EPARTRADE Race Industry Now Explores Digital Clutch Control and Wireless Technology with The BangShift Billy

Bill Armstrong Demonstrates How Electronics Are Bringing Greater Consistency and Simplicity to Stick Shift Drag Racing

The continued growth of stick shift drag racing and drag-and-drive competition has created demand for technologies that improve consistency without sacrificing the character of manual transmission racing. During a recent episode of EPARTRADE's Race Industry Now webinar series, Bill Armstrong, owner of The BangShift Billy, shared how digital clutch management and wireless control systems are helping racers solve some of the sport's most common challenges.

Hosted by Joe Castello of WFO Radio, the webinar titled *"The Future of Stick Shift Drag Racing: Digital Clutch Control and Wireless Innovation"* examined how modern electronics are being applied to traditionally mechanical systems.

From Street Car Racer to Product Developer

Armstrong's products were born directly from his own experiences competing with a 1966 Ford Fairlane that he has owned since 1990. The car, which originally ran 17-second quarter-mile times, has evolved into an 8.50-second street-driven machine that regularly competes in drag-and-drive events.

Seeking greater launch consistency with conventional diaphragm-style clutches, Armstrong developed the company's flagship Digital Clutch Controller.

Digital Clutch Management for Hydraulic Clutch Systems

Designed primarily for hydraulic clutch applications, the Digital Clutch Controller installs inline between the clutch master cylinder and hydraulic release bearing. Rather than using traditional counterweights and base-pressure adjustments associated with adjustable slipper clutches, the system utilizes a proprietary hydraulic cartridge controlled electronically.

Users can configure clutch engagement characteristics through a smartphone application available for both Android and iOS platforms. Once settings are stored, the controller operates independently without requiring the phone to remain connected.

The system allows racers to:

- Adjust clutch bite point and release characteristics electronically.
- Program controlled clutch slip profiles.
- Maintain repeatable launches from pass to pass.
- Adapt settings for varying track conditions.
- Preserve full street drivability.

According to Armstrong, the controller is particularly valuable for modern high-horsepower street cars and import platforms such as Honda, Subaru and GM applications where traditional adjustable slipper clutches may not be available.

Timing-Based Operation with Future Position Sensor Integration

Current versions rely on a precision clutch switch to initiate operation. The controller calculates elapsed time from pedal release to clutch engagement and executes a programmed slip curve.

Armstrong revealed that an upcoming version will incorporate clutch pedal position sensing. For late-model GM platforms already equipped with clutch position sensors, the new system will intercept factory signals and display actual bite-point voltage values, allowing racers to tune engagement with even greater accuracy.

A retrofit pedal-position kit is also under development for broader compatibility.

ECU Integration or Standalone Operation

The controller can operate through aftermarket ECUs such as Holley and Haltech by using parameters including:

- Throttle Position Sensor (TPS)
- Vehicle speed
- Clutch position

For carbureted vehicles or factory ECU applications, racers can arm the system manually using a master switch before staging.

Importantly, the controller only functions during launch and does not affect subsequent gear changes.

Simulating a Slipper Clutch Electronically

Armstrong emphasized that every manual-transmission launch already involves clutch slip.

"The system simply allows racers to perform that slip consistently," he explained.

By electronically controlling engagement, the Digital Clutch Controller effectively provides slipper-clutch behavior while retaining conventional diaphragm clutch hardware.

For drag-and-drive competitors, this eliminates the constant adjustment normally required with mechanical slipper clutch systems.

Measurable Performance Gains

Because launch performance heavily influences elapsed time, Armstrong noted that many customers have reported significant improvements.

Typical gains include:

- Faster 60-foot times.
- Improved repeatability.
- Reduced wheelspin.
- Lower drivetrain shock.
- Elapsed time improvements exceeding half a second in some combinations.

The product has proven especially attractive to bracket racers, where consistency often outweighs outright horsepower.

Wireless Steering Wheel Controls Eliminate Coiled Cables

The webinar also highlighted The BangShift Billy's wireless control systems.

The Billy Button system replaces traditional coiled steering wheel cords using RF-based communication rather than Bluetooth.

The system includes:

- Four Omron pushbuttons.
- Compact transmitter.
- Receiver with four 30-amp solid-state outputs.
- Internal self-resetting circuit protection.
- Optional low-current ECU version.

Applications include:

- Transbrake activation.
- Bump boxes.
- Line locks.
- Nitrous systems.
- Scramble buttons.

Because the design uses solid-state switching instead of relays, response times remain extremely fast.

Armstrong reported measured latency values ranging from approximately 0.02 to 0.07 seconds depending on the ECU and measurement method.

Long Battery Life and Increased Reliability

The steering wheel transmitter utilizes USB-C charging and can operate for approximately one year between charges under typical use.

Unlike Bluetooth systems, the RF architecture provides millions of address combinations, minimizing the possibility of interference.

The wireless design also eliminates issues common with coiled cables, including:

- Tangled cords.
- Connector failures.
- Steering column interference.
- Damage during drag-and-drive events.

Billy Bar Expands Applications Beyond Racing

The company's Billy Bar system extends wireless control technology into off-road and utility applications.

Mounted directly to roll bars, the four-button module provides wireless switching for:

- Light bars.
- Auxiliary lighting.
- Air compressors.
- Trailer accessories.
- Recovery equipment.

With optional external antennas, operating range can reach approximately 115 feet.

The system has even found use on commercial trailers, allowing owners to add lighting circuits without modifying factory wiring and potentially voiding warranties.

Technology Driven by Racers

Throughout the presentation, Armstrong stressed that every product developed by The BangShift Billy originated from real-world racing problems.

Rather than introducing complexity, the goal is to simplify operation while improving consistency and reliability.

As manual transmission racing continues to evolve, technologies like digital clutch control and wireless switching are demonstrating that electronics can enhance the driver experience while preserving the engagement that makes stick shift competition unique.

Watch More Technical Webinars

This webinar is part of EPARTRADE's Race Industry Now series, which brings engineers, manufacturers and industry experts together each week to discuss emerging technologies shaping the racing and performance aftermarket.

For more information, **watch the full webinar here.**