



Operational advantages with DCC

By Mark Gurries

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Copies of this presentation can be found at:

<http://www.siliconvalleylines.com>

Revision History

- V 1.0 Bay Area LDSIG meeting February 2002

This Presentation and some DCC thoughts

- This presentation assumes some knowledge of DCC on behalf of the reader.
- NMRA DCC Standards: successful in goal of operational interchange among DCC Manufactures.
- Time has shown that it is safe to take the “big step” to DCC now.
 - Compatibility issues have been few and far between.
 - Manufactures back up there products.
 - > Update or replace product outright for free!
 - “Goof Proof” policies allow users to be successful with decoder installation mistakes.
 - Decoder prices have dropped dramatically. Discounts -> \$16

DCC Benefits

- DCC Offers more Prototypical Operation compared to DC control.
 - > The goal is “Run your trains, not your layout”
 - > The biggest advantages come in the form of train control.
 - No need to be at a control panel to set up routes and power
 - > Other advantages come in the form of the running experience.
 - Be able to walk with your train if you want too.
 - > All the advantages are targeted for more realistic train operation.
 - Better Motor speed control, lights, sound and optional signaling.
 - > DCC is about allowing technology helping us enjoy our hobby more.
- DCC IS THE FUTURE.....**

Operational advantages with DCC: Locomotives

- DCC allows you to select and control any individual or group of locomotive(s) among many WITHOUT any special layout wiring.
 - > DCC systems use 1, 2 and 4 digit addressing.
 - 1 Digit is used on low end systems of yesterday.
 - > 1, 2, 3...8, 9 (this is actually 2 digit mode limited to 1 digit numbers)
 - 2 Digit is used by all modern systems today.
 - > 1, 2, 3...8, 9, 10, 11, 12...98, 99
 - > Use the last two digits of the Loco number as the 2 digits.
 - 4 Digit is used on high end systems.
 - > 1, 2, 3...8, 9, 10, 11, 12...98, 99, 100,...1000,...9998, 9999
 - > This is the most natural self explanatory method. Enter what you see.
 - > This basic ability to select an individual locomotive allows you to expand upon each locomotive's capabilities for MU operation, motor control, light effects and sound effects.

Operational advantages with DCC: Locomotives

- DCC offers more precise motor control.
 - > DCC establishes a repeatable relationship between a motor speed and a throttle speed step setting.
 - Motor Speed steps of 14, 28, or 128 Steps (Throttle Notches)
 - > Speed tables.
 - Match mismatched Loco speeds for great MU operations.
 - Tailor speed curve for yard operations.
 - Calibrate locomotives to a known scale speed standard
 - > Adjustable acceleration and deceleration rates.
 - Simulate realistic train mass with momentum control.
 - > “Back EMF” or “Cruise Control”
 - Super low speed operation with power!
 - Reduced mechanical binds or stalls.

Operational advantages with DCC: Locomotives

- DCC allows for realistic MU (consist) operation:
 - > Combined multiple engines to make up a consist.
 - > Each consist can be controlled by a single throttle.
 - Each works under a unique consist (loco) number.
 - Advanced systems allow random engine orientation.
 - > Back to back or front to front as opposed to just front to back
 - > Control multiple consist sets.
 - Some system allow many sets of consist to exist at the same time.
 - Advance system allow you to combine multiple individual consist into a temporary single consist.

A train with a consist of two locomotives stops at the bottom of the grade. A helper consist of two locomotive is coupled to the rear of the train. The two consist are combined and the train climbs the grade. At the top, the helper consist is cutoff and the train continues as before. The helpers return to the bottom of the grade....

Operational advantages with DCC: Locomotives

- DCC allows very realistic light effects:
 - > Single Light Effects
 - Gyralight, Mars, Beacon, Firebox, Rule 17 and Strobe....
 - > Double Light Effects
 - Alternating Ditch Lights, Alternating Strobe (Amtrak)
 - > Some effects are tied to locomotive action.
 - Ditch lights alternate blinking when Horn is pressed.
 - Fire Box flicker goes faster as the engine goes faster.
 - Front and Rear lights can be tied to locomotive direction.
 - > Advanced decoders offer more outputs to control more lights or any other electrical device you can think of.
 - Cab interior, number boards, smoke generators, Uncouplers.....

Operational advantages with DCC: Locomotives

- DCC allows for a better integrated Sound:
 - > Simple sound functions
 - Bell, Horn or Whistle activated on command.
 - > Integrated sound functions
 - Engine RPM/Chuff rate a function of engine speed.
 - > Random sound functions
 - Compressor, Fireman Fred
 - > Sounds quality varies with price.
 - Loco specific sounds systems with real sound recordings cost more
 - Generic sound systems cost less.

Operational advantages with DCC: Wiring

- DCC makes it easy to implement prototypical trackside control systems using existing wiring.
 - > Track switch interlocking routes can be pre-defined.
 - > Multi aspect signaling systems.
 - > In the “Run you trains and not your layout” category, DCC can eliminate small control panels.
 - Operate track switches from your hand held cab if desired.
 - > Simple interlocking routes can be set up with a simple command.
 - > With commercial PC software, you can implement complete dispatcher Panels.
 - > Occupancy detection and sophisticated signal control.
 - > Advance switch interlocking and route control.

Operational advantages with DCC: Wiring

- In the “Run you trains and not your layout” category, DCC allows more realistic train operation in reverse loop type situations.
 - > Devices can detect the “short” and reverse the track polarity so fast that the train never stalls as it rolls down the track.
 - > No need for the manual intervention on the train operator part.