

A visit to HAG : mass perfection

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Your Editor and correspondent, George Hoekstra, were recently invited to HAG to review current developments and take a tour of the production facilities. The photos are laid out in relation to each other rather than simply illustrating the article which concentrates on the HAG philosophy and looks at the current situation.

An invitation to visit the HAG factory near St Gallen was too good to miss. Organised with the assistance of George Hoekstra, who was the official photographer on the day, and by kind invitation of Werner Gahler, the Director and Proprietor of HAG, I prepared for an early departure from accommodation at Spiez to be at Mörschwil by 1030.

The factory is close to the station and is housed in buildings behind what was a house and which now provides a reception area together with accommodation for Herr Gahler and his wife.

According to the boss himself, Herr Gahler, life used to be a lot easier. "In the old days, you had green locomotives and you had brown locomotives. You could sell them for years. Now, the variety of models in this drawer represent only a few years - and shelf life is a lot shorter too."



After a warm welcome Herr Gahler gave us a slide show illustrating the history of HAG. Founded by brothers Hugo and Alwin Gahler (hence the name) in 1944, it was the logical development of what had previously been a hobby. The brothers were toolmakers and machine engineers and had been asked by friends to make models for them.

At first O gauge non-prototype models were produced and at the same time the hallmark of HAG was swiftly established, quality first and foremost. Motors, wheels and most other components were produced by the brothers themselves and that tradition has continued to this day.

A factory was rented in St Gallen with the initial idea of producing the tools and components in the factory and assembling at home by family members. This concept was very quickly abandoned as demand soared. From time to time other products have been produced (for example an apple slicer) but trains were and have always been the mainstay of the company. From 1950-1984 the St Gallen factory produced HAG's exquisite models but eventually a move was made to the current site. The new factory represented an investment of SFr 2m and provided much-needed extra capacity. It had been the home in the past to manufacturers of textiles, chocolates and nappies, although probably not at the same time! The former factory now lies underneath the St Gallen bypass.

O gauge models were produced until 1957, the last model being an

SBB Re 4/4¹ which at the time cost SFr 190 and now changes hands at SFr 3000. The sea change started in 1954 when the first HO model, the "Rote Pfeil", was produced. It remained in production until 1980, a testament to the quality of the moulds which HAG manufactures.

HAG is steeped in tradition but has always kept pace with modern standards and technologies which are adapted to conform with the HAG philosophy of quality first and foremost. No expense is spared to produce accurate models and the moulds alone cost SFr 130000 each; in fact each model requires an initial investment of about SFr 200000 before production can begin. For a small manufacturer like HAG this has its problems. The proportion of investment to turnover is about 20%. To put this into perspective Märklin spends over 15 times as much as HAG on investment, but this amount represents only 3% of Märklin's turnover. One can immediately see that economies of scale are non-existent and that overhead allocation is huge in relation to final cost. This equation is the wrong way round leads inevitably to a higher price per unit. However with the emphasis on accuracy and quality this can be turned into HAG's strength.

Everything, and I mean everything, is assembled by hand. Most components are either manufactured in-house or outsourced using HAG-provided moulds and tools. Everything is painted or tampo printed in-house, packed in-house, tested in-house. Total quality control. George Hoekstra's photographs should make this abundantly clear. During our tour of the factory some examples stuck in my memory as opposed to my notebook.

1. All bodies are cleaned by hand in-house using glass fibre brushes and detergents.
2. The window inserts on the new double deck coaches are individually fitted by hand.

3. The Zugkraft Aargau coaches require 64 separate operations before painting is completed.
4. The obsession with detail: check the red line on the non-smoking labels.
5. The in-house-produced motors are individually balanced. The green blob on the armature is the balance weight, not a production error.
6. All models are individually tested.

65% of production is for three rail and this proportion is actually increasing as Märklin produce more digitally-equipped models.

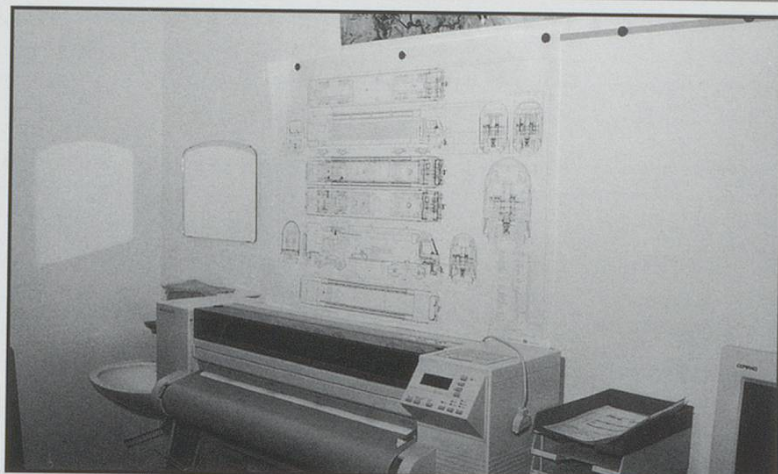
When you think about the above and look at the pictures the wonder is not why HAG is so expensive but rather why are they so cheap? Truly scratch building by mass production.

Herr Gahler did express some concerns about the future. In 1980 for each model about 20000 examples would be produced per year. In today's market about 10000 are produced but with perhaps 30 different variations. One has only to think of the 460 liveries. Bear in mind also that two other manufacturers produce 460s. At the same time he reiterated that, at HAG, quality had to come first and this would never be sacrificed. I suspect that he can afford the odd wry smile in the knowledge that once you have bought a HAG model nothing else will do.

It is no secret that I love HAG models. They are works of art that actually work. Loco models comfortably stand comparison with others costing perhaps £1500-£2000. One puts them on the track and they work supremely well having a dynamic quality of momentum that no other mass-produced model comes close to. Look carefully at George Hoekstra's pictures and see for yourself why HAG stands head and shoulders above the rest.

Many thanks to Herr Gahler and his staff for their hospitality and patience. If you are in or near St Gallen at any time then visit the HAG shop at the Mörschwil factory which is open daily from about 1000-1200 and 1400-1700. It's worth it!

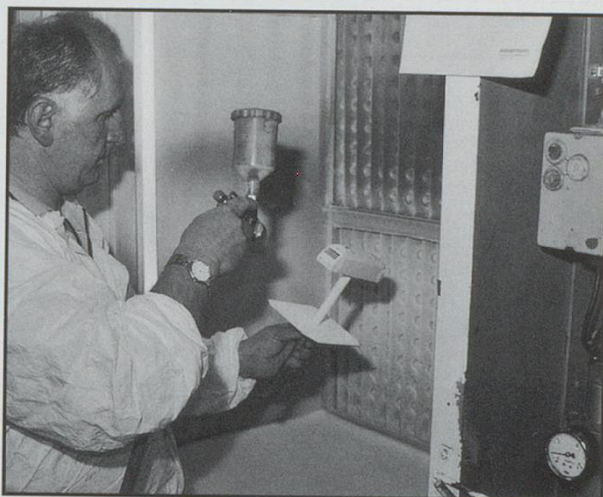
A TOUR OF THE FACTORY



All models start with proper drawings. The investment needed is frightening. For a CAD system like this updating alone comes to several thousand pounds every two years.

**Photographs and captions
by George Hoekstra.**

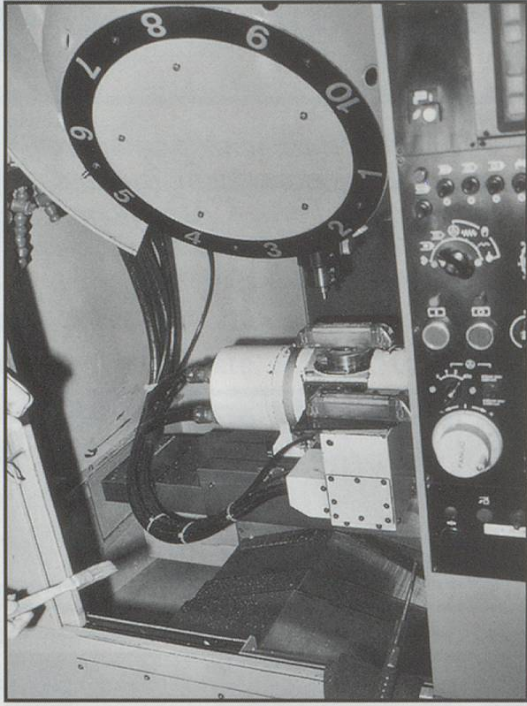
After cleaning the basic shell it receives a base coat. No need for a mask here as the strong ventilation makes sure no paint vapours can reach the face or get into the room.



For the other coats of paint, masking off is done by hand: a consequence of the relatively small numbers produced by firms like HAG. It would be far too expensive to set up a machine to do something like this for anything less than 10000 items at a time. Figures like that are only achieved by firms like Märklin or Bachmann.

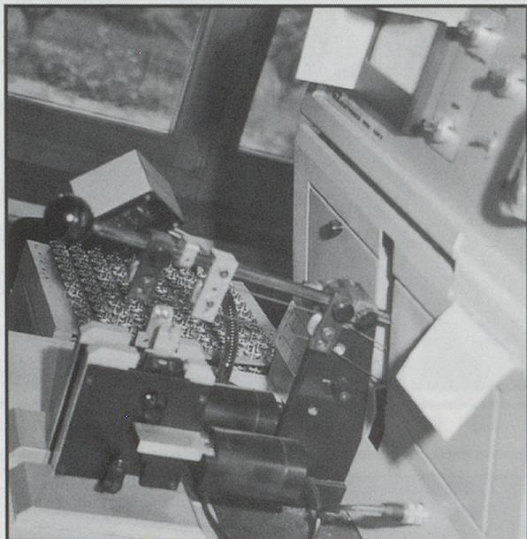
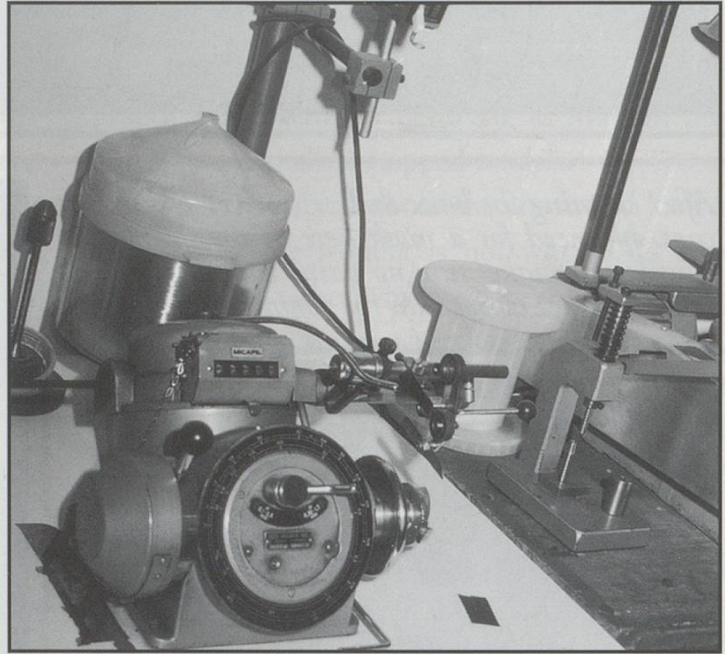


Another example: windows here are fitted individually by hand. Again, the tooling costs to manufacture fitting sprues for every type of coach would be far too expensive.



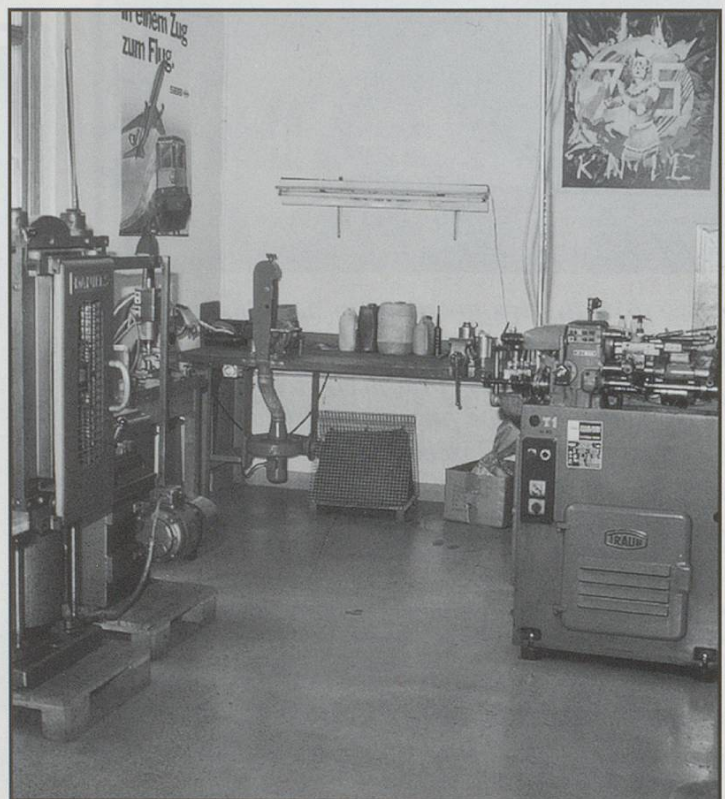
Some of the jobs have to be done by machine. The drilling of the very small holes for things like handrails and radio antenna are so critical, only a machine can do them accurately enough. The people at HAG had to redesign this machine to drill at far higher speeds than normal, in order to achieve greater accuracy and extend the life of the very small drills used.

A winding machine for the electric motors. HAG believes in making as much as possible itself, in order to achieve total quality, as well as having guaranteed delivery.



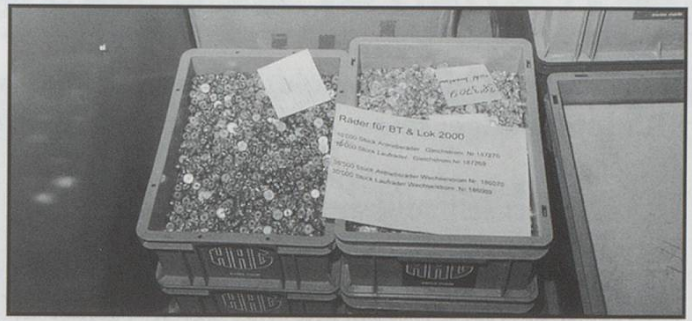
The rotors of the motors are tested for absolute balance, another quality point. Not many other manufacturers bother about this, preferring to install 50p motors in £100 engines.

Another story: the commutators for the motors (that part where the carbon brushes rub on to transport the current) used to be made in Britain. Then one day without warning the firm told HAG they would no longer supply them. A specially-tailored item like this is impossible to obtain at short notice anywhere. So the only possibility left for HAG, was to buy the machines from this supplier, and ship them to Switzerland and make the collectors itself. Needless to say, HAG no longer buys supplies from Britain.

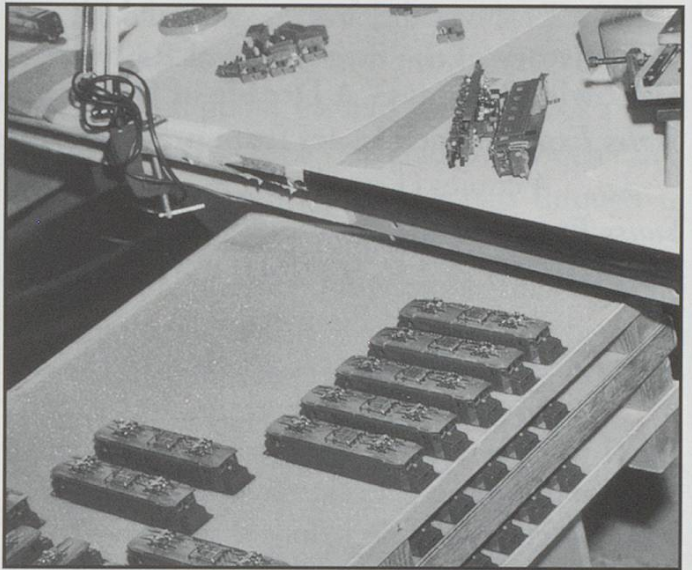




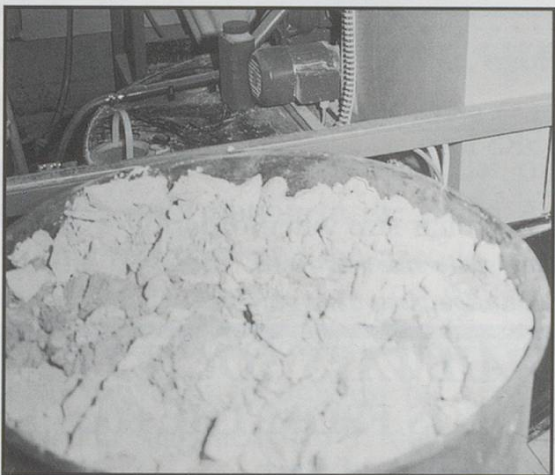
All electrical connection leads are precut to size and tinned, prior to being fitted by hand.



HAG also makes its own wheels: the only way to make sure the axle hole is exactly in the middle.



Proof that the new Ae 4/7 now really is in production! Delays in supplies by outside-manufacturers of some of the smaller components have put this project a long way behind schedule. But then, it is impossible to make all of the almost 400 different parts of an engine all yourself.



What looks like clay here, is actually metal dust. As HAG's metal bodies are drilled, reamed and polished, the very fine dust is sucked away at the sites and transported here by ducts. The metal is filtered out and solidified, to be sold off for use in other manufacturing.

At HAG, they really do test every loco, before it goes into the box. Most of the other manufacturers only test a sample of the production run.

