

HRC's Annual Report for 2008 & Working Plan for 2009

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I . Implementation of Two International Training Workshops on SHP

1. 2008 Training Workshop on Small Hydropower Technology



2008 Training Workshop on Small Hydropower Technology was implemented from May 15th to June 23rd 2008 in Hangzhou, as entrusted by Chinese Ministry of Commerce.

(1) In terms of its number of participants and countries, it is the ever-largest training workshop HRC has organized since its establishment. Altogether 58 technicians and officials in the field of SHP from 34 countries globally attended the training. It is also the first time for HRC to have Dominican and Yemeni participants.

(2) A comprehensive teaching plan was scientifically formulated, inclusive of in-class teaching, field visit, presentations on special topics and exchange among participants. The teaching materials covered a great deal of knowledge, technology and experience in the field of small hydropower, such as hydrology, site selection, geology, hydro-energy, conduit system, power house design, SHP economic appraisal, hydro auxiliary equipment and SHP operation and management. In addition, the past experience in SHP development and some concrete technologies are also introduced. Presentations on special topics comprehend some hot-spot issues typical of China's SHP development, such as the Three Gorges, South-to-North Water Diversion Project, etc. Study tours covered some small hydropower stations and hydroelectric equipment manufacturers and some hydropower experiment bases. All the teaching materials offered in class are derived from long-term practice and research and meet the demands of various countries with different level of SHP development. Besides, the



International participants' donation for China's quake-hit regions

training materials are practice-oriented with moderate difficulty level and favorable in promoting bilateral cooperation in economy and trade.

(3) Upon the request of the participants, a donation called

“Together with the Quake-hit Regions” was organized by HRC when the devastating earthquake in Wenchuan, Sichuan province jolted the whole China at the beginning of the training period. The amount collected in the donation by foreign participants and HRC's staff totaled RMB 14085 and US\$ 100. A participant from our neighboring country Pakistan pointed out at the donation ceremony:“ We, Pakistani are greatly

saddened at the loss of the precious lives of our Chinese brothers due to the devastating earthquake. The loss of people of China is the loss of people of Pakistan. On this difficult time, we are with China and will stand by China. What we can do, we will do it for you. This amount of assistance is not a big number, but it embodies our feeling of sharing pains with the Chinese people.”

“I’d like to help victims of the disaster to rebuild their communities and their lives.



Zhejiang TV Station interviewed the participants

I’m firmly convinced that under the strong leadership of the Chinese government and the great help from all over the world, China will certainly win the battle against the earthquake.” Silvia Petkova from Bulgaria said.

“In 1999, my country Turkey also suffered from a serious earthquake. So, I know clearly how you feel now. We will spare no efforts in supporting you.”

Staff from Hangzhou Charity Federation, officials from Jiulian community where the training program was carried out, and some leaders of HRC were present at the ceremony. Journalists from Zhejiang TV Station Channel 6 interviewed some of the participants and HRC’s leaders.

2. Training Workshop on Small Hydropower Technology for African countries

2008 Training Workshop on Small Hydropower Technology for African countries was implemented from Aug. 14th to Sept. 22nd 2008 in Hangzhou, as entrusted by Chinese Ministry of Commerce.

(1) In terms of its number of participants and countries, it is the ever-largest training workshop for African countries HRC has organized since its establishment. Altogether 32 technicians and officials in the field of SHP from 17 African countries attended the training. It is also the first time for HRC to have Comorian and

Djiboutian participants.

(2) Specialists in both French language and hydroelectric knowledge were arranged as interpreters in order to guarantee the quality of the training program.



(3) To make sure that all the participants were in good condition during their stay in China, doctors were sent in at the beginning of the training to do the health checkup for every participant. Besides, free consultancy and checkup service were provided on every Friday, which won the praise from the participants.

(4) The activity of “Volunteer as Traffic Order Keeper” highlights the whole training. On Sept. 9th, several African participants volunteered to help keep the traffic order in the rush hours when they got the news that Hangzhou was then currently in its efforts to establish itself as a national model city. On the evening of that day, the scenario of African participants guiding the traffic at the crossroad outside HRC drew all the attention of passers-by, which added luster to the city in the dusk.

The whole activity lasted two hours and the participants expressed that it was a great honor for them to do something to make Hangzhou a more beautiful city.



to make contribution to the civilization build-up of Hangzhou

In spite of its small scale, it still attracted many media in Hangzhou. Staffs of the media told us that they wanted to make the news an inspiration for Hangzhou citizens as well

as an appeal for joining in the civilization build-up of Hangzhou. Well-known media in Hangzhou, including Hangzhou Daily, Qianjiang Evening News and Today's Morning News, reported the event in detail. In Hangzhou Daily, an article entitled "African Youths as Traffic Guides with Interpreter" elaborated on the event, which invited commendatory feedback from the audience and played a significant role in pushing

forward the construction of a model city. In addition, channel 6 of Zhejiang TV also televised the event. In a word, for both Hangzhou

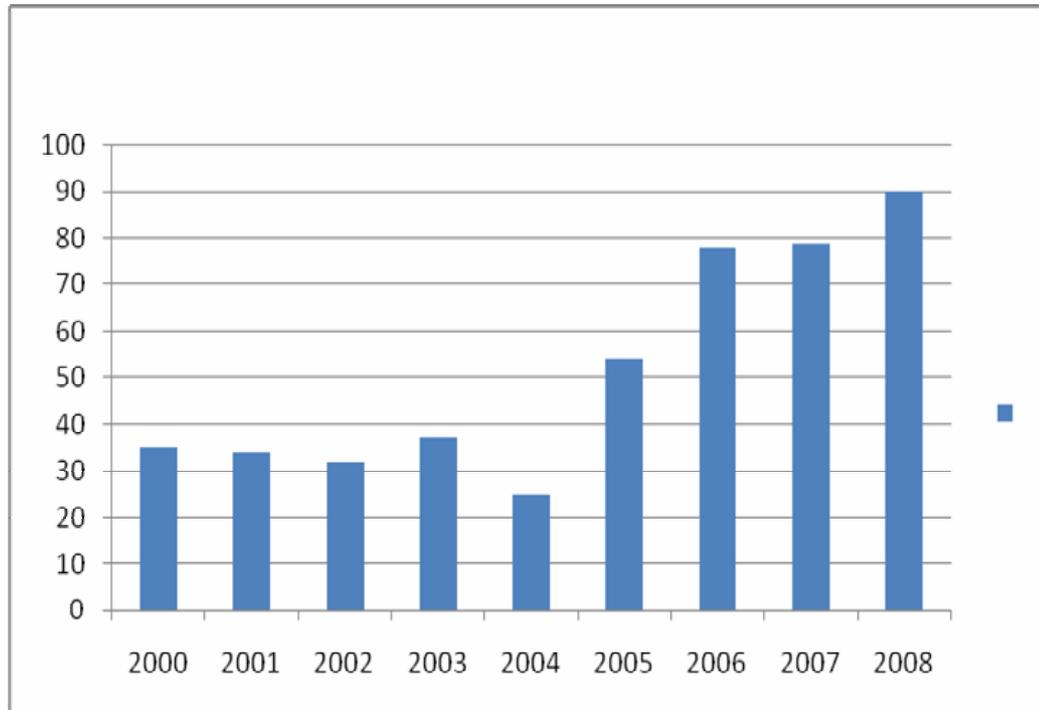


International participants cheered on the millennium-old Beijing-Hangzhou Great Canal

citizens and foreign friends, the activity will be a great push for the development of the city. It is also a great achievement of social benefits of our training program apart

from technological accomplishments.

Increase of HRC's international participants since 2000



II. International SHP Cooperative Projects

1. Mongolia TAISHIR Power Station

TAISHIR power station is a behind-dam-type station. The total installed capacity of the 4 units reaches 11000kW($3 \times 3450 \text{ kW} + 1 \times 650\text{kW}$). The design head for the first three units (3450 kW) is 43.80 m and the fourth one (650kW) 35.20 m. HRC and Beijing CAMCO Corporation are the joint successful bidders for this project, a project with the largest installed capacity in Mongolia. The contract of hydroelectric equipment supply was signed after the bidding in October, 2004. The design of the power station has already been completed. The 4# unit was connected to grid in November 2008, while the 1#, 2#, 3# units have not functioned yet due to climatic reasons.

2. Vietnam Taian Power Station

Taian power station in Vietnam a diversion type station composed of 2units with a total installed capacity of 82000kW($2 \times 41000\text{kW}$) and design head of 186 m. The design contract was signed between Vietnam Taian Hydropower Com., Ltd and HRC's Planning & Design Institute for Medium & Small Hydro Power in February,

2007. The project, a key state project approved by Vietnamese Ministry of Construction, is situated in Hejiang province in Vietnam. Currently, the sourcing of main hydroelectric equipment of the project is completed and the construction planning is under way. It is scheduled to be connected to grid in 2009.

3. Vietnam Menghong Power Station

Menghong power station is a diversion type station composed of 2 units with a total installed capacity of 3200kW(2×1600 kW) and design head of 110 m. The design contract was signed between Vietnam Shav Hydropower Com., Ltd and HRC's Planning & Design Institute for Medium & Small Hydro Power in January, 2008 with the general contractor being Zhejiang Hydropower Construction & Installation Com., Ltd. The project, a key state project approved by Vietnamese Ministry of Construction, is situated in Laojie province in Vietnam. Currently, the sourcing of main hydroelectric equipment of the project is completed and the construction planning is under way. It is scheduled to be connected to grid in 2010.

4. West Lake Power Station in Jinhua

Cooperation on the rehabilitation of West Lake power station in Jinhua, Zhejiang province, is carried out between California Energy Committee and HRC. The Sino-US cooperative project started in November 2007 and is scheduled to be completed in 2009.

5. In July, 2008, two specialists with HRC were dispatched to Kenya to assist with the site selection at planned GIKIRA and CHINGGA



Abundant hydropower resources in Kenya still to be exploited

power stations with satisfactory results achieved.

6. Ms. Cheng Xialei, executive deputy director of HRC and Mr. Pan Daqing, chief of Division of Foreign Affairs & Training, attended the luncheon on Oct. 15th in Beijing



at the invitation of Pakistani president and held talks on topics regarding SHP training, consultancy, design and equipment supply with Pakistani side. HRC will dispatch experts to offer consultancy service in 2009.

III Hydropower Equipment Export

As from 2005, HRC began to export small-sized complete sets of hydroelectric equipment to Turkey, Vietnam and Philippines. The year 2007 witnessed a rapid expansion of its export business with the main markets being in Turkey, Peru and even Africa. The present 13 and 2 export projects of complete sets of small hydropower equipment respectively to Turkey and Peru are contracted with an amount of about US\$ 30 million.

The supply contract of complete sets of 2 horizontal mixed-flow units (4500kW) for the KEKLICEK power station in Turkey was signed in July 2007. The supply includes 2 turbines, governors, excitation, valves and computer monitoring system, which is developed by HRC itself and named SDJK. Within the supply period of 6

months required by the purchaser, the equipment reached Turkey port in April and our engineers were sent for supervision on the on-site erection in May. On Aug. 28th, 2008, the project passed acceptance organized by the local government. The output, noise and vibration of 2 hydroelectric generating sets are all satisfactory and it has already been put into commissioning.

Three contracts with a total contracted amount of about US\$ 8 million was signed in December 2007 for supplying complete sets of hydro equipment to Turkey, namely YALNIZCA(3 × 5000kW), PINAR(3 × 10000kW) and KARTALKAYA (3 × 2700kW). So far, the equipment of YALNIZCA II has been supplied and the rest equipment will be supplied by the end of 2008. Our personnel was sent to Turkey in late December. The equipment of KARTALKAYA reached the site in November and personnel will be dispatched there according to the progress of civil works. The equipment of PINAR II has been supplied and the rest equipment will be supplied before Spring Festival. Personnel for on-site service will also be sent there before Spring Festival.

Another contract of hydroelectric equipment supply was signed with Turkish Akcay HES Elektrik Uretim A.S Corporation, with three complete sets included (2 × 10MW and 1 × 5000kW). Draft tubes of stage I and distributors of stage II were respectively shipped in mid October and December and the rest equipment will be supplied before Spring Festival.

In June, 2008, 6 hydroelectric equipment supply contracts were signed with Turkish AKFEN Investment Corporation, inclusive of OTLUCA I(3 × 12.296MW), OTLUCA II (3 × 1936kW), BOGUNTU(3 × 1107kW), SARACBENDI(4 × 5918kW), YUVARLAKCAY(2 × 1655kW) and CAMLICA III(3 × 9052kW). After technical negotiation, it has been put into operation and the first equipment will be supplied in mid March 2009.

Gira II(1 × 1950kW) in Peru has been in adjustment period and is scheduled to be put into operation soon. The equipment of Sandia(1 × 1200kW) in Peru has reached the site and is to be installed.

In June, 2008, another contract with Gikira(2x500kw) in Kenya was signed. The equipment is originally planned to be supplied in December, but it has been delayed due to the global financial crisis. In July, two experts with HRC were dispatched to Kenya for on-site investigation and consultation service with satisfactory results scored. Kenya, a place rich in small hydropower resources, will be a potential market.

With the recovery of the global economy, Africa will be a great business area for HRC in the near future.

IV Translation & Publications

1. Three publications

N0.	Works	Author or translator	Note
1	CDM Development of SHP	Chen Xing	
2	Investment Policy Analysis of SHP in China	Cao Lijun	
3	Status Quo and Problems of Small Hydro Development in Asia-Pacific Region	Pan Daqing	Chinese to English

2. In all 17 papers issued both at home and abroad

N0.	Title of Academic Papers	Magazine/Conference	Serial Number	Category	Author
1	Big Plans for Small Hydro	<i>Water Power & Dam Construction</i> , UK, May, 2008	ISSN 0306-400X	Foreign Academic Journal	Pan Daqing
2	Innovate Small Hydropower Technology Based on Indian Experience	<i>China Rural Water and Hydropower</i> , N0.1, Jan., 2008	ISSN1007-2284	Domestic Chinese Core Journal	Zhao Jianda
3	A Simulated Analysis of Complementary Power Generation of Hydro & Solar Energy	<i>China Rural Water and Hydropower</i> , N0.7 2008	ISSN1007-2284	Domestic Chinese Core Journal	Xu Jincai, Dong Dafu, Zhang Wei
4	Economic Analysis and Implementing Approaches of Rural Electrification in Foreign Countries	<i>SHP</i> , N0.2, Apr., 2008	ISSN1007-7642	Domestic Chinese Ordinary Journal	Zhu Xiaozhang

5	Typical Case Study of Environment Design for Small Hydropower in Europe	<i>SHP</i> , N0.2, Apr., 2008	ISSN1007-7642	Domestic Chinese Ordinary Journal	Zhao Jianda, Li Zhiwu, Wu Hao
6	Pondering the Speaking Right of China's International Trade of Small Hydro	<i>SHP</i> , N0.3, Jun., 2008	ISSN1007-7642	Domestic Chinese Ordinary Journal	Zhu Xiaozhang
7	TC Turbine Operator with Function of Step-closure	<i>SHP</i> , N0.3, Jun., 2008	ISSN1007-7642	Domestic Chinese Ordinary Journal	Xu Wei, Li Yongguo
8	Analysis of the First Regional Micro Hydropower Capacity Development and Investment in Rural Electricity Access in Sub-Saharan Africa	<i>SHP</i> , N0.5, Oct., 2008	ISSN1007-7642	Domestic Chinese Ordinary Journal	Shen Xuequn, Goufo Yemtsa
9	Discussion on Relevant Settlement Issues on the Premise of Main Materials Supplied by the Owner	<i>SHP</i> , N0.5, Oct., 2008	ISSN1007-7642	Domestic Chinese Ordinary Journal	Shi Rongqing
10	Scientific Outlook on Development Established to Promote the Healthy Development of Rural Hydropower	<i>SHP</i> , N0.6, Dec., 2008	ISSN1007-7642	Domestic Chinese Ordinary Journal	Cheng Xialei
11	Limitation of Selection TFW Pressure Regulation Valve in Low-head Hydropower Station	<i>SHP</i> , N0.6, Dec., 2008	ISSN1007-7642	Domestic Chinese Ordinary Journal	Yao Zhaoming
12	Defect and Analysis of	<i>SHP</i> , N0.6,	ISSN100	Domestic	Yao

	Technical Water Supply System in Huangshanxi Primary Hydropower Station	Dec., 2008	7-7642	Chinese Ordinary Journal	Zhaoming, Jiang Xinchun
13	Practice of Crack Prevention through Temperature Control in Taierzhuang Pumping Station	<i>SHP</i> , N0.6, Dec., 2008	ISSN1007-7642	Domestic Chinese Ordinary Journal	Shi Rongqing
14	Typical Case Study on Harmonious Coexistence between Small Hydropower Station and Environment-Rino Hydropower Station in Italy	<i>China Water Power & Electrification</i> , No.12, Dec., 2007	ISSN1673-2243	Domestic Chinese Ordinary Journal	Li Zhiwu, Zhao Jianda, Wu Hao
15	Status Quo & Analysis of CDM Development for Rural Hydropower	<i>China Water Power & Electrification</i> , No.4, 2008	ISSN1673-8241	Domestic Chinese Ordinary Journal	Chen Xing
16	Role of Programmed CDM in Rebuilding Hydropower Stations after Disaster	<i>China Water Power & Electrification</i> , No.9, 2008	ISSN1673-8241	Domestic Chinese Ordinary Journal	Chen Xing
17	Status Quo & Thought on Science and Technology Journal of Water Conservancy Project and Core Journal	The 6 th Symposium on National Core Journal & its Internationalization and Networking held from Sept.5 th to 10 th , 2008		Published in Domestic Academic Conference	Zhao Jianda, Wu Hao

V Foreign Guests Reception & Outbound Missions

Foreign Guests Hosted by HRC in 2008 (altogether 18 batches with 133 guests)

No.	Time	Country/Organization	Guest	Objectives & results
1	1/8-12	HRC's local agent in Turkey	2	The two sides held talks on three axial-flow power station projects and visited several equipment manufacturers and stations designed by HRC. The Turkish side is satisfied with our production capacity and technological strength, laying a good foundation for further cooperation.
2	1/14	LLC Engineering Corporation, U.S.A	3	The two sides respectively detailed its background and business scope, exploring the potential of cooperation. Besides, the two sides exchanged notes on America's inclined-jet unit research project. It laid a good foundation for further cooperation between the two sides.
3	2/19	Turkey	2	The two sides held talks on the construction of a mixed-flow power station in Turkey. The Turkish side spoke highly of HRC's international reputation and its achievements as well as expressed their desire to further cooperate with Chinese side.
4	4/8-10	Vietnam & Germany	2	Visited HRC and some power stations, held talks with Hangzhou Yatai Hydro Equipment Completing Com., Ltd. on equipment supply and aspired for further cooperation.
5	4/21	Philippines corporation "Clean and Green Energy Solutions"	3	Visited several equipment manufacturers and power stations designed by HRC and held talks on some projects. The Philippine side is satisfied with our production capacity and technological strength, laying a good foundation for further cooperation.
6	4/14-18	FILYOS, Turkey	4	The two sides conducted in-depth exchange on the design and supply of hydro equipment of Hangzhou Yatai Hydro Equipment Completing Com., Ltd., laying a good foundation for further cooperation.
7	5/15-6/2	Participants	58	Attended the training workshop on small hydropower

	3	from 34 countries globally		technology, which was sponsored by Chinese Ministry of Commerce and implemented by HRC.
8	7/8-12	Commercial Councilor, Pakistani Embassy in Beijing	1	Visited HRC and some power stations, exploring possibility of further cooperation between China and Pakistan.
9	8/14-9/2	Participants from 17 African countries	32	Attended the training workshop on small hydropower technology for African countries, which was sponsored by Chinese Ministry of Commerce and implemented by HRC
10	9/10	America International Resource Corporation	2	Discussed about cooperation in the field of CDM
11	10/7-11	FILYOS, Turkey	5	Progress check on equipment production
12	10/7-29	PIK enerji corporation, Turkey	1	Visited equipment manufacturers and discussed about equipment export
13	10/12-15	FILYOS, Turkey	4	Held talks on cooperation of new projects
14	10/26-29	Turkey	2	Held talks on cooperation of new projects
15	10/7-10	Philippines	2	Discussed about hydro equipment export
16	10/30	The World Bank	1	The two sides held talks on topics regarding training cooperation between HRC and some Vietnam organization, compilation of list of SHP equipment manufacturers of China and some other issues.
17	12/8-10	Turkey	7	Discussed about cooperation in the field of SHP
18	12/24-29	Turkey	2	HRC's Turkish customer on PINAR project came for production inspection.

HRC's Outbound Missions in 2008 (altogether 12 groups with 22 people)

No.	Time	Delegate	Country	Tasks & achievements
1	3/17-19	1	Pakistan	Attended the international conference about "Hydel Power Development in Pakistan" and delivered a speech entitled "SHP Training, R & D and Private Investment".
2	4/2-11	1	Uganda	Attended the follow-up training seminar of "Management of Hydropower Development 2007".
3	4/1-4/29	1	Holland	Attended the training for backbone staff and managing personnel.
4	5/25-31	3	America	Attended the software training in Joss Data corporation in order to better carry out "948" project. The training got the participants to know about the principles of generation by the software. It also offered field investigation in California.
5	5/5-8/5	3	Turkey	Offered technological and installation guide for Keklicek power station in Turkey and discussed about the issue of equipment supply.
6	5/23-6/19	2	Turkey	Held talks on the construction of six power stations in Turkey and the supply of hydroequipment by Chinese side, with six new contracts signed.
7	6/29-7/7	1	Spain	Attended Zaragoza Expo 2008.
8	7/12-28	3	Turkey	Held talks on the cooperation of the construction of Bayramhacili and other projects as well as purchase of hydroequipment from China.
9	7/19-9/14	1	Turkey	Carried out the on-site installation supervision of KEKLICEK power station.
10	7/27-8/5	2	Kenya	Offered technological consultation on the cooperation of the construction of several planned hydropower sites.
11	10/3-11/5	1	Sweden	Attended an advanced international training program "Management of Hydro Power Development and Use 2008" sponsored by the Swedish International Development Cooperation Agency.
12	11/11-12/5	3	Turkey	Held talks on the construction of Garzan-I power station in Turkey and purchase of hydro equipment from China.

VI Working Plan for 2009

1. To implement another two training workshops on SHP based on the past experience and try to make new contributions to China's foreign-aid training programs.
2. To implement the training workshop on SHP for ASEAN countries.
3. To translate the textbook *Small hydropower* (From English to French version).
4. To edit and publish *HRC brief* in three languages, namely Chinese, English and French.
5. To implement well the cooperative projects in SHP design, hydro equipment supply and consultation with Turkey, Vietnam, Peru, Mongolia, Pakistan and some other countries.
6. To finish the revision and publication work of *Rural Hydropower and Electrification in China* (English version).
7. To make continuous efforts in the writing and translation of website articles, papers and annual report.
8. To translate into English *Electro-mechanical equipment guideline for small hydropower installation*.
9. To deal with day-to-day work, including reception, foreign affairs, information exchange and so on.