

DCC SOUND

By Mick Moingard

You won't get the best out of your decoder purchase if you just plug it in and set the address and do nothing else. There are eight factors to a great DCC Sound installation. Most of them are not about the decoder you install, though that clearly is important. These eight factors are the core of my DCC sound demonstration, and on the stand I am able to talk about all of them, and show people what I mean with operating models, steam and diesel. These feature a number of decoder manufacturers, and different speaker installations, and of course show off the operational features of the decoders and sound projects in them. These eight factors are explored some more in the slides. You can quiz me about them in more detail, and see them in action at ScaleFour North 2021.

8 things required for a successful DCC Sound installation.

1. The Locomotive

- Must be mechanically silent
 - At least at the speeds you normally use
- Needs to run properly
 - No binds, lurches, stutters
 - Properly lubricated
- Pickups on as many wheels as possible
 - clean and adjusted properly
 - Wheels need to be clean, including where the pickups rub
- Layout needs to be good too:
 - Properly wired track
 - Clean track and clean rolling stock wheels

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2. The Sound Recordings

- Individual, discrete sounds
- Recorded at proper distance
 - Not from the cab!
- No extraneous stuff
 - Birdsong, aeroplanes, cars, wind, voices!
- Properly mixed
- Properly looped where appropriate

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3. The Decoder

- 16-bit sound
 - And lots of memory
- Polyphonic
 - 8 voices minimum
 - 12 or more is even better
- Sound influenced by what's going on
 - motor load
 - throttle setting
- Volume settings for each individual sounds
 - Equalizer, reverb?
- Active brakes
 - Enable proper coasting
- Decent documentation
- A comprehensive sound library

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4. The Speaker

- Response down to 100Hz or lower?
- Diaphragm size is not necessarily important
 - Size of the voice coil tends to matter more
- Impedance matched to the decoder
 - 8-ohm speakers are usually OK
 - Multiple speakers **may** help
- Modern “Sugar Cube” speakers work very well
 - And the price is right

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5. The Speaker Installation

- The Key to Success
 - Or rather, the easiest way to fail
- Properly baffled/boxed
 - Prevent front and rear waves mixing
 - Gets the speaker driver working properly
- Properly placed in the locomotive
 - In the smokebox? No chuffing tenders....

And of course: neat and properly insulated wiring for the whole installation.

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6. Careful CV Programming

- Make sure it runs properly
 - Including BEMF setting
 - Momentum **required** for decoder Automagic
 - Set Chuff rate on steam locomotives
- Brakes
 - Yes, most sound decoders have functional brakes: use them
- Function mapping
 - You really need all your locos with the same function map
 - Put the functions you use when operating on F0 to F9 (F12 if using Digitrax)
 - I can't over-emphasize this need
- Lighting
 - Yes, even on steam locos – firebox, headlights...
- Sound Modifiers
 - Equalizer and Reverb
 - Pitch Shift
- Random sounds setup
- JMRI/DecoderPro computer program makes this all fairly easy to do.

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7. Volumes

- Set volumes properly
 - Whistle/Horn overwhelm everything else
 - Chuff on steam locos
 - Prime Mover for diesels
 - Auxiliary sounds
 - Can you hear that sound when you're 200 feet away?
 - Injectors, shovelling coal, frying breakfast....
- Then Adjust via the master volume
 - Low at home
 - Higher in public – at exhibitions

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8. Operate it Properly

- Use of whistle/horn signals
 - And the bell, where appropriate
- Drive like the prototype
 - Need lots of momentum in the loco (CV3/4)
 - Set the desired speed, let the loco attain it
 - Shut the throttle to coast
 - Use the Brakes to stop it.
- Consider
 - Shunters need time to uncouple and recouple
 - Brake hoses, steam heat lines and electrical connections
 - When coupled, static brake test
 - Or running brake test just after starting
 - Anything parked will have its handbrake set
 - Don't just barge into it and push it along