



THE FABRIC OF CARS' EXISTENCE

For decades, fabric-bodied cars have had to be restored with incorrect PVC coverings. Now, after an amazing salvage operation, that's no longer the case

WORDS David Lillywhite // PHOTOGRAPHY Lyndon McNeil

THIS COULD BE the biggest change in restoration for decades,' says Graham Moss, as he unlocks a small industrial unit on the edge of a quiet Bedfordshire village. I'm wondering if that could really be the case, and mentally listing restoration breakthroughs. Plastic filler? MIG and TIG welders? 3D mapping? They've made processes easier, but have they changed the appearance and authenticity of any car? Not really.

Graham swings open the doors to reveal a piece of machinery that looks run-of-the-mill, until a closer look reveals steam-age sprockets, drive chains, levers, dials and rollers that clearly don't belong in this century.

This, however, is the future – at least, it might be if you have a fabric-bodied car. The machine you see here enables the correct fabric to be used, rather than the PVC (in a limited range of colours, including just one shade of British Racing Green) that is all that's been available for fabric body restoration since the 1960s.

A bit of history: in the early days of the automobile, carmakers concentrated on running gear and chassis, leaving traditional coachbuilders to construct the bodywork. Ash frames were skinned in aluminium but early chassis were rather flexible, and the bodywork took the strain, resulting in unsightly cracks.

The alternative, which became a popular solution for everything from sidecars to limousines, was to cover the →

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body in a fabric that was coloured to match (or contrast with) the painted metalwork of the vehicle. Two companies manufactured the majority of these fabrics: ICI in the UK and Dupont in the USA. The ICI version, 'Rexine', was used for book binding, tablecloths, public transport seat coverings, even wallpaper.

It was highly flexible, waterproof and durable, and it could be made in *any* colour, to a high-gloss finish – or it could be embossed at extra expense to show a grain. There are plenty of cars that, incredibly, still exist with their original Rexine, including Bentley 'Old No 2', the 1930 Le Mans 24 Hours Speed Six, which Graham's vintage Bentley specialist company RC Moss Ltd restored eight years ago (featured in *Octane* issue 46).

The Rexine on Old No 2 is intact, but only just. That got its owner – top-level collector Peter Livanos – and Graham thinking about what might have happened had the fabric not been usable. Could it be reproduced?

What happened next is uncanny. Bentley historian Clare Hay, employed to document Old No 2, started to research Rexine. She came across the name of Wardle Storeys on the Stour estuary near Ipswich, once the home of Britain's first plastic manufacturer, and also of Rexine production. When she Googled the company, the first picture to come up was of the factory being demolished, taken by a photographer who specialised in urban decay. In fact, he'd taken around 80 photographs – just two days earlier. The demolition was still ongoing!

One of the pictures showed a huge, paint-spattered machine that Clare and Graham realised could have been used to produce the fabric. They contacted the demolition

company and persuaded someone to let them take a look – as Graham recalls: 'It was an incredible place, a 77-acre factory, all steam-powered, with tiled floors throughout. The machine's saviour was the later routing of an electric train line, which cut off part of the factory and left only a narrow tunnel under the line for access.'

'We found the machine. It was 25-metres long and steam-heated. I thought, no, this is ridiculous! We'll walk away!' All the same, Graham mentioned the factory to Peter Livanos. 'I said to him "I wasn't going to tell you because I know what you'll say." And, of course, he said it – that we should rescue the machine. It's been a nightmare ever since! I kept thinking it over and finally I had a eureka moment – "Why do I need the oven?" – because either end of the machine was generic. I could take the ends, and halve the length of the machine.'

'I arranged to buy it for scrap value, meeting in a layby with cash in an envelope. Only then was I told that the lagging round the heating tubes might be asbestos! I had to employ a man in a spacesuit to go in and analyse it. Turned out it was plaster of Paris. Then we had to work out how to get the machine out through the tunnel. We found a company that specialised in storm drain work, and they used a lowloader to drag it out.'

So that's how Graham Moss came to be heading up the Vintage Fabric Company, based down the road from the spotless RC Moss workshops. But it's not been easy...

'We'd been told that the coating was 50% cellulose, 50% castor oil [to add plasticity], but when we tried that on the fabric, it would crack. It's incredible: Dupont made six billion yards of Rexine in 1928 alone and yet

Above and right
The marvellous fabric machine, which in operation clanks and hisses like something out of *Charlie and the Chocolate Factory*; Graham Moss scrapes away excess paint using a broad-bladed palette knife.



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there's so little information available on it. The British Library lists an instructional book but they can't find it!

'The breakthrough came when we found an old boy who'd worked on the machine. He said that three separate coatings were used: the first to seal the fabric; then the pigmented cellulose, but that would leave the surface so soft that you could use it as a crayon; and finally a rock-hard clear coat, just microns thick.'

Graham continued to experiment and began to perfect the coating, but still the fabric wasn't pliable enough.

'When we started I'd paid an expert to analyse the original fabric, and he'd told me that it was "a plain twill weave", with one warp under, one weft under. No! That construction locks it so that it can't be folded. Eventually I realised that the expert probably never analysed it, he just took the money. It turns out that it's a 6/1 weave, over six, under one, which is loose as hell and very pliable.'

Graham commissioned a mill in the north of England to produce the fabric, weaving it and then singeing the top layer with a naked flame to burn the fibres back, ironing it, shaving it, bathing it, stretching it to a uniform tension and finally back-combing it to a furry finish. 'If they don't roll it properly it's game over,' says Graham.

All this before the machine was even up and running. Graham replaced the original steam-powered oven with a modern oil-fired unit, and installed it in its own building, away from the main site.

'I sent a letter to the Ipswich local paper, asking if anyone remembered using the machine, and a man phoned us up. He'd used it for seven years. He came down one Sunday and changed our world; he brought the machine alive. It took another seven months to get it right but by then I felt quite confident.' It's still a daunting process, though.

Below
The Wardle Storeys factory, as found mid-demolition by Graham Moss. In fact the narrow access tunnel (bottom left) has prevented further demolition work to the part of the factory that the machine was found in.



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Above
The two finished cars: UV 7818, a 4½ with embossed fabric; and KD 123, a 3 Litre with smooth fabric. Graham uses a modern machine with custom-made roller for the embossing; the 'grain' (top right) must remain straight, so embossed fabric can only be used on square-backed bodies. The close-up (bottom left) shows what's underneath a Le Mans-type body covering.

Graham works at one end of the machine, standing on a rubber mat to avoid static electricity build-up, scraping away excess paint with a knife. In the past, operators would climb up to the machine and tap the knife onto the end roller to earth any static, and so now the roller is pock-marked from decades of those little taps.

Another operator works from the opposite end, where a water-heated roller pulls the fabric through under tension. As the fabric starts to move – at some lick, it has to be said – Graham pours the paint mix (or sealant or top coat) onto the fabric, and a Stellite-tipped blade scrapes almost all of it away, leaving an initially invisible coating. The varying thickness and imperfections of the fabric are allowed for by a thick rubber blanket on the roller beneath the stellite blade, keeping the coating uniform at all times. Graham has to adjust barge boards on either side to keep the coating within 5mm of the fabric edges at all times.

The fabric then heads through the three-stage oven, each part working at a different temperature to evaporate the three solvents: cellulose, isopropylene and toluene. It is then directed around the opposite end of the machine from Graham, and gravity drops (to reduce creasing), cleverly concertinaing under the machine, then to be guided out the other end by adjustable rollers, operated by a third man to compensate for shrinkage in the fabric.

Job done? Oh no. This process, for the pigment stage

alone, is repeated around 22 times, the coating building up and finally, in the last four or five passes, beginning to show its trademark high gloss. At any stage Graham might spot a flaw, or have to intervene with his knife to scrape away a build-up of paint, before the run is potentially ruined. The process is highly dependent on operating conditions, so that on a clammy summer's day the coating often won't migrate to the fabric. A crisp, cold day is much better. Fortunately, as the coating builds up the fabric smooths out, as does the process. 'And then,' Graham grins, 'the magic just happens!'

And after the magic? That's the (relatively) easy bit, because although re-upholstering a fabric body is a highly skilled process, it's much quicker than scratch-building aluminium panels – but with all that's involved with the fabric production, it's not much cheaper. The fabric is stretched around the frame, then padded out with horsehair to achieve the correct contours.

Several cars are now underway, and two have been completed: a Bentley 3 Litre and a 4½, both belonging to Peter Livanos, and due to be unveiled at Pebble Beach Concours this year. They look incredible, noticeably different from PVC-bodied machinery. The vintage car world is about to be thoroughly shaken up. **Car**

THANKS TO Graham Moss of RC Moss, www.vintagebentleys.com.