

Hangzhou Public Bicycle Service
March 2008

Report by: BAI Song
Bradley Schroeder
HUANG Siqi
Xiaoliang Hu

System Overview

The Hangzhou Public Bicycle System was trialed from May to October, then officially opened on October 1, 2008. Currently there are 350 stations and 10 000 bicycles with the goal of 2 000 stations and 15 000 bicycles. Future plans are to extend the business hours by an hour from 6h30 - 20h00 to 6h00 - 21h00. There will be an extra half-hour to return the bicycles after 21h00. They have



also added five 24-hour service stations, making a total of eight 24-hour service stations by the end of this year (2009). There is a registered 56 000 trips per day but the average is 40 000 trips per day with 80% of the people using the bicycle for less than 1 hour, which is free of charge. The goal of the system, according to the government, was to act as a feeder system to the buses. The initial rollout of the project was around Westlake, a popular tourist destination. It then moved to the business district and then into the communities.

While the system has its small problems, the general consensus from the community is that it is very useful and efficient. The user profile is mainly tourist focused on the weekends around Westlake and mainly commuter focused on the weekdays in the city and surrounding communities. According to the operator, moving the bicycles to the needed locations is the greatest challenge. Another challenge has been educating people (locals and tourists) on how to use the system, although it was clearly explained on signboards and we found it very easy to understand. There is little theft or vandalism thanks to cameras at each station. The majority of theft happens when people lock their bicycles outside of the station area.

Infrastructure

The infrastructure of the system is very similar to the Velib system in Paris with a few exceptions. The bicycles are often parked in covered facilities with a back and usually two sides, leaving the third open where the user enters and exits. There are a few mobile stations but the majority of the stations are anchored into the ground. The bicycles have mounts on the right side that slide into a sleeve on each parking post.

The outdoor furniture, shelter and kiosk are provided by a company called Yiu Tec, based in Guangzhou. They were contracted by the Public Transport Group Ltd., who provided a picture of what they wanted. Yiu Tec created the designs from that. The furniture is good quality and Yiu Tec manufactures and installs the units. Each bicycle shelter unit is 6.5m long, 2.2m wide and 3.2m high. Each



shelter parks 10 bicycles.

Many stations have a kiosk which comes equipped for electricity from the manufacturer but the Public Transport Group Ltd retrofits for both phone and internet. Each kiosk has a retrofitted RFID card reader which looks like an ATM machine located on the side of the kiosk. The machine tells

Furniture	Estimated Cost
Bicycle Shelter with advertising on both sides	RMB 28 000
Bicycle Shelter with advertising on one side	RMB 27 000
Bicycle Shelter with no advertising	RMB 18 000
Kiosk	RMB 43 000

you the status of your rental (if you have a bike, how long your last trip was, how much money you have on the card; the record of rental and returning including time and station names). The text on the screen is in Mandarin but



there is a voice which speaks in Mandarin first then in English. Since the menu screen is written in Mandarin and has no voice, the English is a bit of a novelty and not very useful.

A branch company of Public Transport Group Ltd designed the locking pedestals. The only particulars we have is a gentleman named Yao Guofang designed the first and second generation from a photograph of the Lyon public bicycle locks. We were unable to get any idea of the cost.

The software for the system was designed by the Hangzhou Dianzi University. It is functional, appropriate and easy to use but still has some bugs to work out. The main problem seems to be in the registering the return of a bicycle.

The bike

The bicycle used is a one speed with a step-through frame style. It is not quite the quality one would expect from a rental bicycle from other systems operating worldwide and they already look pretty old and run down. We asked about how long they estimate the bicycles to last but the operator did not have an answer. Expecting the bicycles to last anything longer than a year would compromise the quality of the system. Some attributes of the bicycle are:

- The bicycles all have front baskets, a bell and mudguards
- Some bicycles have rear child seats
- Rear brake is a drum brake and front brake is a caliper brake
- The saddle height cannot be adjusted without a spanner
- The seats are comfortable
- The pedals are plastic
- There are no lights on the bicycles and only a rear, pedal and spoke reflectors; no front reflector
- There are two types of locking systems, one is a key lock which secures the handlebars in a turned position (similar to a motorcycle) and the other is a cable lock secured near the head tube. Bicycles had one of the two, the latter being a better option.



- The brakes are set up in European style, with the front/left hand and the rear/right hand

Operations

The system uses a Smart Card. You can purchase a temporary card for 200 RMB deposit plus a 100 RMB balance. To receive a temporary card one needs to show one's ID to prove one's information is correct. There are only a few kiosks around town that process temporary smart cards. Upon completion of using the system, the temporary card can be returned for the deposit.

The permanent smart card is integrated with the BRT, bus system, car parking and water taxi. Paying by smart card often attracts a discount compared with paying with cash (10% discount when in BRT and bus, although there is no discount when used for the water bus, taxi or car park). To rent a bicycle, one places the smart card on the terminal and pulls the bicycle away (<http://www.youtube.com/watch?v=UiET1ucwrGk>).



The pricing structure is:

Time Period	Cost
1 st Hour	Free
Hour 2	RMB 1/ hour
Hour 3 and on	RMB 2/ hour

To return the bicycle one slides it back into the terminal and places the smart card again on the terminal to lock it (<http://www.youtube.com/watch?v=8scZxbPa7Zo>). Every station with a kiosk has an ATM style machine (<http://www.youtube.com/watch?v=1bf6OJ7TK-w>). The text on the screen was in Mandarin and when you go through the menu the machine speaks to you first in Mandarin and then in English.

* If you use the public bicycle in 90 minutes after BRT or bus, the free time would expand to 90 minutes.

Marketing

The marketing of the system was done through T.V. ads, newspaper articles, staff at kiosks to assist users and a website (www.hzzxc.com.com).

Advertising

The advertising is managed by the Hangzhou Public Traffic Advertising Company (No.135 Guangfu Road), an advertising company focusing on outdoor media. They have more than 400 bus line shelters, bus stop signs and more than 6 000 bus body placards to sell in the Hangzhou urban area, Yuhang, Xiaoshan and Xiasha.

In August of 2008 the first advertisement contract was signed with Hangzhou Polar Region Ocean Park who spent an estimated 20 million RMB on advertising on 500 bicycles (one interesting restriction is the least number of ads to purchase on a bicycle is 100). The advertising rates are found in the table below.

Description	Size(cm)	rank	unit	limitation	Media cost(RMB)	Manufacture cost(RMB)
Large board	350*150	Package portfolio	15	15day	75 000	10 500
Small board	150*100	Package portfolio	20	1 mon	58 000	6 000
Large board	350*150	Single station	1	1 year	135 000	700
Small board	150*100	Single station	1	1 year	34 800	300
Board without	240*120	Single station	1	1 year	25 000	400

light						
Middle board	170*110	Single station	1	1 year	49 600	400
Bicycle body			1	3 month	600	50

Not all the stations actually have advertising space because there are areas where advertising is not profitable. An insider told us that the system is actually profitable but the government doesn't publicly announce that because they want to maintain an image of 'a system for the people'.

Observations

The system is a huge success. It's the team's opinion that cities with such high demand as found in Asia should investigate system designs which utilize less pavement space. Although the Velib style system works well where demand is low to moderate, in Asian cities where densities are extremely high and bicycling is very prevalent, the system could reach a capacity where pedestrians are marginalized in the amount of walking space they have on pavements. A more space-efficient system could revolutionize bike sharing in Asian cities.

As the cost of bicycles is relatively low in Asia, a bicycle of slightly higher quality is suggested to really keep the system 'first class'. Another suggestion is to replace the fleet of bicycles annually or once every two years as that seems to be the global consensus on the lifespan of bicycles for bike sharing programs.

As Huangzhou is very tourist oriented because it is such a beautiful city, having English as an option on the ATM style RFID card readers would be a big addition to the system at a very low cost.