

PIPE TECH REVIEW

Pipe Technology NEWS from
TEPPFA

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SUSTAINABLE CONSTRUCTION

BRUSSELS. TEPPFA is developing a plan to turn its vision of sustainable construction into reality. See page two.



“Sustainable construction is not new to the world of pipe technology. What is new is a coordinated approach to fully demonstrate and promote its principles.” Roger Smith, President of TEPPFA



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► SUSTAINABLE CONSTRUCTION

Frank Jones believes that sustainable construction is one of the major challenges and therefore opportunities that currently face European pipe technology. As director of the Pipes Group for the British Plastics Federation, and vice president of TEPPFA his message is clear.



Frank Jones

Starting out as a public health engineer, Frank Jones since then worked for many years in the plastic pipe industry. He represents the sector on a wide national and European level. He draws his definition of sustainable construction from Gro Harlem Brundtland, a Norwegian politician, diplomat and physician who is an international leader in sustainable development. She says:

“Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

Sustainable construction touches a plethora of issues, products and processes. The bottom line for Frank Jones is ‘Don’t pass anything onto the kids!’ Having said that, he insists that we all do our homework.

“Sustainable construction is about everything we do as an industry and how our products are installed and perform now and at the end of life cycle and even after being recycled. That means for example, what goes into the air, soil and water and what comes back in the form of infiltration and public opinion.”

Strategic issues

“The main arguments for promoting responsibility in the field of sustainable construction are well known:

- European regulation
- European certification
- European enlargement
- Best practice
- Differentiation
- Reputational management

REACH is probably one of the most immediate strategic issues facing our industry. The fact that our manufacturing process is already highly controlled and measured with all the supply chain efficiencies that go with it, means that we shall adapt if necessary and benefit from the changes.”

Certification, Frank explains, presents another set of circumstances. “CE marking will be introduced within the next 18 months. Any manufacturer of building products that is covered by the Construction Product Directive (CPD) will be obliged to mark those products with the CE marking. Whereas the practice will not be legally required in the UK, Ireland, Switzerland, Sweden or Finland, its introduction will not give any guarantee of quality. It is simply a declaration that the product is fit for its intended use when incorporated into the structure.”



"If we are to maintain a profile that relates to sustainable construction, we must press home the importance of our individual Third party quality marks. They alone show that the product has the good performance for the application expected by the customer. They are third party controlled and certified."

"As a body, TEPPFA is well aware of these shortcomings and is advising pipe makers in new EU member countries to focus on third party quality marks as well as CE marking."

Durable standards

Standards are another area where Frank Jones is confident that sustainable construction will be important. He points to the latest draft standard in Structured Wall Pipes and the fact that minimum pass levels in the Water Industry Specification of WIS 4-35-01 which adopts recognised European test methods have been agreed with the UK Water Industry as being appropriate for sewer applications.

Laboratory based research on exhumed pipe sections has in fact confirmed the durability of these pipes after many years of use. Having been measured for their structural and oxidative stability, there was only minimal or no loss of the material's ability to resist slow crack growth or oxidation after use and aging.

The longest field time scales were over 50 years for a PVC-U pressure pipe installed in Germany. In this case, following LTHS testing of the exhumed pipe, the author concluded:

"...under realistic conditions in Bitterfield of 12 - 20°C and 4 – 5 bar, it may be assumed that another 100 years of safe operation could be expected."

On a related note, Frank also underlines the work carried out by TEPPFA to adopt common testing standards such as mechanical testing, impact strength, temperature, pressure and chemical resistance."



Testing PVC pipe for deformation on impact

Recycling

On the subject of recycling, Frank is more pragmatic. "By recycling, we are not only acting in a sustainable way but we are producing products that fit the sustainable construction agenda. The only problem is that our products perform too well and for too long in the ground. In the UK, last year we collected 800 tonnes of old pvc pipe for recycling. We recycle considerably more plastic pipe and fittings taken from in-house rework material. Both sources of waste are turned into useful sustainable pipe products. Moreover, our progress in achieving European targets is impressive and by 2010 we shall be recycling significant volumes."

But it is the range of sustainable products that Frank Jones believes will communicate more than anything else the credentials of the pipe industry.

"Compared to traditional pipe makers, our ever growing list of sustainable products is differentiating us. Our industry has an innovative power to create completely new solutions for the sustainable construction market. Squeeze and folding trenchless technology, stormwater collection and management systems, super-cooling and geothermal environments, more robust, more flexible, more pressure resistant pipes...The list continues and may well embrace aqua fore technology and grey water."

Frank Jones believes that the industry's association with sustainable construction will add to its reputational assets. "The goodwill that we are generating is a resource for the future which is most definitely plastic!"

► THE ART OF BUILDING CONSERVATION

Plastic pipe makers would love the world to be made up of PVC rings, PP Soil & Waste and PE fittings. But conservation architects have another vision. Helen Molton is a leading architect with HOK International. Her story is interesting.

It is not so easy to become a conservation architect in the UK and become a member of the Architects Accredited in Building Conservation. There are only 300 members of this special division of the Royal Institute of British Architects. Helen Molton had to go through a five year check-up on her credentials and expertise before being able to join. And that was after over twenty years of practice in the profession.

So what about plastic pipes in old buildings – surely a perfect solution?

“I wish it were the case. The authorities that own and look after ancient monuments such as the London Estates demand the use of traditional materials as much as possible. This can be a challenge.”

One of Helen’s recent building conservation projects involved three large and prestigious four storey George VI town houses overlooking London’s Regents Park. “When built around 1827, each house probably had one single toilet that was not self flushing. Now worth EUR 15 million after building conservation, each dwelling required a wide range of modern comforts from central heating to cooling, wired for sound, sanitary perfection, sophisticated electronic lighting controls and the latest security equipment. Ugly duct boxes were out of the question. And with beams crossing from under one floor to another, we could not accommodate miles of conduit.”

Helen was able to solve the problem with a raised floor for the horizontal services and a neatly partitioned void that could take all the plumbing and the other vertical wires to the top of the building.



Helen Molton

A raised floor was ideal for Regents Park, but Helen says that it was not suitable for the historic building that houses the British Medical Association. “Again we were dealing with high ceilings but the floor level architectural features were far too precious to conceal.”

Plastic telecom cables when embraced by this raised floor and void panelling were acceptable. But the conduit was metal pipes!

Le client est Roi

Soil & waste pipe has to be cast iron. “The London Estates have their own specifications and these have to be cast iron and usually painted black.” A bit noisy surely?

“By its very nature, the building conservation industry is conservative. We therefore dampen the internal workings of these metal pipes by external rock wall blankets encapsulated by chicken wire. It is an old, tried and tested method. Le client est Roi. The customer decides!”

And hot and cold water? “No lead pipes but copper. It will be sometime before we can expect to see push-fit everywhere in the conservation field but it will come.”

Cracks of hope...

In the 50's, 60's, and 70's, many ancient buildings were stripped of their historical features. We have now gone back to traditional materials with a fifty year horizon. Timber, glass, the colour of the front door, the pipes – everything is meticulously specified. That means clay sewers – even concrete is considered too modern!

But as usual, there are a few cracks of hope in the clay sewer market! "Clay pipes when cushioned with cork are not so dependable. So we often use Hepworth plastic couplers. The refurbishment and restructuring of the stylish 1 – 4 Eaton Square was a case in hand. We needed to split the properties into bigger better apartments with servant's quarters (yes, they still exist!). This required joining up the clay drainage with the Victorian sewer in this way."

Eaton Square is typical of the kind of residential properties that HOK are called on to lovingly conserve. Baroness Thatcher used to live in the neighbourhood and a nearby resident used to be a very good friend of Miss Money Penny. Other modern day residents are rats of the rodent variety. Their urine can cause Weils disease and HSE precautions are thus mandatory.

Clear floors

But protagonists of plastic pipes will be delighted to learn that underfloor heating where possible, is *de rigueur* and considered infinitely preferable to radiators. "Radiator systems are clutter and we want clear floors. They are well known to dry out buildings. And that may seriously destroy architectural features. At the British Library, museum grade humidifiers consisting of large fan coil



Foreign and Commonwealth Office



King's Library, British Museum

units had to be concealed. Metal is always used for ventilation although we make sure that we avoid drumming via space and throughput calculations!"

"Conservation architects often find it impossible to conform to building regulations." Notes Helen. "The one thing we do not want is to destroy the historic character of the building. Often when these fine buildings were designed and made, there were no local or national building regulations. Fortunately, not all regulations have to be followed because of waver systems. Imagine presenting a series of modern calculations based on how the building will perform and what say, the energy costs will be in the future? With historic buildings, you cannot use the same criteria."

So is there no hope that we can see a totally plastic pipe conserved building?

"Buildings perhaps but not monuments! Expectations are always rising. Think back to a generation ago when a bath once a week was considered a sign of weakness. Today a bath en suite with plasma screen and B & O speakers is an absolute must have. Tomorrow it may be toilet seats wired for video conferencing. But do not hold your breath! Plastic pipes? We love them but only in the right place and perhaps the right time!"

HOK is a US based architectural firm that has undertaken major award projects all over the world. It has an impressive portfolio of treasured buildings in the UK that it has repaired, refurbished, conserved or completely renovated. The King's Library at the British Museum, the Foreign and Commonwealth Office, Marlborough House and the Royal Lodge in Windsor are landmark projects.

► GREENHOUSES

Trees are the lungs of the Earth. With this issue partly devoted to sustainable construction, one recent project clearly illustrates how plastic pipe systems are contributing to the growth of over one million trees annually.

The Problem

Cole & Sons Nurseries cultivates nursery stock on over 180 hectares at seven sites across Leicestershire, growing over 200 tree varieties amounting to over a million trees annually. Its container grown varieties number over 400, with a capacity for over two million shrubs, and it has also recently been recognised by the Horticultural Trades Association as the Nursery Stock Grower of the Year for the third year in a row. In the UK and with growth on this scale, the summer sun's warmth can sometimes be in short supply. More warmth was needed but how?

The Solution

The answer came with 864 square meters of Uponor underfloor heating pipe was laid by TLM Project Services and encased in concrete to hold it in place and protect it from erosion. Seed trays were then laid on top of the concrete where they enjoy constant and consistent heat from below.

The completed project involves eight manifolds supplying warm water heated by a conventional boiler which is then circulated through the system every hour.



The Result

The system runs 24 hours a day to bring on young seedlings that would otherwise struggle to establish themselves in colder earth.

This will allow Coles to grow the same quality of plants much faster and therefore in higher quantities, giving it a great advantage over any of its competitors. It will also mean later flowering plants are available much earlier in the year.

The underfloor heating system was chosen because of its ability to be used under a variety of surfaces – although it is usually stone, ceramics, wood or carpets. There are also no underfloor joints with these systems meaning that there is a greatly reduced risk of leaks and subsequent disruption. Having to lift hundreds of plant trays to plug a leak would have spelt disaster for Cole's.

Another advantage is their ease of installation. Time spent with no plants in the greenhouses meant not only inconvenience, but lost revenue for Cole's. The combination of easy to handle and quick to fit pipe with the simple and effective system components meant that the Cole's project could be completed in a matter of hours.

► BUILDINGS DIRECTIVE

Brussels. Energy Commissioner Andris Piebalgs has hinted that he might extend the scope of the Buildings Directive. He says that some 70 million tons could be saved on top of the 40 million tons saved by implementation of the existing Directive.

Speaking to the 2006 Offshore Northern Seas Conference, he explained that there was little room for manoeuvre to influence the EU supply side so the real option would be to act on the demand side.

One of the areas where the EU energy policy could have a positive effect was through raising our environmental commitments, "Actually realising the 20% cost effective reduction of EU energy consumption would by itself more than fulfil the EU international climate change commitments." He said.

Around 40% of final energy consumption in the European Community takes place in the buildings sector.

► MARY HARRIS IS FIRST WOMAN

London. National Grid is a major gas transmission and distribution company in the UK. Mary Harris, Director of the Offender Programme, led by National Grid has received a highly regarded CBI First Women Awards 2006.

Mary is well known to manufacturers of plastic gas pipes and to the building trade. She overcame strong competition in the Business Services category award which was

presented at a gala dinner at London's Park Lane Hilton hosted by CBI Director General Sir Digby Jones.

The awards, now in their second year, aim to unearth a new generation of role models and celebrate pioneering women in eight industry categories. The CBI says the awards go to women who have broken through the 'glass ceiling' and can genuinely claim to have achieved a real first for women.

The award judges said of Mary: "She is an inspirational high achiever who has applied business solutions to intractable social issues and created a real positive outcome"

One former prisoner, now turned gas network operative, said the programme "has given me my life back".

► PIPE CONGRESS IN GERMANY

Würzburg. A two day congress to communicate the latest developments in plastic pipe technology will take place in Würzburg, Northern Bavaria on 25/26 October 2006.

The event is organised by the KRV in conjunction with the German plastics centre (SKZ), Figawa (association of gas and water supply companies) and the RBV (Association of pipe-work constructors). Various plenary sessions and workshops have been scheduled. Presentations will be made by representatives of the above bodies as well as from Borealis, Geberit, Uponor, Simona AG, Amitech, Friatec, Wavin, Rädlinger primus line GmbH, Rehau, TECE GmbH, etc. More information: www.krv.de

► PIPES MORE THAN 100 YEARS

Dutch research confirms that PVC water pipes could last more than 100 years. The news could have important implications for plastic pipe technology in Europe and elsewhere.

A report just published by a technical consortium in The Netherlands officially confirms that the life span of existing PVC pipes when installed according to the correct conditions is more than 100 years. Service life expectancy of these pipes was previously estimated to be around fifty years.



Roger Loop

Replacement schemes

The publication is the result of a study in 2002 by the TNO research company. It was initiated by KIWA (the Dutch Quality Mark Institute), raw material suppliers and the Dutch plastic pipes association (BureauLeiding).

Roger Loop, director of the latter organisation is delighted with the results.

"We started using PVC water pipes in the Netherlands because many of our metal pipes were corroded and we needed fresh drinking water. An exciting outcome of the technical research carried out is that plastic pipes may well be suitable for a good service life of even up to 200 years."

Research undertaken involved developing a test for aging based on the degradation process and the quality of old piping. "With this information, water companies can now develop more realistic and effective replacement schemes and therefore get more value from their valuable assets." Says Loop.

Many sections of in service water plastic pipes of 10 – 45 years old were dug up for examination and analysis. Researchers concluded that in addition to the state of the raw material, many other factors affect the degradation process. These factors included exposure to UV light, transport, pipeline pressures, installation and ground conditions.

The effects of these factors therefore have to be considered for instance, by municipalities and water companies when thinking about the quality of their piping.

The Dutch plastic pipes Association are now deciding how and when to promote this report in the Netherlands. An executive summary of the report is available on the publications page of the TEPPFA website.

