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# **Construction/ Infrastructure Writer of the Year**

## **Binyamin Ali**

 **Construction  
News**

## **Post-Grenfell: How insurance premiums have soared 900%**

<https://www.constructionnews.co.uk/best-practice/post-grenfell-how-insurance-premiums-have-soared-900/10028263.article>

The Grenfell Tower fire was a national tragedy and is of course a hugely emotive subject.

Writing about the commercial implications for the cladding industry, in the run-up to the first anniversary of the fire, was therefore a tricky task.

It was imperative to be considerate of the biggest issue in the wider story – the fact that 72 people died. But as industry press, it is also incumbent upon us look at the business implications of this dreadful tragedy.

Binyamin's investigation revealed that a number of cladding firms have seen their professional indemnity insurance jump from £24,000 per annum to £240,000.

Other firms have had to accept similar increases while also accepting a combustibility exclusion clause, which means that, in the event of a fire or any claim relating to fire, the firm may not be covered.

The article also revealed why firms don't know whether or not their work is compliant.

BEST PRACTICE

# Post-Grenfell: How insurance premiums have soared 900%

22 FEBRUARY, 2018 | BY BINYAMIN ALI



COMMENT



- › Case study: Stanmore
- › Box: ACM combinations tested
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- › Government/Industry response
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- › Box: Q&A – a broker's view

Binyamin Ali investigates how 900% PI insurance premiums hikes have affected envelope specialists, and why they don't know if today's jobs will remain compliant.

On 18 June 2017, four days after the Grenfell Tower fire, permanent secretary to the Department for Communities and Local Government, Melanie Dawes wrote to every local authority and housing association chief executive in England.

In her letter, Ms Dawes said that by the end of Monday 19 June, they all needed to have identified "whether any panels used in new build or refurbishments are a particular type of cladding made of aluminium composite material" (ACM).

The cladding installed on the Grenfell Tower when it was refurbished in 2016 was suspected to have aided the spread of the fire (a Hotpoint fridge/freezer would later be identified (on 22 June) as the source of the fire by the Metropolitan Police).

The chief executives were asked to examine the cladding installed on buildings over 18 m tall.

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A combustibility testing programme followed (conducted by the Building Research Establishment (BRE), which set out to test six (later extended to seven) different combinations of ACM wall cladding and insulation materials for their combustibility (see box).

Four out of the seven tested combinations failed the fire safety test.

Unfortunately for the cladding industry, the government's early move to prioritise finding out which buildings were safe for residents to continue occupying – a move which cannot be faulted – placed a negative public spotlight on cladding materials.

It had a chilling effect on clients and insurers which cladding firms have suffered from in lost business and in many cases, massive increases to their professional indemnity (PI) insurance.

## Case study: Stanmore

"At the time, HCC, who were our insurers, said to us 'Don't worry. That building was insured abroad so it hasn't had an impact on the UK markets and we don't foresee it affecting your insurance renewal terms'," says envelope specialist Stanmore director of operations Peter Baker.

Stanmore's PI insurance had to be renewed by 29 September 2017, but in an attempt to get ahead and be more organised, the company started working on its renewal documents (before the fire) at the start of June and submitted its renewal papers just after the fire happened.

"Eventually at the start of August, it started filtering through. [Our broker said] he was struggling to get the same terms for renewal this year and when we asked what the terms were, we were told they'd be in touch because they were finalising the details," recalls Mr Baker.

"As we started getting quotes through with exclusion clauses and increased premiums and things like that, it started hitting home."

**"In our terms for this year, we have an exclusion clause for anything combustible, which is ludicrous"**

Peter Baker, Stanmore

To continue working on the projects the company had on its books and to win new work, it needed a £10m PI liability in place. When it became clear HCC's terms were not going to be acceptable to it, the company had to look elsewhere.

"We went back out to market and had to get it from two separate providers – we got £5m and £5m with a lot less favourable premiums and excesses but we

have got the cover. We were happy just to do that so we can make sure we provide that £10m PI we need to work on a lot of these projects," Mr Baker says.

In 2016, Stanmore's PI premium was £24,000 per annum, but this jumped to £68,000 last year. What's more, their excess used to be £5,000 for each claim, but this increased to £50,000.

Having signed up to these terms, Mr Baker says he and Stanmore MD Rajbir Singh Manak sat down to talk about the insurance situation. "There's pretty much no point claiming on particular projects [because] £50,000 is not a small sum of money, and probably would cover most of the work needed to remediate some of these schemes that may come out of the woodwork in the future," says Mr Baker.

And it got worse for the firm. Mr Baker says: "In our terms for this year, we have an exclusion clause for anything combustible, which is ludicrous. Everything in the right circumstances is combustible. So that exclusion means that in the event of any fire or any claim relating to fire, we would potentially be uninsured from a PI point of view."

Some of the biggest PI insurance providers (Allianz, Zurich, Chubb and Aviva) were all contacted for comment by *CN*, and asked to explain why there had been such drastic increases. But all, barring Aviva, declined to comment.

An Aviva spokesperson said: "Aviva has not applied any punitive increases as a result of Grenfell and continues to underwrite each risk on an individual basis.

"The nature of our corporate client base means we engage much more closely with individual clients as part of the underwriting and claims processes and therefore know much more about each individual risk. This means we are able to mitigate against pricing volatility and cover uncertainty during the renewal underwriting process."

## Combinations of ACM cladding materials tested

1. ACM with unmodified polyethylene filler with foam insulation - Failed
2. ACM with unmodified polyethylene filler with stone wool insulation - Failed
3. ACM with a fire retardant polyethylene filler (category 2 in screening tests) with polyisocyanurate (PIR) foam insulation - Failed
4. ACM with a fire retardant polyethylene filler (category 2 in screening tests) with stone wool insulation - Passed
5. ACM with A2 filler (category 1 in screening tests) with polyisocyanurate (PIR) foam insulation - Passed
6. ACM with A2 filler (category 1 in screening tests) with stone wool insulation - Passed
7. ACM with a fire retardant polyethylene filler (category 2 in screening tests) with phenolic foam insulation - Failed

### Case study: Dane Architectural Systems

Dane Architectural Systems specialise in the design, manufacture and installation of façade solutions and architectural metalwork. The company was forced to accept even worse excess and premium costs than Stanmore.

"Our [PI insurance] renewal was in December 2016. Our normal cover for £10m liability cost £24,000 in 2016 and our quote for 2017 post-Grenfell was £240,000," says the hugely frustrated director of Dane Architectural Systems Billy Field.

"When you consider that Dane are in their 50<sup>th</sup> year of business, they've never made a claim or had a claim made against them, obviously we were very shocked."

Following the initial quote from its previous insurer, the company shopped around but still ended up paying £177,000 for the same cover it had the previous year, and had to increase its excess from around £5,000 to £500,000.

"It's another erosion of profit, [which] causes people to make bad decisions and it's just another nail in the coffin for the UK construction industry. I wonder how many European [firms] coming into the UK as cladding companies are having the same problem insuring themselves through European insurance agencies?" Mr Field asks.



The £30m turnover business was able to absorb what Mr Field describes as “exorbitant” insurance fees, and continue trading.

The company has also had issues with clients following work that was completed to specification, but in the aftermath of intense scrutiny of cladding materials post-Grenfell, it wanted changes made even though the work was signed off by building control. Dane and the main contractor have had to share a “high six-figure sum” between them, because the client said they “were responsible for putting that product forward [even though] there is a precedent to say there is nothing wrong with it,” Mr Field says.

Government guidance on what materials and combinations of materials are safe to use have so far been limited to the tests conducted by the BRE.

**“The whole situation now is an absolute bloody mess. Nobody knows what’s happening”**

Billy Field, Dane

Where a combination of materials has passed the test (such as test combination number four), the government’s report says: “This result shows one way in which compliance can be achieved and offers an indication of how remedial works could be specified.”

But this is followed by various caveats: “There are many different variants of this cladding and insulation and it is possible that products from different manufacturers may behave differently in a fire.”

This lack of official endorsement has created a lack of clarity, which in turn has bred doubt. It’s also important to note these test results were intended to be used by housing authorities and building owners, letting them know whether their building’s cladding is fire-safe or not – they were not intended to act as an update to the Building Regulations and to be used by the construction industry.

“We need direction from the government,” Mr Field says.

“They need to change the Building Regulations to make them more understandable because that will allay any fears that these insurers have and the public has.”

## Government and industry response

The lack of guidance from government or any trade association has meant that the cladding being used in ongoing developments could be torn out at a later stage, as companies can’t simply stop all work until further notice.

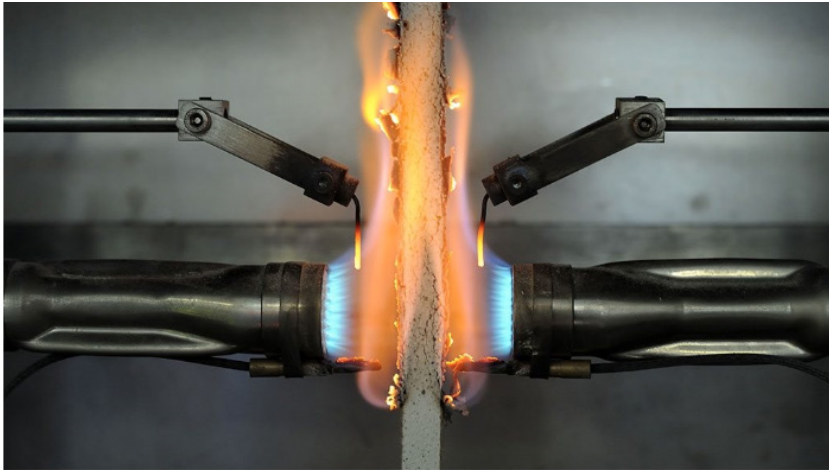
“It’s not a nice position to be in because we want to continue to secure work and continue to work with our clients successfully, but there are still a lot of unanswered questions. There are people who are trying to make morally correct decisions but they don’t know if they are right or wrong,” Mr Baker says.

Mr Field adds: “We are having to make decisions to pre-empt the slow, lumbering government who have given us no direction whatsoever.

“The whole situation now is an absolute bloody mess. Nobody knows what’s happening. The guidance out of the preliminary report doesn’t really say anything and we have still got to progress because we’re still installing and designing buildings now.”

The only significant government report to emerge so far is Dame Judith Hackitt’s *Independent Review of Building Regulations and Fire Safety: interim report* (referred to above by Mr Field) published on 18 December 2017, with the full report due to follow in Spring 2018.





Materials being fire-tested in a facility in Avignon, France

In her foreword, Dame Hackitt notes: "As the review has progressed, it has become clear that the whole system of regulation, covering what is written down and the way in which it is enacted in practice, is not fit for purpose, leaving room for those who want to take shortcuts to do so."

"There is plenty of good practice but it is not difficult to see how those who are inclined to take shortcuts can do so."

She goes on to call for a "universal shift in culture" and sets out the direction of travel for the full review later this year. But given that Dame Hackitt has been set the task of reviewing the regulation of the whole industry, the interim report is understandably light on guidance for envelope specialists who need immediate direction on what will be deemed acceptable combinations of cladding materials.

"I know that lots of manufacturers are choosing to use the BS 8414 testing rig now," says Build UK communications director Laura Smith – BS 8414 is the safety test the ACM cladding materials have been subjected to by the BRE.

"There is also a testing rig in Dubai, so those tests are being undertaken by manufacturers who want to know whether their systems pass that test or not," Ms Smith adds.

**"Everyone is still talking about ACM materials and there are obviously a lot more building products that are used on facades"**

Peter Baker, Stanmore

Build UK is part of a group established by government to coordinate the construction industry's response to the challenges of implementing recommendations from the Independent Expert Advisory Panel, set up on 27 June to advise government on immediate steps to ensure building safety.

Ms Smith confirmed she is not aware of any further work being done by government to test the many different cladding and insulation combinations used across buildings, and that it's not something the industry response group is specifically looking at. She added that Build UK is launching a survey to understand the extent of the PI insurance problem and how it might impact capacity in the sector.

## What next for the industry?

Looking ahead, Stanmore's Mr Baker thinks the industry's problems are only just beginning.

"I still think we're at the tip of the iceberg. Everyone is still talking about ACM materials and there are obviously a lot more building products that are used on facades for buildings that are over 18 metres tall," he says.

"The actual testing resources are dire. There's only one rig out in the UAE and there are two in the UK. The resources aren't there to get all these products tested in every different situations, and then there's the question of money. I think we're a long way away from a time when we can sit comfortably and have all the answers."

Mr Baker's prediction is likely to be proven correct. One of the key areas Dame Hackitt's interim report singles out for change is the system of product testing, on which she notes: "Products must be properly tested and certified and there is a need to ensure oversight of the quality of installation work."

This will no doubt involve more than the testing of cladding materials. With the final report not due to be published for another few months, and considering the time it will take the industry to take stock of and respond to its findings, implementation and direct results will be further away still.

Until then, the cladding industry will continue to exist in a state of extended limbo, not knowing whether work done today will be torn out tomorrow.

## A broker's view – Q&A with Ian Gregory, director of MPW Insurance Brokers

### How is the market changing?

We have a number of clients who cut across this industry in various shapes and forms, but certainly [for those] with any involvement in cladding, and I'm looking at this solely from a professional indemnity angle, insurers are certainly playing hardball now – there is no doubt about it.

The market has hardened quite dramatically insofar as there are a number of players who would have done it but no longer do it, or what they're offering now is based on quite a detailed question set. They'll look far closer at the types of properties they're working on and the type of cladding that is being used. One of their key concerns is the height of the property and anything over 18 m is proving to be an interesting battle.

### Why is ongoing PI insurance required?

It's pretty evident there is a problem in the market for these particular risks and I'm sure the majority of people who are involved are aware of that. Word gets around but it doesn't make it any easier and doesn't soften the blow.

Clients are certainly worried about the additional cost they are likely to incur and it's a difficult one because you take out PI for two reasons: you want to protect yourself and there's probably a contractual requirement to have it as well.

A contractor may require you to purchase continuing PI after the completion of a project for a period of six years or 12 years.

### What happens if you can no longer afford PI?

There is normally a [part] of the contract that will state "as long as the cover is available at acceptable commercial rates." There is an element of 'get out' (what is considered 'acceptable') there but of course, what it's not doing is protecting you.

I haven't come across a case when I client has invoked this, but I think it would be an interesting conversation because technically they're in breach of their building contract because when they were instructed, they agreed to continue the insurance and it's really a question of deciding [are you] in



agreement that the cost is now prohibitive?

The policy holder may say it's far too expensive but the client may not think it's too expensive at all, so it might be a situation where it would have to go to arbitration.

The underlying problem is if they do not continue that insurance and there is a claim at a later stage, they are not protected.

### **When will things go back to normal?**

I've heard that it's going to be unsettled for the next 12-24 months and possibly beyond, with claims arising from previous cladding installations. With that in mind, insurers are taking a very cautious approach.



## **'I just burnt out': Industry CEO on overcoming a mental breakdown**

<https://www.constructionnews.co.uk/analysis/interviews/i-just-burnt-out-industry-ceo-on-overcoming-a-mental-breakdown/10030126.article>

CN's Mind Matters campaign in 2017 played a significant role in getting the industry to talk about and address mental health.

As part of our ongoing efforts, this year's 27 April issue featured a special report on mental health.

To take the industry conversation forward, Binyamin sought to engage senior figures who would lead by example and speak publicly about their own mental health challenges.

Trad Group CEO Des Moore was courageous enough to do just that, and the resulting article was extremely well received by the industry.

Skanska CEO Gregor Craig commented that it was "an inspiring example" of how it was possible to suffer poor mental health but still "reach the very top of your career aspirations".

He added: "We desperately need more of these role model stories."

The article has been viewed nearly 2,000 times.

INTERVIEWS

# 'I just burnt out': Industry CEO on overcoming a mental breakdown

26 APRIL, 2018 | BY BINYAMIN ALI



2 COMMENTS



- > In at the deep end
- > A catalogue of support failures
- > Opening up
- > Breaking barriers to engagement

Trad Group CEO Des Moore speaks to *Binyamin Ali* about the mental breakdown he suffered as a 26-year-old and the lessons construction can learn from experiences like his.

"For at least a month, there were days I just wouldn't get out of bed and try to face the day," says Des Moore, Trad Group CEO and president of the NASC.

He's telling me about how, at the age of 26, he suffered a mental breakdown.

"The only reason I got through it as I did is because my wife Debbie fully supported me and managed to get me through it," he recalls.

Mr Moore has come a long way since this difficult experience. We meet in his office on the seventh floor of Bank of America House in Bromley, south London, where Trad is based.



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For a long time, only a handful of people knew about this period of his life because, in construction, you just don't talk about this sort of thing – especially if you're ambitious. "I kept it to myself because I think it was always [the case] – and still is now – that people would actually perceive it as being a weakness, and a barrier to you being promoted to a senior position where you end up with a greater level of responsibility," he explains.

"In fairness, I probably haven't felt like that for the last 10 years."

## In at the deep end

Perhaps unsurprisingly for the CEO of a major scaffolding contractor, Mr Moore started out as a scaffolder himself.

Having learned the ropes, he decided he was ready to take up a position with more responsibility and started looking for opportunities to retrain.

This led to a role as a supervisor. "I don't think I was even a trainee supervisor; I became almost like an instant supervisor and was given a book, a big A4 diary with about 40 men in it," he says.

What level of training had he received before being given the job? "None," he laughs, as if bemused by the recollection.

Mr Moore spent two weeks with the supervisor who was leaving the role. He was then told who his contracts manager was, and that was it. His responsibilities included supervising works, arranging equipment and – most importantly – paying the wages of the 40 workers under his watch.

**"From what I can recall, I actually just one day left the car and the keys [and] went home. And I just froze. I couldn't do anything"**

The year was 1982 and at the time, pay was determined day-to-day. Mr Moore would assess the work everyone undertook at the end of each day and pay them accordingly.

"I ended up with many situations where the men believed they should have been paid more than what I did pay them," he says. As a result, there were

at least two occasions where he was chased around a site by scaffolders holding tubes.

Despite these incidents, he kept his head down and refused to shirk his responsibilities. "Eventually, with the work pressures, the level of work and no support, eventually I just burnt out," he says with an apologetic shrug.

"From what I can recall, I actually just one day left the car and the keys [and] went home. And I just froze. I couldn't do anything."

Mr Moore was dating his future wife Deborah at the time but still lived by himself. "She came and got me. I think I was somewhere up in the city. I didn't even know where I was, I couldn't remember now," he says, racking his memory for details. "[Debbie] came along with a friend of hers and I remember them taking me to get some treatment."

His recovery would take six months.

## A catalogue of support failures

As we discuss what he went through during this time, one thing becomes clear: he believes the root cause of his breakdown was the lack of support available when he started the role.

"It was a clear example of just giving someone a position with no training that they couldn't actually cope with, [and with] no support mechanism. And they must have seen the signs clearly," Mr Moore says. "We had some sort of informal training, but it was a very pressurised position. I wasn't given any real support with it. I had to no mentor, so to speak."

Only one person from the company went to see him while he was unwell – a contracts manager who Mr Moore credits, along with his wife, with getting him back on his feet.

In the early 80s, HR departments – if they existed at all – were a far cry from those in place today. But the lack of an HR programme to help him back to work was not the biggest issue, Mr Moore argues. "That would have been irrelevant to some extent anyway. It was really the support mechanism that should have been in place when I was appointed.



"I was brought up in the East End [and the job] was in Twickenham. You could have put me in Johannesburg for everything I knew about Twickenham. So I had an area I knew nothing about, men I didn't really know, a very brief handover, a very difficult job calculating wages for people who had been there for quite some time, with a set of money that maybe hadn't been supervised correctly."

When he was finally fit to return to work, he initially went back to work for a brief stint before moving onto a number of other scaffolding companies, joining Trad in 1991.

**"I had done my absolute best. And that's the same advice I've given to a lot of people that I've employed since: just do your absolute best"**

At the time, Trad was under the stewardship of founder Hayden Smith, who Mr Moore credits with instilling an "unstructured" but important support mechanism and open-door policy in the company.

Mr Moore would go on to become managing director of Trad's scaffolding business in 1997 and CEO of Trad Group in 2011. During the early days of his

reintegration, however, he had to develop his own coping mechanisms to deal with the pressures of work.

"When I eventually got better and started another role, I convinced myself that I would do my absolute best to do the job during the course of the day.

"And then if I got home and it had all gone wrong, [there was] nothing I could do," he shrugs with a smile. "I had done my absolute best. And that's the same advice I've given to a lot of people that I've employed since: just do your absolute best."



## Opening up

Adding to his role as CEO of Trad, Mr Moore became president of the NASC in 2017.

Determined to help reverse the idea that mental health is not something you talk about in construction, he used his speech at the NASC AGM in November last year to discuss the breakdown he suffered as a 26-year-old.

"I felt it would be appropriate given that I am president of the NASC and it's a big industry issue," he says. "I have got to this position and I had a serious mental health incident many years ago – it hasn't stopped me."

Since his speech at the AGM, there is now a greater awareness of mental wellbeing among senior staff at Trad, Mr Moore says, and this is being communicated to middle and junior management teams as well.

Is he now happy with the level of mental health awareness and support currently in place at Trad?

**"I have got to this position and I had a serious mental health incident many years ago – it hasn't stopped me"**

"No," he answers frankly. "I think we've got good support but I don't think it's anywhere near sufficient and there's work to be done, same as with any business."

He's keen to impress upon me that establishing awareness and support can be very

straightforward. It can be a few words of encouragement, reassuring someone that a mistake they have made does not mean the end of the world, or it could be asking someone how they're doing and listening to their response.

What businesses should not do, however, is take an off-the-shelf approach. "It doesn't have to be some sort of really involved plan that nobody really grasps," he says. "Not every company is going to have a CEO that's had an experience, but you certainly should have something that's actually bespoke to your business and you embrace and roll out through the whole business."

Addressing and improving mental wellbeing requires engagement from both ends. An employer can do everything possible to create open communication channels, but staff have to be willing to engage with them.

## Breaking barriers to engagement

One challenge is that many people – particularly in construction – put off going to the doctor for even physical pains, let alone mental health problems.

Mr Moore again has first-hand experience of this: seven years ago his former CEO hounded him into getting a physical check-up because he wasn't looking his best; an angiogram revealed two blocked arteries which required a quadruple bypass.

He believes engagement can only be achieved through staff buying into the idea of mental wellbeing. "In our business, if I develop a policy, the only way I'm going to get any traction with it is through the people I work with taking it forward. If I had two individuals who don't buy into it, I would consider it my job to properly explain and get them to understand why it's important that we do it. It becomes the job of the person in the senior position to explain it to people."

Now 61 years of age and part of an industry generation considered out of touch by some, Mr Moore's willingness to speak openly about mental health is encouraging.

As our conversation nears its end, his attention focuses on how businesses across the industry should establish support structures. "It needs to be something taken on board by the CEO and the senior people, getting all the staff involved, and it needs to be something for their individual company," he says.

"It should just be something you're doing on a consistent basis because, ultimately, it's just good business. That's it."

## The new bad back?

Construction is not alone in struggling with mental health awareness and falling short in how the issue is addressed.

Employers in every sector and society struggle to understand and address it.

According to the Mental Health Foundation, 70 million work days are lost each year to mental health problems in the UK, which translates to approximately £2.4bn per annum.

Mr Moore believes that the stigma attached to mental health, the fact it is largely intangible, and the perception of it among sufferers as a weakness has led some to view it as an excuse to get out of work.

"Someone said to me recently that it's the new bad back – you can't actually determine if it's true and it's something that can be abused," Mr Moore says.

What compounds construction's mental health problem is the macho persona workers have traditionally projected, which has forced the industry to shy away from getting on top of mental health.

The result? A more acute industry-wide mental health problem that leads to absenteeism and more suicides in this sector than in any other.

Between 2011 to 2015, male suicides among low-skilled workers in construction was 3.7 times above the national average, while for women in this category it was twice the national average.

Among skilled trades, men working in building finishing trades (particularly plasterers, painters and decorators) had more than double the risk of suicide than the male national average (this data is not available for women due to low suicide rates).

The data tallies with Mr Moore's perception of the industry: "When you get into the subcontract trades like scaffolding, steel fixing, carpentry – anything like that, they've got this macho image. To actually acknowledge that somebody might have some mental health issues would probably be the last thing they would want to accept or make anybody aware of."

 [VIEW COMMENTS \(2\)](#)



## **Manufactured construction: How theory is being turned into reality**

<https://www.constructionnews.co.uk/best-practice/technology/manufactured-construction-how-theory-is-being-turned-into-reality/10032686.article>

The construction industry has long looked towards the manufacturing world as the standard bearer of productivity and efficiency.

However, there have been few viable solutions with regards to how construction can evolve its processes and emulate manufacturing.

When Binyamin found out that the Manufacturing Technology Centre, which has previously helped the automotive and aerospace industries enhance their business models, was working with construction firms to achieve this, he went to find out what it was working on.

The resulting article details the entirely new business model and method of construction the MTC has developed, alongside consultancy firm Bryden Wood.

The solution has received government backing and is being used on a confidential public-sector project worth more than £1bn.

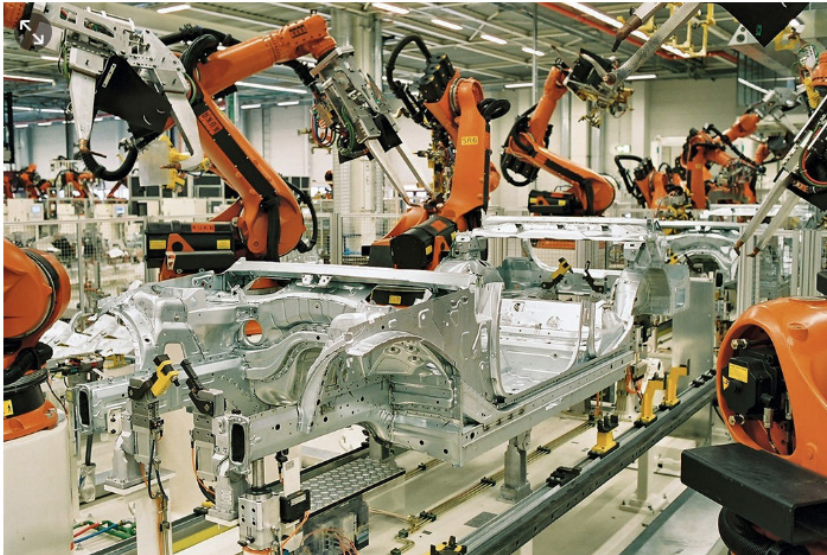
If the building method achieves widespread take-up, it could open up the industry to the manufacturing world's technical experts as well as its supply chain, with huge implications.

# Manufactured construction: How theory is being turned into reality

9 JULY, 2018 | BY BINYAMIN ALI



1 COMMENT



Pioneering firms and a trailblazing government project have the potential to transform industry productivity through manufacturing methods. *Binyamin Ali* finds out how.

In February 2017, McKinsey Global Institute's Reinventing Construction report found there is a \$1.6tn growth opportunity in the global construction industry.

The key to unlocking this massive opportunity is better productivity, the report said.

From Latham in 1994 via Egan in 1998 through to the Construction 2025 report in 2013, the industry is littered with studies that highlight shortcomings in the sector, identify opportunities and quantify the size of the potential prize.

Yet the industry continues to struggle with the same problems: poor productivity, limited collaboration and standardisation, and a yawning skills gap.

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McKinsey's report noted: "While many sectors including agriculture and manufacturing have increased productivity 10-15 times since the 1950s, the productivity of construction remains stuck at the same level as 80 years ago."

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This “glacial pace” of evolution is found across the global industry, the report added. As a result, the manufacturing and automotive sectors are widely (and correctly) cited as the standard bearers of efficiency, the success of which construction should seek to emulate.

But until now, the question of how this can be achieved has received few viable answers. This, however, might be about to change.

## A chassis for a building

Consultant Bryden Wood has been working with research body the Manufacturing Technology Centre (MTC) over the past 18 months. The pair have been trying to find ways of introducing manufacturing methods of design, production and delivery to the construction industry.

One of the biggest breakthroughs they have had is the idea of having a variety of replicable building platforms, all of which have standardised dimensions in areas such as corridors, rooms and floor-to-ceiling height. “A platform is a standardised superstructure of a building – think of it as the chassis of a motorcar: it’s a platform,” explains Bryden Wood engineer Dries Hagen, who is also a former client of the company.

“On that platform you bolt on a load of things that make it a Mini, or a Mini Countryman and so on. In terms of construction, projects are very much the same where you have a superstructure which is the standard platform. Onto that you can add cladding systems, plumbing systems, bathrooms, offices and so on. You can do anything, but you can use the same platform.”

It is the repetitive nature of such a platform that then allows you to step into the world of manufacturing thinking, Mr Hagen says enthusiastically.



Offsite elements are often post-applied to buildings – the platforms mentioned would always incorporate them from inception

The concept came about following a conversation between Bryden Wood, MTC and the Infrastructure and Projects Authority in spring 2017. The trio were discussing the current set-up where every building is, in effect, a prototype – a team is assembled, it invents something from scratch that is built just once, and then typically changes for the next project or disappears entirely – along with everything that team has learned.

“At the moment, there is no continuity of expertise and learning from project to project,” says Bryden Wood director and head of global systems Jaimie Johnston.

“Every time Ford designs a car, they don’t get a completely new team in that’s never designed a car together who ask each other, ‘How many wheels should we have?’ They have quite a sophisticated [starting point] and ask how they can develop it with new things from material science, technology and electronics – they have a continual improvement rather than constant reinvention.”



The platform concept is not completely new. The likes of Tesco and BP have been using similar methods for years, while Bryden Wood developed a standardised operating theatre for the Circle Reading Hospital project, which is now being used for the under-construction Circle Birmingham Hospital – 10 years after it was first conceived.

## Componentising buildings

To take the concept forward across construction, Bryden Wood suggested that government clients should stop separating multi-billion-pound frameworks into separate pots.

Instead, they could spend the money “on mass customisable components that can then be used in multiple programmes, so [they can] immediately start to cross fertilise learning,” Mr Johnston says.

Customisable components are the second part of the concept. Just as the chassis of a car needs to be fitted out with a shell, wiring and seats, the building platform needs wiring, plumbing and cladding that is also produced on an assembly line, which is essential to unlocking the productivity gains of manufacturing processes.

“What we’re trying to do here is look at the design of some very novel components – things that have never been used in construction before, as opposed to the traditional approach to facade walls, for example,” explains MTC delivery engineer Terri Livingston.

One of the innovations this has led to is a ceiling cassette that can be assembled by a complete novice with limited training.

Working with a base unit onto which all of the wiring, plumbing and insulation must be fixed, the individual receives on-screen instructions such as ‘place component X into location Y’. Every component is barcoded and scanned before and after it is fixed into place to ensure there are no errors. A similar solution has been developed for cladding.

**“What we’re trying to do here is look at the design of some very novel components – things that have never been used in construction before”**

Terri Livingston, MTC

The whole concept has moved beyond prototype phase and is being used on a live project for a government client – one which plans to use the platform superstructures and componentised solutions on future developments too.

“This really is an area where the MTC came to the fore because what we are doing here is not off the shelf,” says Alfie Heyland, project manager at Mace, which is also involved in the project for the government client along with Interserve and Kier.

“We’re buying a series of raw components, assembling a product and going through a journey of, ‘How do go through the stages of product design development, process design development, and validation of those processes?’” Mr Heyland says. “We’ve got some good ideas [in construction] but we don’t have the full span and history that automotive and other manufacturers have, in terms of that rigour and discipline, looking at things from every possible and conceivable failure mode.”

As well as moving quality standards closer to those found in the manufacturing industry, Bryden Wood and the MTC are also creating something that can be described as a genuine design for manufacture and assembly project (DfMA), Mr Johnston says. “People try to post-apply offsite to an existing process, so you design a building and say, ‘Right, let’s turn it into a DfMA project’ – it doesn’t work like that. It’s *design* for manufacture and assembly,” he stresses.

## A bridge for manufacturers

A knock-on effect of being able to properly use DfMA in construction is that it acts as a bridge between the construction and manufacturing industries, opening the door to a completely new supply chain that construction firms have so far been unable to access.

Bryden Wood discovered this when it was trying to develop components that could be assembled to create large segments of buildings (such as the ceiling cassette) and broken down into brackets. The company quickly found a laser-cutting specialist that was able to improve its design and offered to make it the next day for half the price.

"You suddenly unleash a load of new people who can say, 'Right, I've got a whole load of techniques that you would never have got your hands on, but because we're now having this conversation, let me tell you about brackets'," Mr Johnston says. "And you're thinking, 'Brilliant, now we're having a proper manufacturing conversation and now we are starting to get the benefits'."

Mr Johnston adds that this can also enable experienced individuals from the manufacturing and automotive sectors to make the jump into construction, due to the creation of a new manufacturing space within the sector.

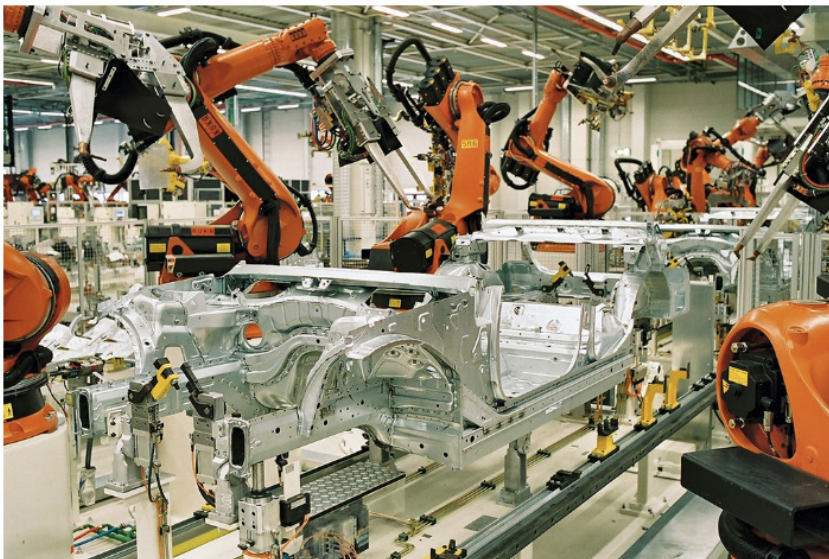
## Reversing practices

Given that the public sector is the industry's biggest client, it is encouraging that the concept has secured the backing of a government client through a live project.

The ambition is to secure industry-wide take-up, but this will mean reversing some long-standing approaches and assumptions about how a building can and should be built.

At the outset, contractors can develop a series of platform superstructures off their own balance sheet, but (in the early stages at least) componentising the larger segments of a bespoke building will take time and money – who pays for this?

"Clients need to step up to the plate," says Bryden Wood's Mr Hagen. "In the automotive industry, they spend all of their money upfront on design. In the construction industry, everyone delays spending money as deep into construction as possible. That's the wrong way around."



The automotive sector is cited as a standard-bearer of efficiency, which construction should seek to emulate

Instilling this change in client mindsets may be difficult, but the long-term upshot could be huge. "If you take a school for example, historically it would take around six-to-nine months from appointment to design completion," says Kier preconstruction procurement lead John Handscomb.

"What we're now asking is: how feasible is it to get that down to a week? The first reaction you get is, 'That's impossible'. And yet, I can go onto the BMW website, choose all of my finishes, alloys, sound system and so on. I never question the wiring or the chassis in the car because they tell me that is the wiring and chassis. And it will configure that car, with a schedule for them to make it, within minutes. They can do it and a car is a complex piece of kit."

Implementing this new way of working also means accepting that passing down risk through the supply chain will no longer work. This is because all stakeholders – client, contractor, supply chain – will need to be involved from the start of the project to select the best platform, agree on what can be componentised and how, and how best to manage the logistics of offsite and onsite assembly.

"What you're looking at is involving the people who are going to hold the risk across the project," says the MTC's Ms Livingston. "That is one of the key elements that might be transformational for construction."

MTC associate director Trudi Sully adds: "The sooner you get people involved earlier in the the process together, the better the overall quality. [This pre-empts] the common story of the contractor having to go back and change the design because it can't be built that way or doesn't function in that way."

## Obstacles to evolution

The stakeholders involved in this initiative are understandably excited about the potential impact it could have, but none of them appear to be under any illusions as to how quickly the industry can adopt a manufacturing business model.

For a start, there are a limited number of individuals in the industry who have the required skills to help push the transition along. "We need more manufacturing people in with us as part of construction because we do speak different languages, and we need more and more people who are going to act as translators," says Mace's Mr Heyland.

This is one of the reasons why Bryden Wood recruited Mr Hagen. His engineering background and pragmatic approach to problem-solving have allowed him to fulfil this translator role, and remain a constant throughout the project.

**"What we're now asking is: how feasible is it to get that down to a week? The first reaction you get is, 'That's impossible'"**

John Handscomb, Kier

"Bryden Wood needed someone to come and help preach this gospel because it needs people who can shout from the rooftops and not cower when they come up against adversity," Mr Hagen says. "It needs a lot of that because this change is going to be very painful and [some] incumbents don't really want – and can't really afford – to embrace it wholeheartedly. It will disrupt their existing mainstream activities too much."

Mr Heyland agrees. "It's going to be uncomfortable for us in construction to make that journey," he says, though he believes that bridging the remaining gaps is far from impossible.

"We're going to have to work in a different way and we're going to have to focus our attention further and further down the value chain, which actually means far more detail than we're used to," he says. "We're going to need support, not just from bodies like the MTC who are helping to bridge a gap, but individuals with experience that will be part of construction and help us drive forward the theory as much as possible."

Unlike with a lot of offsite factory solutions developed by private companies, none of the parties involved in this project will claim intellectual property rights – any IP generated will be given to the Crown.

The fact the public sector will adopt a presumption in favour of offsite construction from 2019 suggests this concept is being given every chance to succeed.

If it does, the billions in productivity benefits dangled by McKinsey's 2017 report may finally become a reality.

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