Living with...

The Regner Sächsische IV K

by ALAN REGAN

What is it like to live long-term with a locomotive? In the first of a series of similar articles featuring long-term user experiences of their locomotives, ALAN REGAN describes his unusual Regner working compound locomotive. It's quite a feat of miniature engineering... **Photos by Alan Regan.**

I suggested some time ago to our ***SMT*** Editor that perhaps a series of articles could be encouraged describing the use of unusual models. *(This is a great idea! I would welcome similar articles from any reader who has a few years experience of using their locomotive – Ed).* Well, I get to put my money where my mouth is by providing the first such article. I've chosen my Regner Saxon Meyer 0-4-4-0, which is a fully articulated compound loco. The rear drive unit runs on fresh steam (simple expansion) and the front drive unit runs on the exhaust steam from the rear unit (compound expansion) or, usually for starting, can run on fresh steam also. This is selectable from a valve between the cylinders on the rear drive unit. Anyway, before I go further, a bit of history.

The prototype

The Royal State of Saxony Railway ordered 96 of these neat articulated compound locos from Hartmann in Chemnitz. They were delivered in batches between 1892 and 1921. They replaced a variety of older locos across Saxony's 520km 750mm narrow gauge network as traffic increased and the existing locos came to end of life. The network abounded with tight curves, hence the selection of articulation to the design of Günther-Meyer. Ninety one of these machines came into the possession of the Deutsche Reichsbahn, of which 57 were still in serviceable after WW2. Of these, nine were rebuilt with Knorr brakes, leading to their disfigurement with air tanks mounted atop the boiler. Twenty five were rebuilt in the 1970s with new boilers and frames. The most obvious difference between the rebuilds and those in original condition is that the former have flat steam domes whereas the original have rounded domes. A number of the rebuilds remain in preserved use. My model is one of the rebuilt locos still in use on the Pressnitztalbahn, close to the German border with Poland.

The model

The model was announced in 2006 as Regner's Model of the Year. The company's practice was (and still is) that it builds the MotY to the number ordered by the time the firm closes for its summer break. I had long admired Regner's products and also the prototype, so I ordered it as soon as it was announced. In the event delivery was delayed and it was not until June 2007 that I received it. When it arrived, the shipping container had taken a clout and the main frame was damaged at one end. I took pictures and e-mailed Regner. A replacement was sent promptly and I returned the defective frame, at Regner's cost, to Germany for repair. So my first impression was of good customer service which was reinforced ▶

Above: *A favourite spot for pictures on my line as the train comes round a 9' radius curve into the station. You'll notice that the first '9' of the loco's number 99 1590-1 is missing. This is a transfer and was a casualty of the gas burning in the smoke box when the loco was new. It's now very easy to light and pops readily down the fire tube. I'll get round to ordering etched plates one day...*

when another small problem arose during assembly of the loco. I haven't mentioned this so far – the model is delivered as a pre-painted kit needing assembly and some pipe bending but no soldering.

The instructions are in German, so the audience for any of Regner's Model of the Year kits is limited outside German speaking countries. My A-level German was still in regular use as a result of my work and friendships in Germany, so whilst I did need to look up some words I was otherwise unhindered. The instructions are full of what I would describe as 'builder to builder' tips, the most important of which was "don't move onto the next step until you are fully satisfied with the current step". I took this to heart and as a result, assembly took many months but the outcome was successful. From memory, I was able to run the loco outside in steam in winter 2008 and all the final fettling, including installing working lights, was complete for summer 2008.

Working drain cocks

The loco has working drain cocks which are connected on each cylinder pair by a link moved by an arm in turn moved by a servo (therefore one servo per drive unit, which are linked on the transmitter to open all drain cocks at the same time). One of the links provided was too long, which again Regner replaced when I alerted them to the problem. At the same time they also provided a couple of other parts which I assume that other builders had found either to be necessary or were faulty. I later worked on a friend's loco of the same type – it had been assembled with the faulty link, and the drain cocks either never opened fully or never closed fully. A call to Regner had a new link winging its way to Olney. I was impressed again by the customer service, even though it wasn't my loco.

Now this article is about living with the loco, so what did I have after I'd completed the build?

Radio control with 7 servos

The loco is really unsuitable for manual operation and needs six servos for effective control – I installed a seventh, for the whistle.

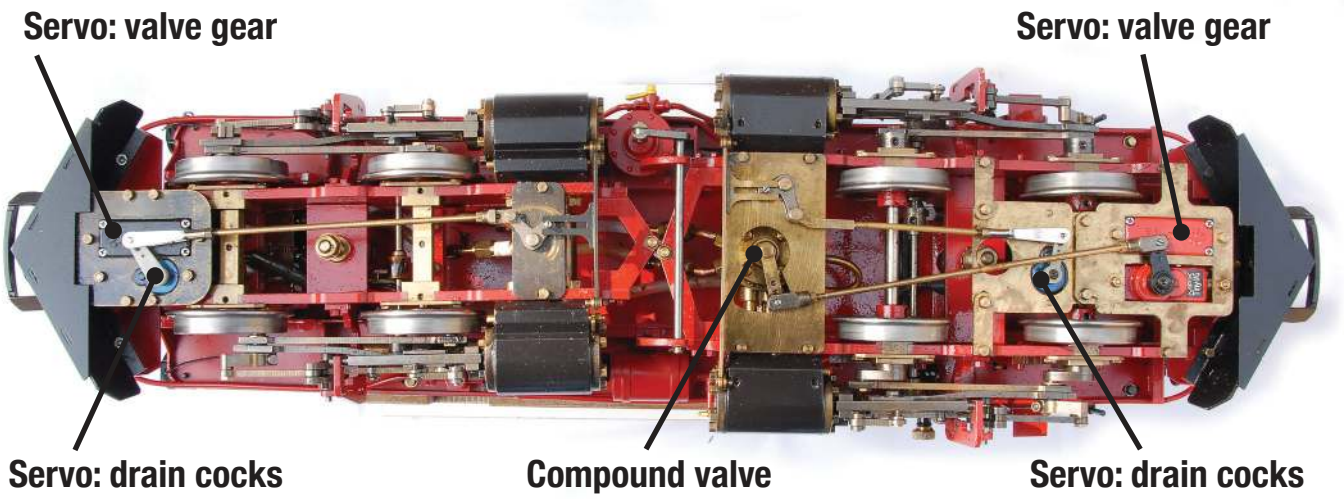
I bought a sophisticated seven channel R/C system with the kit – it was 9% of the total cost of the loco. When I worked on my friend's loco, which had a simple six channel system with servo pairing via Ycable, I realised how much easier it had made it to set-up and to run the loco with my set. On a Meyer, the drive units are opposed, meaning that one runs in forward gear whilst the other runs in reverse. Whilst a Ycable enables you to operate two servos from the same control, each must be adjusted mechanically to achieve the correct throw. With a more sophisticated system, each servo can be adjusted on the transmitter and they can then be linked, also on the transmitter. The same applied to the drain cocks, which also work with one set reversed. Getting this right avoids burning the servos out due to overthrow, so a more costly set may ultimately save you money.

Above: *The eagle-eyed will notice that the train is reversed in this view – the clerestory coaches are at the front of the five coach consist. The train is approaching the station and about to make a lovely noise as it clatters over a set of points.*

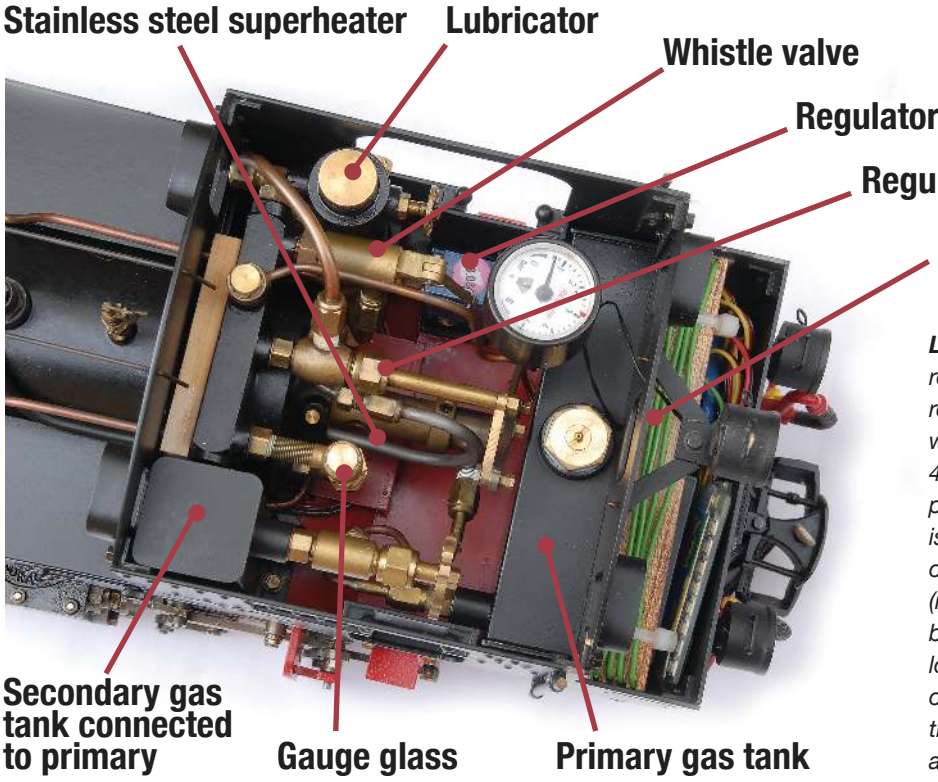
Two drive units

Both drive units are fully sprung and pivot on the frame on which the boiler and cab sit. They are also linked in the middle, one to the other. Stiff PTFE steam pipes connect each drive unit and the frame above. Getting the angle of the steam pipes correct prevents the PTFE pipes pushing the drive unit down or lifting it up. The cylinders make the drive units front heavy and with adjustment, these pipes compensated for this and smooth running was thereby achieved. I have recently worked on a model of another Meyer (the W&LLR's Monarch), where I have balanced each drive unit with weight at the opposite end to the cylinders. I might try this on the IV K, because it would probably further improve adhesion.

There is a water top-up system in the left hand tank, but the filler point is adjacent to the battery. Water is inevitably spilt during filling, so I made a sump with a drain below the footplate to avoid possible damage to the battery. The right hand tank contains the battery charging point and switches for the lights. The whistle sits at the bottom of the tank, enclosed in a wooden sound chamber, to attenuate the sound and



Above: *The underside of the locomotive – as you see, five servos of two different sizes have been crammed into a small space. The high pressure cylinders are in the rear bogie and are fed with fresh steam from the superheater. They exhaust spent steam either to the low pressure cylinders in the front bogie or to the chimney if the compound valve is set to feed high pressure steam to both sets of cylinders. A single servo (marked) controls this action.*



Left: *The cab arrangements – not much room for a driver and fireman here! The receiver is nicely away from the heat along with a battery condition indicator. The long 40Mhz aerial is wound round a loose fitted piece of wood. The drain for the lubricator is under the footplate (see the rear ¾ view of the loco on the next page). The large (rearmost) gas tank feeds the smaller tank by the boiler, so it's easy to refill when the loco is hot. The small piece of wood in front of the steam turret limits the movement of the dummy top feed pipes (plain copper and either side of the dummy whistle).*

stop steam spreading within the tank and cab. Finally, the receiver and battery condition indicator are in the coal bunker, right at the back of the loco and as far away from heat as possible.

Twin gas tanks

The loco has two gas tanks, filling at the rear and evaporating in a tank next to the boiler. I replaced the original Regner filler valve with a Ronson one from Chuffed to Bits – this has enabled me to make full use of the capacity of both tanks, resulting in 40-45 minute runs. It was tedious to fill before. I light the loco from underneath the smoke box, which I find easier than opening the smoke box door. Care needs to be taken to make sure that the flame pops back into the fire tube – the sounds of a correctly 'popped back' flame is unmistakable and it's worth taking time to recognise it, otherwise a scorched smoke box door will be your reward. The loco raises steam readily, but with four cylinders and all that metal, condensate is a problem, to which rescue the drain cocks can be applied. Manfred Regner advised me to start the loco with the drain cocks half open and the regulator open a crack. This works providing you can ignore the temptation to leave the shed before the loco is fully warmed up. Ready is when (at least ▶

Left – Rear ¾ view: *The leaf springs on which the rear bogie wheels ride are visible in this picture. I reinforced them as the loco originally rode too low at the back. The cab steps do limit the swing of the rear bogie but it will happily go through 5' curves without fouling. The additional coal capacity provided by the wooden extension is removable giving access to the receiver. Finally, the lubricator drain can be seen below the footplate above the lifting arm of the rear bogie.*

Left – Front ¾ view: *Another posed picture with the loco blowing off furiously. The tank filler hatches lift, the fireman's side gives access to the water top-up point and the driver side hatch gives access to the switches to turn the head and tail lights on and off (one switch for on/off and the other for front/rear). The cab roof lifts off rather than being hinged – a squint through one of the half open roof vents enables you to read the pressure gauge.*

on my line) steam from the drain cocks is moving the loose ballast! Once all condensate is cleared, the loco starts most readily with fresh steam being sent to both drive units.

Compound working

However, as soon as it's in motion, compound mode can be selected via the radio controlled valve between the cylinders on the rear unit, at which stage speed reduces a little and the exhaust beat disappears almost completely! All that can really be heard is the spitting of condensed steam onto the baffle which sits beneath the smokebox protecting the two servos in the leading drive unit. At full pressure (3 bar) the loco will start in compound mode, but sometimes a blip of the stick to select fresh steam throughout gets the loco moving, at which time compound mode can be re-selected. The loco has a long but relatively small boiler, so I find that stops for water are more frequent than with some of my locos, but full pressure is readily regained (the boiler has cross tubes within the fire tube) and your train is soon again in motion.

I've used this loco regularly for over six years and whilst generally satisfied, I have often experienced some hydraulic locking of the leading power unit on start-up. I also thought that it lacked power. I've fitted Regner PTFE pistons to a couple of locos in recent years and have been very impressed with the resultant smooth operation and power increase. Therefore, I've swapped the original pistons, which were brass with twirled PTFE tape wound into a slot in each piston to form a piston ring (standard Regner build until the last five years), with Regner PTFE replacements. I was able to swap the old for the new simply by removing each front cylinder cover and unscrewing the piston from the cross head using a socket wrench. The new pistons have transformed the loco. The hydraulic locking is gone and was I suspect due to steam passing the pistons due to poorly formed piston rings, which sealed only when the loco was fully hot. Power is up – it will now start a heavy train on the 1 in 50 grade on the new extension to my line. The loco is largely to scale but if I'm honest, it would look better built to 32mm at 1:22.5 scale, or to 1:20 scale on 45mm gauge track. The cylinders on the rear drive unit are proud of the line of the tanks, but this is hardly noticeable when the loco is in use. A viewers eye's are drawn to the two drive units in motion, the one appearing to oppose the other, and being fully sprung and articulated, the loco rides serenely over any undulations or unevenness in the track. The impression is cemented in compound mode due to the lack of exhaust.

Conclusions

The Saxon Meyer is an unusual loco which needs to be driven a little differently to a twin cylinder, simple expansion loco but is very rewarding when you get it right. To paraphrase a well known loco builder, joy is when the loco stops playing with you and you instead start playing with the loco. ■