Machine Applied Plastering, Rendering and Floor Screeding

A Talk Given to the London Master Plasterers’ Association

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I would like to start by going back a little bit. We all talk a lot about the German experience and what has happened in Germany because it is held up as the bright star. Moreover, mechanical application over there was born out of a depression followed by boom. The Germans found themselves short of labour and needed to get things done quickly and in an efficient manner and that is really the basis of how it started in Germany.

The UK experience has not been quite as good. Turn your minds back probably 20 years when the Swedish systems were in this country. However, they had long drying times, characterized by thin coats and not really suited to the UK building market although we did try hard to make them successful. Then about 10 years ago one-coat projection tried to succeed but I think, if we are honest, machines, material and labour were not ready.

Let us bring ourselves more up to date. Over the last two years we have seen the best of the German machinery and the best materials coming together to start to make the system work and we have a good few examples now of the system actually in the UK. It was only at the meeting a few weeks ago with the manufacturers of the Association that there was talk of more work coming about. And when questions were raised such as “What about the labour?”—Well you all know the answer—it is not really there.

The right time . . .

So, even the timing for machines seems to be coming right. We have the materials, we have the machines and it looks as though we may have a shortage of labour which bears out the German situation that started it all off. Coupled with this, you have seen Blue

Floor screeding in progress.

Some close-up examples of machine applied rendering.
“The result was a very satisfied architect, builder and plastering contractor who had carried out the job and, who, before we got there, were not quite sure what they were going to do.”

Circle develop from just internal plaster since the machines can now be used for plaster, render and floor screed and this makes the machine much more interesting to the plastering contractor.

There is one big hurdle that we all have to overcome and I think only by all of us working together will we ever achieve that. This hurdle is called ‘education.’ Education of the architect, education of the builder and education of the labour using the system. I think the trouble is we find ourselves in a ‘chicken and egg’ situation. Until it is used on site nobody appreciates the benefits but it is difficult to get people to use the system for the first time.

Our concept of machine plastering is to have systems or, if you like, packages of material to overcome most situations. I think all people have said at some time “There’s one material, lads, there’s the machine—now spray it on any old wall.” Well it is very nice if it all works.

But, what we have had to look at is all the types of situations which arise; all types of things that happen. That was very much the case in the floor screeds situation where we came to you two years ago and said, “We can pump a floor screed. It goes down at 7mm.” I think you all laughed and rightly so. Your experience said that does not happen here. We have now looked at that and I will be telling you in a few minutes exactly what that means.

We have packages and we have systems that can now do those jobs and we can answer the problems with machine plastering. I think the problem was that we came with one material and said “Here is the miracle.” As you know it does not quite work like that on site. We are looking at those three areas, and are looking at developing those products as packages and systems and service products to those main products so that the whole system works.

The main thing about projection plaster is the speed and efficiency of the system. It is now becoming more widely accepted over the last two years. We used to go to people and they would laugh as they had done over the floor screed. We do not find that so much now. Once you get the examples behind you I think people are much more willing to accept it and we can actually take them to those jobs where it has been successful. But the main stumbling block, and I am sure you will all agree with this one, with projection plaster has always been the price. However, I think certainly we have noticed that with more manufacturers now, and I include both the UK and the Continent here, that more of them are looking for a share of the market and this looks like it is alleviating the contractors problems. I think we see the price of projection materials trying to equate themselves to the hand applied materials.

I think initially people said that the speed and the efficiency equalled money in your pocket. What we are now trying to say is, you do get speed and efficiency but that does not equate to money in your pocket—it has to be done for the same price. I think we have all learned that lesson.

We know that machinery is not like buying a trowel or a feather edge, but that it is an investment and must be used as such. The most successful
machine use was usually where the boss showed most of the interest and made it work and the others followed. In fact I know of a company director who was the only one who actually wanted to use machinery. The others were dead against it. He pressed on. He managed to do a job and convinced them he had made a little bit of money. He did another one and he went on, and in fact that person now has four machines. That is the way it works.

People are against it, people are for it. But it is those who show the most interest who win, and I can quote you another very large company who bought a machine—and in very large companies it does not matter if a thing works or not. The boss was not that interested and it now sits in a corner of his yard and I think he probably wants to sell it. There are two sides to the argument. We have never said that everyone will use a machine. We have always known that there will be a market for machines and there will always be a market for some hand applied.

Over the last couple of years we have said quite a lot about plaster machinery. We know the problems and we know what you have been saying. If we have not come up with all the goodies at once we are sorry but we do have to start somewhere. Now we have started, we are making it work and we are getting bolder all the time.
That I am afraid is the way our industry works. To think that everything changes over in five minutes to the system you want is pie-in-the-sky. It does not work that way. A lot of hard work, effort and convincing goes into trying to get people to use systems of this sort. I know the ready-mix floor screed people have been talking about this for years and years. They have now got a fair part of the market but it is still hard work for them.

So we moved on and we are getting more materials. The next area to receive our attention was the render side and I know that some people think we should have gone to that one first, but there we are—life is not always easy. Machine applied renders, and I am generalizing here, are now more readily available and in my opinion they will change the method and the specification of rendering given time.

These renders follow the principle of projection plaster and are usually one coat applied up to 20mm thick. They are cement based and can be applied to bricks and blocks and on to other surfaces that renders go on. It is usually sand and cement applied.

**Preparation . . .**

However, they do have the usual preparation. If it needs SBR primer—it needs SBR primer. If it needs wiring—it needs wiring. They only go on to what sand and cement would normally go on to. These renders are sprayed on and are ruled off to give a flat even surface and then they can either be textured from the spray gun to give a bold texture which is somewhat like roughcast. If you have somebody who is quite efficient with the gun he can even get down to a fine Tyrolean finish. Or you can rule the surface off again to leave a flat surface and this is then left to harden.

For what you put on in the morning you would use a nail float. And what you put on in the morning you scrape, or what you put on in the afternoon you scrape the following morning and that leaves what we called before the War, a scraped finish—a fairly traditional finish on render. In fact we have recently completed the three show houses at the Ideal Home Exhibition for Wimpeys. One of them was in fact done in that scraped finish and two in the textured method and I know that Wimpeys are looking to changing quite a lot of their new houses to render and may well adopt this system.

The material comes ready mixed, it just needs the addition of the water from the machine and it is colored with one of our six colors. Speed and efficiency are again the benefits of the machine applied render. I have seen a pair of semi-detached houses sprayed, ruled and textured in one day.

One of the things that I think machines bring to all the work that we do is quality assurance and it can be brought to the rendering as well. The materials that are used and come to you in the bag are constant, factory blended and tested. On site the machine sets the amount of water in the mix and this remains constant. The risk of poor sands, inconsistent cement proportions, varying amounts of water in the mix and poor mixing, are the main causes of rendering failures.

**‘No risk’ renders . . .**

All these risk factors are taken out when the machine and factory blended materials are used. New housing estates as well as renovation work are targets for these renders. For instance,
I was in Scunthorpe a couple of weeks ago and I saw streets of old houses done in Nofines originally and dashed. Now I am sure you have all seen what happens—the dashing falls off, water gets inside and it is a terrible mess. Men were stripping off the old dash ing, putting an SBR cement scrub coat over the Nofines, wiring over any big cracks, then spraying this particular rendering and texturing it. Those houses looked superb when they were finished.

The newest and most revolutionary product to date is the pumped floor screed widely used on the Continent. However, here we see that the educational process has to involve the specifier and the main contractor because the best system is where the concrete has to be laid flat, tamped, and the self smoothing floor screed pumped at between 7mm and 10mm.

Now we do realize that thin section flooring is not always practical on site. The concrete, certainly in the UK, is not laid level enough to take 7mm to 10mm so we realize that we have to have a package of materials to carry out most jobs.

For example, we have a patching material to fill in any hollows or dips or even holes and this material is in fact available now. It sets hard in two hours and can then be covered by the self smoothing floor. Second, there is a fine filler for local repairs to finished floors which may get damaged by other trades. Third, there is a material which can be used for small jobs and can be poured by hand—that is, from a bucket or even a watering can and not through the large machine—and which sets in two hours. It can be walked over after two hours. Fourth, we can supply a product pumped through the large machine but which can be laid to a thickness of up to
55mm. In fact we did a job just off the Strand which was recently completed using the thicker floor screed. It was an office renovation job and the floors were very, very uneven. The thickness required in order to maintain head height in the rooms was anything from 3mm to 55mm.

To carry this out the main contractor made a grid of the floor at metre centres and using a laser he drew up a plan of the floor and the various thicknesses required. Again at metre centres, the concrete was drilled and plugged. Screws were then put into the plugs and levelled off at the required height using the laser. The tops of the screws were painted red so that you could see them. We then pumped the floor screed material to the top of the screws and this gave the thickness required (from 3mm up to 55mm). The result was a very satisfied architect, builder and plastering contractor who had carried out the job and who, before we got there, were not quite sure what they were going to do.

**Swedish experience...**

What we see from Swedish floor screed is that the set can actually be walked on in two days and covered with sheet vinyl, carpet or whatever in five days. In fact the fast set materials that they have can be walked on in two hours and (again), covered in days. This means that the site is not so disrupted as with normal flooring materials. In fact, what we have said to some architects and main contractors is that the screeding can be left until a much later stage in the contract so leaving floor areas clear for other trades. Coupled with this is the speed of application and you can actually lay this screed as fast as you can walk which could be up to 300m² an hour. So the whole site benefits from that very quick floor.

The system brings quality assurance, the materials being factory blended and controlled. The water ratio is controlled by the machine and is constant. Human mistakes are kept to a minimum and the floor itself leaves a smooth, hard finish. In the dropping ball test our indentation has never exceeded 1mm and is usually 0.9mm. As you know they usually allow between 3mm and 5mm.

What we are doing is giving training to anybody who has a job or wants to get involved in this floor screeding system. We are running a publication which is a Users Guide and we also have what we call a Specifiers Guide which lays out all the why’s and wherefore’s of using the system.

Our stance, over a period of time, has changed and we are now saying that given a floor, given a job, there is a good possibility that a material that we now have can do it. Given the constraints of thickness and setting time and thin and thick sections we can do it. Advice, specifications, training are all part of the package not only for
floor screeds but for all the projection materials. We now have a team of five people who concentrate on nothing else but doing projection materials, site calls, site training, off-site training, advice, selling, and seeing architects.

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**Point of no return . . .**

You have seen our dedication to machine plastering and we have shown you that by bringing an increased range of products and an increased use for the machine. And, in co-operation with the machine manufacturers and suppliers, we have developed and will continue to develop service, training, products and machines. We are now at the point of no return. We think that we have now gotten over the hump that we failed to get over in the last two attempts. There is no going back now. We would find it very difficult in fact to stop what has now started and, if we stopped, someone else would in fact continue.

This time machine plastering is right—the time, the machines and the products. And if I look into the future you can progress further into the total package including silos, bulk deliveries and certainly the floor screed system. The material goes so quickly through the machine it is a job for one man to keep up with putting the bags in. Silos and bulk delivery then become a necessity. Silos have been used here that have been hand filled and have proved to be useful and a benefit on certain sites. We have to set up a system and this will take a bit of time but once we are on our way the next step is towards totally automatic systems.

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