# Bolt out of the blue

## With its latest hybrid, carmaker BYD has come out of nowhere to lead the charge in green vehicles on the mainland, writes **Mark Andrews**

BYD looked set to become one of the leading forces in the mainland motoring industry earlier this year. The company only started manufacturing cars in 2005, but in the first quarter of this year it topped sales figures on the mainland with the F3. For total production figures, the carmaker came in fourth place, behind two Volkswagen joint ventures and General Motors.

It has since taken a tumble, however. Last month the carmaker reported a 99 per cent profit slump for the third quarter, after an already worsening picture in the previous quarter, blamed on slumping car shipments, high dealership inventories and rising costs.

Originally a battery manufacturer, BYD bought bankrupt state-owned Qingchuan Motors in 2003. It would be easy to dismiss BYD as a producer of nothing more than clones and heavily inspired designs, but the company has been gaining a name abroad. Warren Buffett's Berkshire Hathaway owns 10 per cent of the Hong Kong-listed company and a number of foreign carmakers have shown strong interest in its battery technology. The F3 is usually said to be a clone of the 9th-generation Toyota Corolla, but in its DM form it may well represent the future for BYD. China's answer to the Chevrolet Volt went on sale last year to corporate customers and from May this year to private consumers.

Externally a doppelganger for the Toyota, the F3DM is neither ugly nor exciting. Build quality is generally good with panels evenly spaced. However, the doors seem to vibrate when being closed.

Internally, however, the visual similarity to the Toyota is not carried through to the quality level. Sit in the driver's seat and one of the first things you notice is the flimsy plastic foot rest. Storage bins also seem of poor quality and do not open or close smoothly.

The central console has the CD/radio at the top. Below are controls for the parking sensors along with a clock and the hazard warning button. The climate control buttons are above a storage bin and ash tray.

Equipment levels are relatively low, consisting of electric windows and mirrors, and air conditioning. There are, however, comfortable leather seats.

In the rear, headroom is poor and anyone taller than 1.8 metres will have problems, but leg space is adequate. The middle passenger has to make do with just a lap restraint. Boot space is very disappointing.

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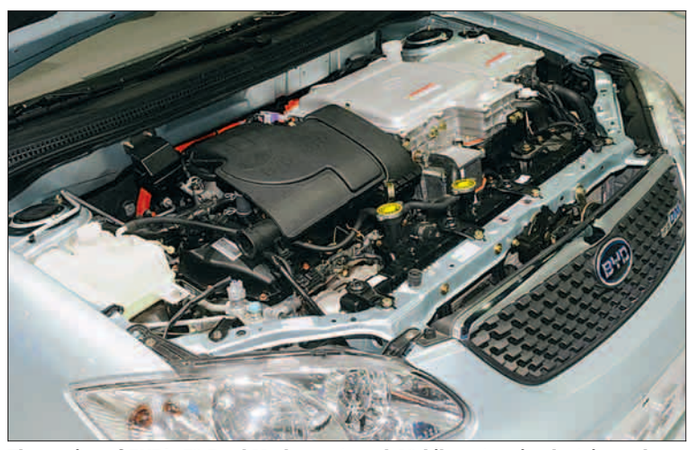
Turn the key and things become a bit more exciting. First of all, the display lights up in blue. The left side largely shows the electric power use of the car for both the interior electronics and propulsion. A fuel gauge flanks the speedometer to the left, while the battery charge indicator complete with percentage readout falls to the right. Then there is a diagram showing the power use and sources around the car.

In front of the conventional-looking automatic gearboxes are two buttons at the base of the central console. Marked EV (electric vehicle) and HEV (hybrid electric vehicle), these allow the driver to choose how the car is powered.



The engine of BYD's F3 Dual Mode can travel 60 kilometres in electric mode

On fully charged batteries, the maximum range is claimed to be 60 kilometres when operating solely as an electric vehicle. Using a fast-recharge station, the batteries can take on 50 per cent juice in 10 minutes. Using a domestic supply a full charge takes seven hours.

There is also a large solar panel on the roof that can provide some truly carbon-neutral motoring. Like a mild hybrid, the car recovers kinetic energy under braking conditions.

The F3DM uses the same one-litre petrol engine that BYD has in its F0 small hatchback. Usually the engine is used to just charge the batteries, as in the Chevrolet Volt. However, the F3DM overcomes the Volt's problem with mid-range acceleration by also using the petrol engine to provide extra power during acceleration.

All the batteries and technology packed into the DM carry a big weight penalty, adding 360kg over the conventional F3. However, BYD says the propulsion system has the equivalent power to a 2.4-litre conventional engine (the normal F3 is powered by a 1.5-litre unit).

In EV mode the car proves to deliver sprightly performance. Acceleration appears to be good up to about 80km/h. Unfortunately, we can't assess it at faster speeds as our test was limited to the confines of BYD's Shenzhen headquarters.

As can be expected, the car is very quiet. Surprisingly, when in HEV mode there appears to be no difference. However, the petrol engine wasn't working because the batteries were more than half charged and no fast acceleration was required.

Despite the weight penalty, handling seems to be good, but the test route is relatively straight and as usual for a Chinese car the steering is light. Road surfaces are good but the car gives the impression of having soft suspension.

While the F3DM does have quality problems, particularly with the interior, the propulsion system seems to work. In achieving this, BYD has beaten to market and most likely spent a fraction of the research and development costs of General Motors with the Volt.

Furthermore, it seems to have solved the mid-range acceleration problem that European tests of the Volt have revealed. And to top it all, the full list price works out at under US$25,000 compared with the American's US$41,000.

### Facts and figures: the F3DM

**What drives it?** There are two electric motors producing 50kW and 25kW respectively, plus a 1.0 litre petrol engine producing 50kW, giving a combined output of 125kW.
**How fast is it?** Top speed is 150km/h and BYD says it can go from zero to 100km/h in 10.5 seconds.
**How safe is it?** Only two airbags are fitted and there is a protection system against electric shock. No official crash tests have been done but the car has passed mainland electric vehicle safety standards.
**How thirsty is it?** Electricity consumption is 16kWh per 100km.
**How clean is it?** No carbon dioxide figures are quoted but under EV mode it is as clean as the method of electricity production.
**How much is it?** The full list price is 169,800 yuan (HK$197,100). But the central government offers a subsidy of 50,000 yuan and some local governments also offer a subsidy – Shenzhen gives 30,000 yuan.


# Digital detectives hot on the trail of Singapore's cybercriminals

**Philip Lim**

If you've just become the victim of identity thieves or computer hackers, it's time to call in someone like Ali Fazeli.

The Iranian expatriate specialises in crime-scene investigations but, unlike his glamorised television counterparts, he packs no gun and the evidence he looks for does not include DNA, fingerprints or blood.

Fazeli is a digital sleuth operating in cyberspace, trawling computers, internet websites and the latest mobile devices for evidence of corruption and fraud – even marital infidelity.

"We are IT security people, private security who specialise in computer forensics," the 30-year-old says with a smile.

Fazeli and his fellow digital crime fighters have a growing number of cases to crack in Singapore, a global financial hub where crooks are using modern technology to steal money and precious business information.

"I believe cybercrimes, or attempts at cybercrimes in Singapore, are on the increase given our increasing connectivity of computer systems and use of the internet here," says Gerard Tan, president of the Association of Information Security Professionals.

"If you include virus attacks, most of us, if not all users, would have been targeted or hit at some time, as this is so common now," he says.

"We have also heard of, and know of, deliberate intrusion attacks on corporate websites and have seen evidence of these in internal reports.

"Most of them are probably unsuccessful and unreported."

Government statistics from last year show that 90 per cent of Singapore's residents aged 15 and above had internet access in one form or another, and 81 per cent of households were connected to the Web.

Overall, computer usage among enterprises reached 78 per cent, with 75 per cent of businesses using the internet in their work.

Data from internet security firm Symantec released in September shows that 70 per cent of internet users in Singapore had fallen victim at least once to cybercrime, including credit card fraud and identity theft.

Thus the growing need for cyber sleuths such as Fazeli, who has tracked down thieves selling confidential company information to rivals and resurrected data deleted by criminals trying to erase evidence of their misdeeds.

Fazeli, who studied internet security in Australia, also test-hacks company websites to see if they are vulnerable to attack.

"Singapore is one of the financial hubs, so when we're dealing with the finance, the corporations, we see crimes," he says.

His private Singapore-based cyber security company, Infinity Forensics, handles about 25 cases per year for local and foreign clients, most of them corporate jobs, but also private cases such as harassment and divorce.

"If there is any legal case of divorce, let's say maybe there's cheating and the evidence is already removed from your mobile phone, from your hard disk or anything, usually we can help to recover that information," he says.

The police have their own Technological Crime Division, but many companies prefer consulting private sleuths such as Fazeli who offer confidentiality and discretion when dealing with cases.

Police decline to give numbers on cybercrime cases handled in Singapore.

But with an estimated 50 private digital forensics experts operating in the country, the industry will need more experts to cope with the rapidly evolving technological landscape.

"Yes, there would be an increasing demand for digital forensics experts in Singapore," says Mandy Mak, assistant director of the information technology school at Temasek Polytechnic, which is starting a course next year to help meet demand.


The school is targeting enrolment of 50 to 60 students for the three-year diploma programme in digital forensics.

Fazeli's company also holds workshops for individuals, including police and military officers, government employees and academics.

Army combat engineer Ravi Krishnan, 31, paid more than US$500 to attend a workshop last month to learn how to retrieve evidence from mobile phones for his speciality – improvised explosive devices (IEDs).

IEDs can be detonated by mobile phones, as shown to devastating effect in places such as Iraq.

"I'm here to get a better idea about mobile forensics, how can we apply mobile forensics to our IED fields, how much we can collect from the mobiles," Krishnan says.

**Agence France-Presse**