

Virtual Scaleforum 2020

The 8 Things you need for a Great DCC Sound Installation

Mick Moignard

mick@mickmoignard.com

Mick Moignard?

- DCC user since 2000, sound since 2003
- Camp 93, On30 layout on UK Show scene; one of the first such layouts to feature DCC Sound in every locomotive
- HOn3 D&RGW/RGS home layout
 - Modelling this prototype since 1976
- Small business in DCC & Sound installs in the UK
 - Upwards of 2000 installs completed
- Clinic presenter at NMRA and other events in UK and US
- DCC/Sound Course tutor at Missenden Railway Modellers and at Pendon Museum
- Many magazine articles on DCC and other subjects

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

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

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

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.

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