



BP5: PTW Design and Protective Equipment

Reference: BP5 011	Title of Project:	Electronic Licensing / Smart Card Control
Version: 1	Website:	http://monash.edu.au/muarc/reports/muarc260.pdf
Brief Description of Project:	<p>Use of PTWs by unlicensed or suspended riders is a serious issue in some countries. Unlicensed riders are usually untrained and are at a much greater risk of collision and injury.</p> <p>This technology uses a validated 'smart' card to activate the ignition system on the vehicle. The card can be enabled for a specific vehicle and individual. If a rider's licence is suspended or revoked they are unable to start the vehicle.</p> <p>The technology has applications in enforcing bans for drink driving or dangerous driving offences. There are also vehicle security benefits.</p> <p>Honda has developed a Smart Card system, primarily for security purposes, which may be developed to provide additional benefits.</p> <p>The newly developed smart card key system consists of the steering lock module, LF antenna, UHF receiver, and the smart card key that the user carries, etc. By integrating the smart ECU and the mechanical parts such as the main switch knob, steering lock, etc. into the steering lock module, the simple system construction suitable for a motorcycle has been realized. The system is also linked with the seat actuator, console box, fuel injection ECU, meter, and the turn signals.</p>	



■ Smart card key system layout



When the rider presses either one of the main switch knob, the seat switch or the console box switch, the smart ECU starts functioning. It sends ID signals in LF (low frequency) waves from the vehicle to the smart card key via the LF antenna. As the smart card key receives and identifies the LF signals, it sends the ID to the vehicle in UHF waves. The UHF receiver in the vehicle receives and identifies the UHF signals, allowing the item corresponding to the pressed switch to be unlocked.



■ Main switch/seat switch/box switch

It is possible to unlock the main switch knob, open the seat, or open the console box just by pressing the switch while having the smart card key on their person. When the main switch knob is turned to ON, the fuel injection ECU exercises cross-referencing based on the ID from the smart card key system.

The smart card key system has made vehicles become more user -friendly than ever. The system completely eliminates key operation when starting or adding/removing an object to/from a compartment. Taking into account rider operations, while wearing winter gloves, further considerations have been given to the application of a smart card key system into a motorcycle such as, the main switch knob shape, the incorporated torque limiter in the main switch knob, the communication ON/OFF switch attached to the smart card key, etc.

When locking the main switch knob, the locking can be confirmed by answer back. When unlocked, the SMART indicator lamp in the speedometer and the blue illumination around the main switch.

Monitoring Data:	None available.
Results:	The Honda Smart Card system appears to work well but has not been developed to provide rider/vehicle specific control.
Key Effective Conclusions:	<p>A system of electronic licensing would have potential benefits in reducing unlicensed/untrained riding.</p> <p>There are major logistical problems with introducing such a system. It would require significant investment from governments and manufacturers and a standardised licence/ignition activation system.</p>
Projects for Comparison:	None.
Justification:	The technology is available but the infrastructure changes required are substantial. This project is a long term aspiration and currently has no potential to contribute to eSUM WP3, BP5 objectives.