated. (See *Australian Building Codes Board BCA 2004 Volume One reference*, on *page 287*, when dealing with "*Specification E2.2b Smoke Exhaust Systems*", especially *3(a))*

The emphasis in the Standard is on temperature; dependent on the circumstances of building design, use, materials of construction and smoke/fire loads and the nature of the fire/smoke event itself that may occur.

Again restating the position expressed earlier, if the Standard did not intend this interpretation then it would also state that the fail safe operation must occur not only for any smoke spill fan regardless of whether it was a 200 or 300 degrees Celsius fan, but that the fail safe operation must occur instantly on activation of the fan in fire or smoke spill mode, as it currently does for smoke dampers. Instead the Standard uses the word "*during*".

These elements again define that the nature of the event itself will be the major determinant as to the need for the fail-safe opening (FSO) event.

A Division of NuAire Pty. Ltd.
ACN 087 430 715 ABN 80 087 430 715

Once again; the introduction of the logic as it appears to be contained in the ruling is therefore counter to the logic and wording contained in the Standard.

If the members of the committee disagree with our beliefs as to the logic contained in the ruling in this, or any other regard, then it would be helpful to have a written definition detailing the rulings logic and why our claims as to its apparent logic are not correct. We could then better understand the ruling and its basis and perhaps bring a sharper perspective to the issues raised in this response.

If the logic of AS/NZS 1668.1.1998 is subsequently held by the committee to be flawed due to this apparent conflict in the ruling between temperature of event and fail-safe logic, then the Standard itself must be amended.

If the Standard were to be amended to make its logic meet the logic of the ruling with respect to low temperature events, then all smoke spill fans would require fail-safe open devices regardless of their certification to AS 4429. In this case of course, there again would then need to be a specified test method and performance hurdle for all devices, regardless of design, to get over.

This is not the case at this time. The logic, intent and objective of the Standard are clear. The logic of the ruling is therefore in conflict with the Standard in this regard.

If the ruling is held to remain valid with respect to Fusible link devices, despite the clear conflict with the objective and logic of the Standard itself, then the ruling also needs to be re-issued to identify the flaws in the Standard with respect to low temperature events and effects. Of course, based on our first descriptions of the ruling processes we would maintain that the ruling itself was not the correct process or publication for achieving this outcome anyway.

Any replacement ruling, were there to be one, should of course also address the points made regarding the definition of non-return discharge dampers, the definition of “fully open” or “fail open” and the test methods and performance standards for acceptance of fail-safe open (FSO) devices in this context.

Any new ruling would also be expected to identify that the current (Fantech) devices, 1 and 2, may therefore not meet the requirements of the Standard taking all of these points together, or singly as they may apply to each device.

We will make 2 final points in defence of the use of a fusible link device in smoke spill fans.

a. *AS/NZS 1668.1.1998 Appendix D, Reliability (Informative)* states that *“Failure of a system, or component of a system, should not create a situation that is worse than if no smoke control system had been provided”*

   The fusible link device meets this fundamental requirement as well as the requirements of items (a) to (f) in this Appendix.

A Division of NuAire Pty. Ltd.
ACN 087 430 715 ABN 80 087 430 715

The fact that the device is simple, mechanical, not reliant on fan size, airflow, motor power or speed and not prone to failure over time if maintenance is not carried out to schedule, means that there are a number of specific valid reasons why this approach is more likely to have the desired and intended effect of the Standard, during smoke spill system operation, than either of the other 2 devices mentioned in the ruling.

b. There is also a further issue not addressed in either the ruling or the Standard that needs to be dealt with. We will develop the argument in Part 2 to this document but will mention the issue here. Smoke spill fans contain impellers comprised of various numbers of blades pitched at specified angles. The number of blades (blade density) and the pitch angle of any fan impeller will be a major determinant of the ability for exhaust gases to travel past the impeller in the event of fan failure.

Dampers or flaps of themselves therefore, are not likely to be a major factor in the performance of any smoke spill system where the fan motor has seized or the impeller is held stationary due to power failure or other cause. The critical determinant of performance is more likely to be impeller design and 'degree of openness'.

This issue is not addressed by AS/NZS 1668.1.1998. The European approach implicitly recognises the issue by requiring that smoke spill fans fail closed.
System design then caters for the failure of the fan, rather than relying on a device that may or may not operate in an event, in a fan system that may or may not allow exhaust gases to travel past a stationery impeller.

Put another way, just because a fan meets AS4429 or AS/NZS 1668.1.1998 does not mean it will permit exhaust gases to travel past it in the event of a fan failure.

Conclusions

We believe that we have demonstrated a number of critical points that require the ruling to be permanently withdrawn. These are restated in simple form here as;

1. The ruling process was incorrectly applied and the ruling therefore incorrectly published, according to the requirements applying to the publishing of such documents. If any document was to have been published it should have been as an amendment to the Standard itself, not as a ruling.

2. The ruling process itself was flawed, leading to a compromised and (unintentionally) prejudicial statement of opinion.

3. The ruling failed to provide a test or standard of proof for manufacturers to meet to satisfy the design opinions expressed in the ruling. As such it should not stand.

4. The ruling failed to objectively assess all 3 devices on their merits and to consider alternative views and opinions as to the merits and function of all 3 devices.

A Division of NuAire Pty. Ltd.
ACN 087 430 715 ABN 80 087 430 715

5. The ruling is a de facto design approval; in contravention it would seem of the requirements of the Standards Australia objectives. Further it would seem to be a design approval process without corroboration or burden-of-proof standards.

6. The ruling is not consistent with the logic and intent, expressed and implied, of the Standard. As such the ruling creates a de facto new Standard but leaves the old Standard in force and effect, leading to confusion and conflict.

7. The ruling focuses on a very loose description of the temperature the fusible link may see, without taking into consideration the operation of the smoke spill system it is operating within and the purpose for which the fan and system as specified is intended*.

**Note: In the case of 300 degrees Celsius specifications the Standard specifically refers to high temperatures of events in systems using these fans, as does the BCA in Part E2. There is therefore every reason to believe that fusible link devices will operate to the levels of performance expressed in the Standard – the reverse of the logic expressed in the ruling.*

8. A statement of test method and performance standard should be derived and published in any new ruling or Standard, in order for all manufacturers to assess their fan designs for adherence to the Standard. This should apply to all devices intended for the purpose of 'fail safe open' (FSO) operation in the event of a smoke spill or fire event in connection with a smoke spill fan.

In the light of the points made in this section of the document it is clear to us that the temporarily withdrawn ruling needs to be permanently withdrawn.

A Division of NuAire Pty. Ltd.
ACN 087 430 715 ABN 80 087 430 715

Part 2. Issues relating to AS/NZS 1668.1.1998 and future drafts

After reading Part 1 to this document you will be familiar with the points raised in this section. We have taken the time to re-visit them in this separate section however in order to remove them from the context of the defence of the fusible link device per se. In this way we are hopeful that the points raised in this section are considered solely on their merits.

Summary of points to be addressed

1. AS/NZS 1668.1.1998 does not contain complete test methods and standards of performance for assessing the performance of a fan and certain fan elements (e.g. FSO's) in the smoke spill system.

2. AS/NZS 1668.1.1998 does not spell out in the relevant clause the reasons for the difference in performance standards required between a 200 degrees Celsius for 2 hours certified smoke spill fan and a 300 degrees Celsius for 0.5 hours certified smoke spill fan, and in particular versus the need for a fail safe open mechanism.

3. AS/NZS 1668.1.1998 does not address the issue of what constitutes "open", "fail open" or "fail safe open" (FSO) standards of performance in relation to smoke spill fans.

4. AS/NZS 1668.1.1998 does not address the approach to be adopted by designers, especially, if they are unable to provide sufficient guarantees of a smoke spill systems' performance when incorporating a smoke spill fan.

Let us take each point in turn.

1. *AS/NZS 1668.1.1998 does not contain complete test methods and standards of performance for assessing performance of a fan in the smoke spill system.*

AS/NZS 1668.1.1998 deals with smoke spill fans that meet AS4429 in the context of a smoke spill system described in AS/NZS1668 itself. However there is no test method or objective performance standard stated that identifies to a manufacturer or designer what *else* the fan should achieve each time a fire or smoke event is experienced by a fan.

For example, there is no statement as to what constitutes an acceptable level of response of a fan or fan design to a requirement to Fail-Safe Open (FSO). The Standard only requires that a set of non-return discharge dampers on a 300 degrees Celsius certified smoke spill fan shall FSO *during* a fire or smoke event.

However, there is no statement as to *when* during an event this must occur and there is no definition as to *what* constitutes a successful FSO result. There is no test method or standard of performance identifying how to assess a fan against these criteria.

A Division of NuAire Pty. Ltd.
ACN 087 430 715 ABN 80 087 430 715

Further to this, what function must the non-return discharge dampers, or weatherproof flaps themselves serve in the performance of the smoke spill system? Is there an expectation that a smoke spill fan will have truly non-return dampers fitted, and under what circumstances?

If non-return dampers are meant to be installed to provide an air-tight control mechanism for fans in certain circumstances, then this should be specified, along with the logic for such an approach; and performance standards and test methods described or referenced in the Standard itself.

If the objective of a smoke spill fan in a smoke spill system is to mechanically exhaust smoke, particulate and hot gases during an event, then the Standard should deal critically and in-depth with what happens to the entire smoke spill system performance when a fan fails, under what circumstances that failure could occur, and what the smoke spill systems response should be to that failure. Again, there are no tests or performance standards with which to assess smoke spill fans in such systems against these sorts of criteria.

Should fan failure cause an otherwise redundant back-up system to operate to permit a guaranteed level of smoke egress etc to occur? Is this redundancy to be designed around passive non-mechanical ventilation approaches or should it be designed around powered fans where the source of power is isolated from the other sources of power in the building or compartment? If so, again, what are the test methods and performance standards that a system such as this must pass to satisfy the objectives of the Standard?

We understand that the committee has had this sort of discussion over the years, however a clear position on the issue of “redundancy based” systems should also be included in any new draft of the Standard; if only to ensure that the designer of the building or smoke spill system is fully aware as to what the system must do and how to ensure that this objective is met.

The points made above are not likely to be a complete list of the performance standards and functions that any smoke spill fan or fan system must meet, but they do serve to illustrate possible weaknesses in the current approach in the Standard.

2. *AS/NZS 1668.1.1998 does not spell out in the relevant clause the reasons for the difference in performance standards required between a 200 degrees Celsius for 2 hours certified smoke spill fan and a 300 degrees Celsius for 0.5 hours certified smoke spill fan, and in particular versus the need for a fail safe open mechanism.*

The logic of the Standard with regard to specifying when to use a 200 deg C fan or 300 deg C fan to AS4429 is very clear when the contents of the Standard are taken together, as we have demonstrated in Parts 1A and B above.

The intent and objective of the Standard however, does not appear to be spelled out adequately in the applicable clause dealing with the various fans in questions. Our interpretation of the language of the ruling shows this inadequacy quite clearly.

A Division of NuAire Pty. Ltd.
ACN 087 430 715 ABN 80 087 430 715

There is therefore an apparent conflict in logic that has occurred between the ruling and the Standard due to this lack of detailed explanation, and due to the lack of test and performance criteria, in the actual clause dealing with the 2 types of fans and FSO devices.

To state it another way, the Standard requires conformance to all elements of the Standard, thereby bringing the logic of FSO devices clearly into the open. The ruling however has focussed narrowly on a small area of the Standard; an area that does not adequately explain the reasons for the differences in function in the 2 different systems (300 deg C versus 200 deg C). In doing so the ruling appears to cut across the logic and objectives of the Standard itself.

If the Standard contained the appropriate level of explanation for the differences in function of the 2 standards of fans, then we are sure that the ruling would have favoured the use and application of fusible link devices.

The use of complete context and performance criteria in detailing the function of a device in a system can only aid the achievement of the objectives of any Standard.

3. *AS/NZS 1668.1.1998 does not address the issue of what constitutes "open", "fail open" or "fail safe open" (FSO) standards of performance in relation to smoke spill fans.*

We have touched lightly on this issue previously. The problem identified by the review of the Standard is that the definition of "open" and FSO are far from clear.

You might think that we are pursuing a pedantic approach here with respect to the function of the Standard, however in the context of the ruling and the current discussion this is far from the case.

The stated objective of the FSO approach is to maintain an open path for smoke and hot gases to travel along in the event of a smoke spill fan failure. The problem of course is that the word "open" is open (pun intended) to misinterpretation.

Let us look firstly at the use of the term open in the context of a fan. In this initial case we are talking specifically about an adjustable pitch (or fixed pitch) axial impeller fan.

By their very definition and function axial fans are not open in the true sense of the word. Indeed, depending on blade density and pitch angle they can be more closed than open.

An axial impeller, particularly one that is held stationary in the system, will therefore be a significant barrier to movement of smoke, hot gases and particulate matter in the situation where the fan is off or has failed for some reason.

There is no reference to this fact, or discussion of it, in the Standard, that would cause a designer to consider this problem when choosing the design and performance criteria for a smoke spill system incorporating a smoke spill fan.

A Division of NuAire Pty. Ltd.
ACN 087 430 715 ABN 80 087 430 715

It is arguable therefore that, depending on the blade density of the impeller, the objectives of the smoke spill system will not be met at any time the fan itself fails and the impeller remains stationary, regardless of whether or not the FSO operates and to what degree the FSO operates.

It is also important to add here that ductwork resistances and inlet grilles made of fusible (plastic) materials should also be considered when estimating the impact of these sorts of issues in a fire or smoke event where the fan has failed for some reason.

There should therefore perhaps be a stated minimum level of smoke escape or airflow volume past the fan that a smoke spill fan must be able to achieve in the event of a stationary impeller due to fan failure modes. If you look at this circumstance as being akin to having an unpowered relief roof vent then you can begin to understand what we are driving at.

Currently the Standard does not address the issue of a stationary impeller in any depth, yet it would seem critical in terms of system design and performance, and entirely consistent with the objectives of the Standard. *(One further point needs to be made in relation to fan types. If a smoke spill fan for some reason were to be a centrifugal fan in the system, this issue in all likelihood becomes even more critical as, depending on type and orientation of fan impellers, a stationary centrifugal fan would be an effective blockage in the system.)*

Turning now to *"What is the definition of a successful FSO event?* and *"To what degree must the dampers or weatherproof flaps open, and then stay open, during any FSO event triggered by a smoke or fire event?"*

Taking the issue of the word "open" in the context of stationary impellers and applying it to FSO devices then, you can guess our views on the position that we believe needs to be adopted. FSO devices should logically ensure that weatherproof flaps or non-return discharge dampers, when activated upon, or during, smoke spill system operation, do not impair or reduce the level of performance of the system incorporating the stationary impeller fan; where the fan impeller is stationary for reasons of failure of the motor.

Just as standards of airflow required to satisfy the "smoke escape test" mentioned above can be specified and tested, so too can tests of airflow performance of fans incorporating FSO devices when the FSO devices are activated.

Failing that approach, a performance standard and test method for the degree of openness required for weather proof dampers or non-return discharge dampers in a FSO situation is required in addition to the test method and performance standards required for a stationary impeller in the smoke spill system air stream.

The real trick in our view would be to adequately understand and define the airflow volumes and systems effects required in the case of fan failure and FSO device operation during a smoke spill or fire event.

A Division of NuAire Pty. Ltd.
ACN 087 430 715 ABN 80 087 430 715

Having said that, perhaps the issue of openness will simply be irrelevant in the context of the Standard and smoke spill system operation and effect, if the logic of the system is substantially revised in any new Standard.

4. *AS/NZS 1668.1.1998 does not address the approach to be adopted by designers, especially, if they are unable to provide sufficient guarantees of a smoke spill systems' performance when incorporating a smoke spill fan.*

It may well be that an entirely new approach (or an old approach reworked) to smoke spill systems design needs to be added to the Standard; either by way of alternative to the current system, or by way of replacement.

Given that the stated objective of the Standard, and of BCA Part E2, is solely to ensure sufficient time for the building or compartment to be evacuated of personnel (i.e. to save lives), the idea of providing alternative or redundancy-based systems should not prove unworkable.

This may not have been the case previously when the function of the Standard many years ago was apparently to limit costs resulting from an event. Now that saving human life is the focus and yardstick, the focus on system performance should be easy to justify and quantify.

Any new draft Standard could then approach the question as…*"Should an approach to smoke spill systems that cater for when the fans do not remain open nor get driven open on fan failure, be introduced? "*

In this event the smoke spill systems must cope with smoke and hot gases another way if the mechanically powered approach fails.

This might seem a retrograde step to some, but it allows the complete logic of smoke spill and fire systems to be brought into play by systems designers. It would in all likelihood deliver a two-tier approach to system design consisting of a mechanically powered smoke spill fan to exhaust smoke and hot gases, backed up by a fall back or redundancy-based system that utilises passive or natural ventilation techniques to ensure smoke and hot gases can be directed to exhaust points in a positive and effective manner.

We do not necessarily advocate this approach, but from the point of view of providing the best outcomes for the preservation of human life in the event of a fire, it may well be the single best approach possible.

Conclusions

Whilst we have not sought to go into high levels of detail in Part 2., We are confident that we have provided sufficient material with which the ME-062 and other committees can consider the broader issues raised by our review of AS/NZS 1668.1.1998 above.

A Division of NuAire Pty. Ltd.
ACN 087 430 715 ABN 80 087 430 715

We are confident however, in the permanent absence of the ruling, that the Standard as it exists is a reasonable document if the logic it appears to use, and as we have outlined in various parts of this document, is accepted as being true and correct.

Failing agreement on that acceptance, we would strongly argue that the issues raised above need to be completely debated by ME-062 in order to ensure that the correct logic for the current Standard and for any future Standard is clearly known, understood, and detailed in the relevant documents.

For users to be unclear on the logic and operation of a Standard that seeks to achieve the objective of saving human lives would be unwise.

We look forward to having an opportunity to develop these points in discussions with the committee and other relevant people.

Document prepared by:

Andrew Israel
Managing Director
Fans Direct
September/October 2004