HRC's Annual Report for 2007 & Working Plan for 2008

The year 2007 witnessed fruitful result in HRC's international cooperative projects. Entrusted by Chinese Ministry of Commerce, HRC conducted three TCDC training workshops on SHP with full success. Entrusted by Mongolian Ministry of Fuel & Energy, HRC implemented two training workshops on SHP technology with satisfactory result. Great efforts were taken to expand the international SHP market and hydropower equipment export volumn was increased by ten folds in 2007, as compared to 2006. International cooperation and information exchange were intensified and lots of international cooperative projects including those from Vietnam were contracted. Many overseas guests were hosted and a series of international missions conducted. The year 2007 was exciting.

I、Implementation of international training workshops

A list of international training workshops conducted in 2007

No	Name of the training	Month	Participatory countries	No of trainee	Sponsors
1	2006 TCDC SHP Training Workshop	Dec 2006-Feb 2007	30	42	Chinese Ministry of Commerce
2	SHP Training for Mongolian	4	1	13	Mongolian Ministry of Fuel and Energy
3	2007 TCDC SHP Training Workshop	5－6	18	31	Chinese Ministry of Commerce
4	Training on SHP Operation & Maintenance for Mongolian	7－8	1	12	Mongolian Ministry of Fuel and Energy
5	2007 TCDC SHP Training Workshop for African	8－9	11	26	Chinese Ministry of Commerce
Sum total				124	

1、TCDC SHP Training Workshop

A happy and united “family of SHP”

Entrusted by Chinese Ministry of Commerce, 2006 TCDC SHP Training Workshop was conducted at Hangzhou by HRC from 19 Dec 2006 to 8 Feb 2007. It is the first time for HRC to conduct a training workshop with 42 participants from 30 countries, which requires a higher level of organization, management and implementation. The training lasted a long period around two months and it is also the first time for participants from Uruguay, Georgia, Lesotho and East Timor to attend the training. With

Wonderful lecture and passionate class

Opening ceremony

HRC's constant efforts, HRC has overcome difficulty, and reached the objectives as expected. Through consolidating management and strengthening personnel, HRC organiser mobilized fully the initiatives among the participants themselves, i.e. realizing "self-autonomy". In addition, an international lecturer from Sweden was invited to give presentations for this SHP training workshop, broadening the horizon of the participants. Meanwhile, as designed by the international lecturer, the "Role Play" by the participants as SHP developer, poor villager, rich villager, politician, design engineer, consultant and journalist was so interesting and imaginative that HRC may adopt it for the upcoming SHP training workshops.

Trying *Taiji* devotedly

Cheerful boating on West Lake

2、SHP Training Workshop for Mongolian

The SHP Training Workshop for Mongolian was held with success from 10 to 24 of April by HRC. Attended altogether 13 participants from Taishir and Turgun SHP Stations of Mongolia, as entrusted by Energy Research and Development Center, Mongolian Ministry of Fuel and Energy.

The electric & mechanical design for Taishir Station was undertaken by HRC's design institute and the total isntalled capacity of

the Station which was taken as the local pilot station accounted for 11 MW.

Apart from the appropriate SHP know-how transfer during the training, detailed and vivid presentations specially related to electric & mechanical design for Taishir SHP Station were given. Based on the main features of Taishir and Durgun SHP stations in Mongolia and in combination with the specific needs of the Mongolian participants, visits were arranged to some equipment manufacturers and SHP stations. Although the duration of the training workshop was only 15 days, all the “tailored” programs were carefully and tightly arranged. They were highly appreciated by the participants.

Friendship lasts forever

3、2007 TCDC SHP Training Workshop

2007 Training Workshop on Small Hydropower was successfully conducted in HRC from 17 May to 25 June 2007, as entrusted by the Chinese Ministry of Commerce. In


Sincere smiles from all

total, 31 officials and engineers from 18 countries all over the world attended this rewarding event with fruitful results achieved.


On-site study in SHP station

At the grand closing ceremony, some participants commented: “The Chinese people are so friendly, the development of the Chinese economy so fast and the Chinese public places so secure. How delighting to stay and have the training in China!” The participants all expressed sincerely that in future they would like to try their best to promote the substantial cooperation between China and their own countries, to apply what they have learnt in Hangzhou, China, to strengthen the long-term friendship and together to make further contribution to the global SHP development.

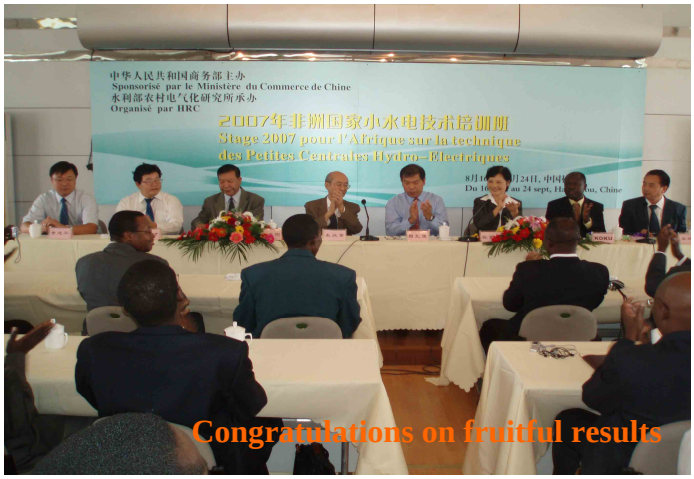
Climbing dam, trying to be the first

4、Training Workshop on Operation and Maintenance for Mongolian

Entrusted by the Energy Research and Development Center of the Ministry of Fuel and Energy, Mongolia, the Training Workshop on SHP Operation and Maintenance for Mongolian was conducted by HRC from July 10 to August 3, 2007 in Hangzhou, with 12 administrators and operators from Mongolian Taishir Power Plant

attended, which scored full success. During the training, according to the characteristics of the participants, apart from the lectures on related technology and theory for power station, especially on the focus of key technology and operation specifications etc. which must be strictly mastered by the staff in daily management & operation work, a one-week on-site practice was also taken in the local hydropower station where the participants had achieved good results with full confidence to work in their new power station after returning home.

5、2007 TCDC SHP Training Workshop for African



Congratulations on fruitful results

Sponsored by the Chinese Ministry of Commerce, 2007 SHP Training workshop for African Countries was held by HRC from August 16 to September 24, 2007 in Hangzhou. In total, 26 engineers and officials from 11 francophone African countries, i.e. Benin, Burundi, Cote d'Ivoire, Equatorial Guinea, Gabon, Guinea, Mali, Niger, Rwanda, Chad and Togo, attended this rewarding event with fruitful results achieved. Through 40-day study, the participants established deep friendship with

Presenting country reports

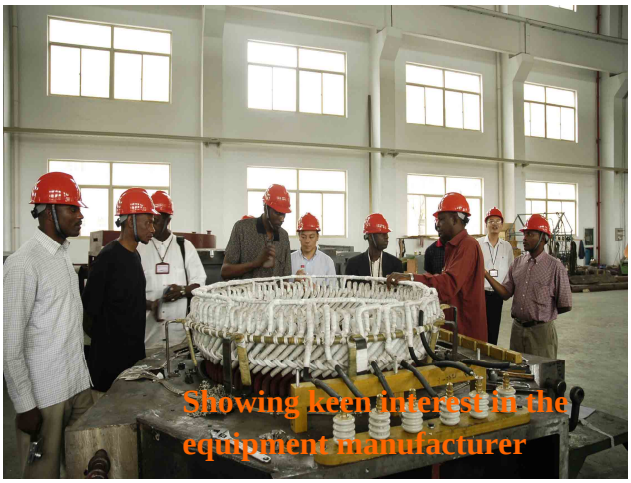
HRC. In their mind, HRC was their mutual home in China, and the unforgettable experience here would benefit their future work.


Group photo after a football match

The training workshop was rich in content, covering all fields of the small hydropower, from the comprehensive experience to specific technologies of SHP development in China, focused on the exploitation modes, hydro energy, hydrology, geology, site selection, civil works, electromechanical design and equipment, metal structure, automation and computer applications, economic evaluation, micro-hydropower and so on, as well as the special topics on SHP investment and financing, social-economic environment of SHP (by a lecture from France), SHP environmental protection, etc.. Chinese experience on SHP introduced was not only reliable, but also practical. With the moderate difficulty degree and pertinence, it could meet the requirements of SHP development in these African countries, creating favorable conditions for future technology exchange, economy and trade cooperation.


Have a try

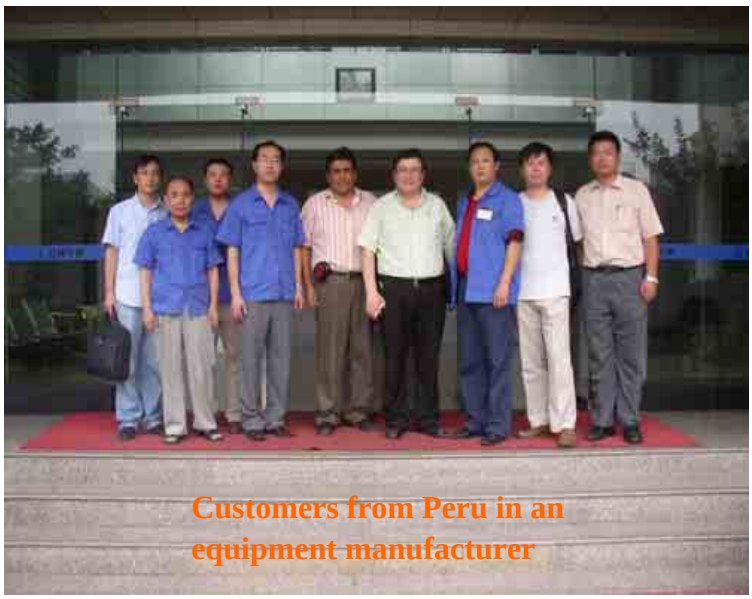
Apart from the lectures in the classroom, site visits and study tours were arranged to Hangzhou Changhe Generating Equipment Co., Ltd. and Hangzhou Resource Power Equipment Co., Ltd. in Xiaoshan, Linhai Machinery Plant and Linhai Electric Machine Co., Ltd., CHINT Co., Ltd., Zhejiang Energy Group and Qinshan Nuclear Power Plant, so that the participants deepened their professional knowledge and extended the knowledge domain. Some of the participants had never been to the hydropower station before, so the visits were the real eye-openers to them.



Showing keen interest in the equipment manufacturer

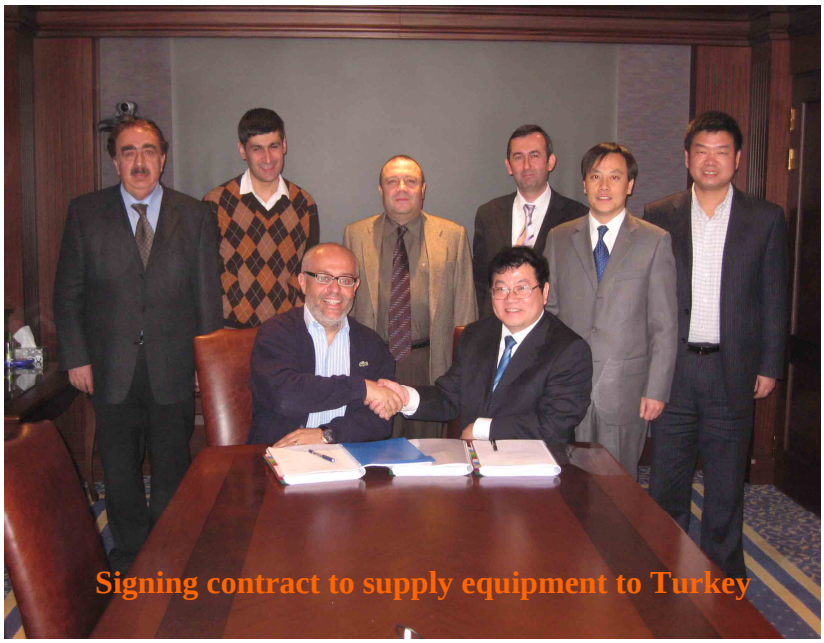
II 、 Hydropower Equipment Export

In 2007, making full use of the resources brought by international training workshops for several years, HRC continued to expand the export trade business, and strengthened the contacts with Turkey, Peru, Philippines, Vietnam,



Customers from Peru in an equipment manufacturer

Russia and other countries. The total value of export contracts amounted to 10.34 million US dollars.


Signing contract to supply equipment to Turkey

1. A supply agreement has been signed with Peru on a set of Pelton Unit with the installed capacity of 1200 kW. The shipment date will be at the end of April, 2008.

2. A supply agreement was signed with Fiji on a 400-kW generator which has been delivered.

3. A supply agreement has been signed with Turkey on a set of Propeller Unit (1 × 250kW). The shipment date will be in early January 2008, and then the technical staffs of HRC will go to the site to guide the installation.

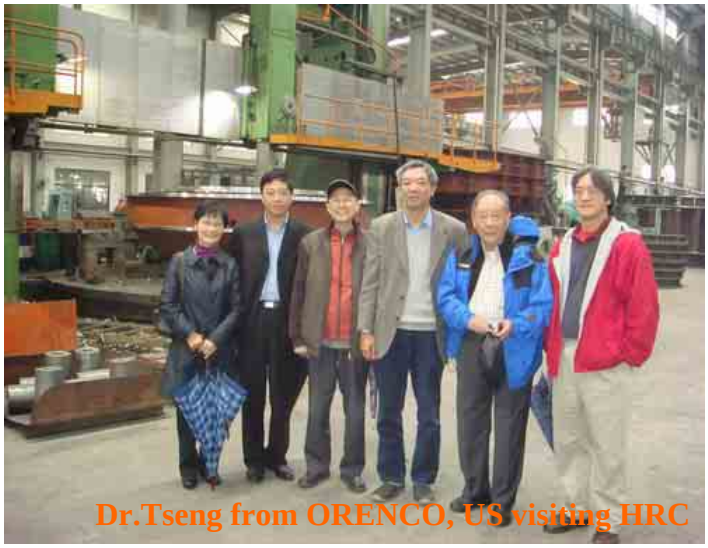
4. A supply agreement has been signed with Turkey on the hydropower equipments (2× 4500kW), and the equipments are planned to be delivered at the end of January, 2008.

5. A supply agreement has been signed with Turkey on the hydropower equipments (3 × 10000 kW), and the equipments are planned to be delivered at the end of December, 2008.

6. A supply agreement has been signed with Turkey on the hydropower equipments (3 × 5000 kW), and the shipment date is planned to be at the end of December, 2008.

7. A supply agreement has been signed with Turkey on the hydropower equipments (3 × 2700 kW), and the equipments are planned to be delivered at the end of October, 2008.

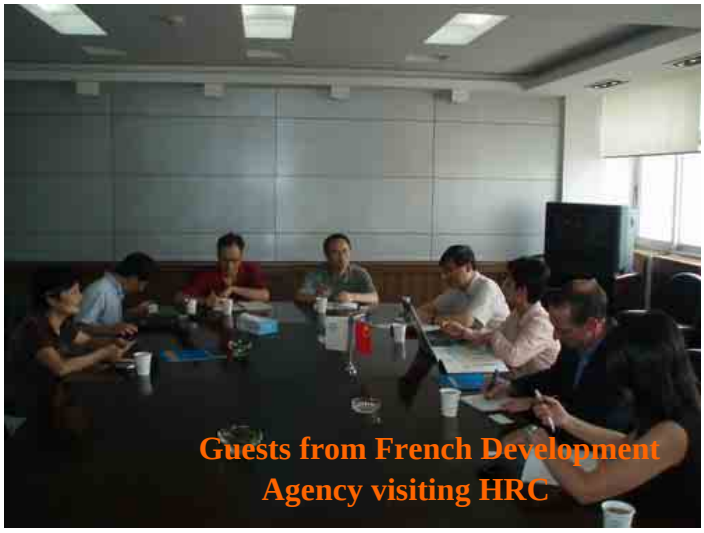
III. International Cooperation and Information Exchange


Dr.Tseng from ORENCO, US visiting HRC

HRC has spared no effort on SHP international cooperative projects, with the successful completion of Khe Dien Hydropower Project in Vietnam and the smooth implementation of Thai An Hydropower Project in Vietnam. A great number of international hydropower projects are still being explored and pursued, such as the design of Muong Hum hydropower station and some others in Vietnam, the reconstruction of the pump station in Uzbekistan, the technical rehabilitation of several hydropower stations in Central Asia, and the design of the hydropower stations in South America, etc.

Improvements have been carried out to 2007 “SHP Newsletter” (in English), one of the publications of HRC, with several columns added,

such as “HRC News”, “Documents & Reports”, “New Publications”, etc. In 2007, over 500 papers were received for “SHP News” (in Chinese), the other publication of HRC, among which, 157 articles were selected and published.


Guests from French Development Agency visiting HRC

The influence of HRC’s homepage has been further increased, becoming an important window for publicizing and a platform for HRC staff to receive information more easily. In 2007, in total 83 pieces of information in Chinese and English were edited and issued, among which, 30 have been adopted in some other websites, such as the “Network of Science and Technology of Water Resource in China (www.chinawater.net.cn)”, the “Information Network of Rural Hydropower and Electrification in China (www.shp.com.cn)” and the website of NHRI (www.nhri.cn), etc. In addition, 6 articles from HRC have been published in “China Water”, introducing the modern new


Turkish Guests in HRC

technology for rural hydropower and the information on check and acceptance of the research programs concerned.

Articles for "2007 Yearbook on Foreign Affairs of Zhejiang Province" which is one of the excellent publications in China, have been provided. HRC's annual summary on foreign affairs is also included in the yearbook.

IV. Foreign guests hosted by HRC and HRC's Overseas Missions

1. Foreign guests hosted by HRC

In 2007, 17 delegations, 163 guests in total, paid visits to HRC (shown in Annex I).

Guests from TIS of Chile visiting HRC

2. HRC's Overseas Missions

In 2007, HRC sent 9 missions, 13 engineers in total, to go abroad (shown in Annex II).

V. R&D

In 2007, relying on technical renovation and with market-orientated system, HRC actively explored the domestic market. New phases were inaugurated for both scientific research and

production. In total, 121 contracts on R & D projects have been signed. Six projects assigned from ministries have been completed, checked and accepted, including the "Research on Sustainable Development of SHP in China", one of the research projects on water resources planning and significant subjects of the Ministry of Water Resources (MWR); the "Collection and Comparison of International Norms on SHP", one of the MWR special projects on standardization of water resources; the "Application and Demonstration of Automatic Control System in Rural Hydropower Station", one of MWR key projects on application of science and technology; the "New Auxiliary Equipment for Rural SHP Station", one of the MWR "948" projects; the "Unmanned Automatic Control System for Rural SHP Station", one of the agricultural transformation projects of the Ministry of Science and Technology (MST); and the "Key technology for Containerized SHP Station", one of the MWR "948" projects.

Acceptance Meeting on Collection and Comparison of International Norms on

Another four projects assigned from ministries have also been Completed, but waiting for the check and acceptance, i.e. the "Remote Automatic Meter-reading System for Rural SHP Station", one of the

MST agricultural transformation projects; the “Simulation Research on Mutual Complementing System of Hydropower and Wind Energy”, one of the Zhejiang Provincial projects on science, technology and planning; the “Research on Key Technology for Mutual Complementing and Energy Storage of Hydropower and Wind Energy”,one of the Nanjing Hydraulic Research Institute (NHRI) fund projects; and the “Research on Key Technology for Mutual Complementing and Energy Storage of Hydropower and Wind Energy”, one of the MST projects of public benefit. The following four projects are being undertaken according to plan: the “Intelligent Control and Managerial Technology for Rural Hydropower Development”, one of the MST projects on international scientific and technical cooperation; the “Equipment Function Development for Decentralized Hydropower-Wind Energy Complementing Power Generation Tests in Rural Areas”, one of the 2006 special projects on upgrading renovation

Acceptance Meeting Research on Sustainable Development of SHP in China

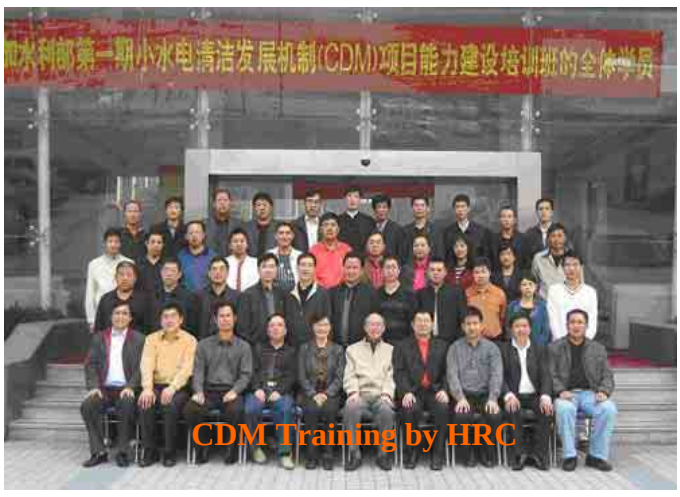
CDM Training by HRC

of scientific instrument and equipment; the “Popularization and Application of Key Technology of Containerized SHP station”, one of the 2006 agricultural transformation projects of MST, and the “Research on SHP Electricity Price and Power Grid”, one of the NHRI fund projects.

Entrusted by the Bureau of Hydropower and Rural Electrification of MWR, HRC held a training course on CDM capacity building for SHP projects and other two on safety supervision of rural hydropower system. In total, 240 trainees from nearly 20 provinces and autonomous regions attended the training courses.

In 2007, 19 papers of HRC staff were published in magazines (shown in Annex III).

The scientific research achievements greatly upgraded HRC’s technical innovation capacity and the competitiveness in domestic and overseas markets, and nurtured a batch of professional scientific and research talents. The solid foundation has been established for HRC to strengthen international cooperation and exchange, and promote the export of Chinese SHP equipment.



CDM Training by HRC

VI. Working Plan for 2008

1. We have applied for assignment of three international training courses on SHP from the Ministry of Commerce (MOFCOM). Guided by the principle of “Considerate organizing, Standardized management, Cordial service, and Keeping close contact”, which was put forward by the minister of MOFCOM, it is expected to further optimize the training staff, renovate the training mode, expand the training scope, enrich the training content, strengthen the training management and improve the training quality, so as to make more contribution to the foreign aid training programs sponsored by Chinese government.

2. To pursue the potential SHP cooperative project continuously, try to get on a new stage based on the contract volume of 2007.

3. To publish the book “Small Hydropower in Asia-Pacific Region ---- Status quo and Problems” (English Version).

4. To promote the exchange and cooperation with USA and EU countries on SHP environmental protection, safety and guarantee, and rural power consumption management and system, etc.

5. Upon request, to organize outbound delegations for visiting and training related to water resources and hydropower.

6. To make continuous contribution to HRC’s homepage by writing and translating papers and reports.

Annex I

Foreign Guests Hosted by HRC in 2007

No.	Time	Country/Organization/Number	Visiting Goal and Results
1	06.12/19--07.2/8	42 participants came from 30 countries	Attending 2006 TCDC small hydropower training workshop
2	4/10--4/24	13 staff in management and operation came from Mongolian Taishir and Turgun hydropower stations.	Attending small hydropower technology training courses for Mongolia
3	5/14	MR Victor, vice president and other staff of TIS from Chile	A fruitful and in-depth talk was held between both parties on cooperating to develop small hydropower projects in Chile, Latin America and other related areas. In addition, MR Victor expressed appreciation for the technology, experience and achievements HRC has made on SHP, and expressed that they would sign the cooperation framework agreement as soon as possible
4	5/17-6/25	31 participants came from 18 countries	Attending 2007 TCDC small hydropower technology training workshop
5	6/17	2 staff of Tanzania Power Co.	They were both the former particpants of TCDC small hydropower international training workshops run by HRC. They revisited HRC, explored the cooperation and deepened friendship.
6	6/21	Dr. Zhao Chongwan and the other person came from United Nations Asia-Pacific Centre for Agricultural Engineering and Machinery	Both parties briefed each other on their scope of business, technical characteristics and development goals, and exchanged views about future cooperation.
7	7/6	3 staff of Peru Engineering Co.	Signed sales contracts to supply impulse units

8	7/11	MR Nicolas and other three staff of French Development Agency and ECDC Promotion Co.	Both parties briefed each other on their background and scope of business，explored cooperation opportunities. The guests believed that both parties could further cooperate on studying environmental impact, construction project evaluation, technical training related to small hydropower
9	7/10-8/3	12 staff in operation and management of Mongolian Taishir hydropower station	Attending Training on SHP Operation & Maintenance for Mongolian
10	8/16-9/24	26 participants came from 11 countries of Africa	Attending small hydropower technology training for African countries
11	9/3-9/9	3 customers of the Philippines	Discussion with HRC for cooperation on hydropower equipment supply
12	9/10	3 customers of Turkey	Discussion with HRC for the cooperation on hydropower equipment supply, visiting SHP stations
13	9/16-9/18	2 persons of French Development Agency	Presentations on SHP training courses and discussion of cooperation with HRC
14	10/16-10/19	3 staff of Turkey RC Co.	Both parties exchanged in-depth views on forthcoming cooperation of equipment selection and technology programs of the two hydropower projects.The customers visited the equipment factory recommended by HRC and SHP station designed by HRC
15	11/15-11/20	2 staff of USA ORENCO Co.	Further talk on cooperation of transformating West Lake station in Jin Hua and building small hydropower stations on Fox river in the USA
16	12/13	2 staff of Pakistan DI Co. and SITARA Energy Co.	Discussion was conducted between the two parties on hydropower cooperation and on a planning diagram of hydropower development provided by Pakistani side.
17	12/26	The Chairman of Provincial Party Committee and other 11 persons of Hejiang province in Vietnam	Visiting and entrusting HRC with some small hydropower projects

Annex II

HRC's Overseas Missions in 2007

No.	Time	Number	State Visited	Visiting Tasks and Results
1	1/28-2/12	1	India	MR Zhao Jianda attended the international training of "The Small Hydropower: Assessment and Development".
2	After 15/3	1	Thailand	MR Huang Jianping attended the fifth meeting of the Joint Steering Committee of Sino-Thai Water.
3	3/22-6/27	1	Cuba	MR Rao Dayi guided the installation of the mechanical and electrical equipment of Moiré hydropower station.
4	3/25-3/30	1	South Africa	Ms Shen Xuequn attended the follow-up training activities of advanced hydropower management and development.
5	4/15-12/31	1	Mongolia	MR Cui Taizhen went to Mongolia to take charge on Site technical guidance of TASHIR Hydropower Station.
6	7/10-8/10 and 7/10-12/31	2	Mongolia	MR Wu Weiguo and Mr. Bao Yufei went to Mongolia to take charge on Site technical guidance of TASHIR Hydropower Station and implement the relevant tasks.
7	7/30-8/20	2	Turkey	MR Lin Ning and Mr. Xu Wei went to Turkey to have technical and commercial negotiations for building four hydroelectric projects and supplying Chinese hydropower equipment.
8	9/1-28	1	Sweden	MR Pan Daqing attended senior international training course for hydropower development, use and management.
9	12/6-12/22	3	Turkey	MR Xu Jincai, MR Lin Ning and MR Xu Wei went to Turkey to have technical and commercial negotiations for building two hydroelectric projects and supplying Chinese hydropower equipment

Annex III

A List of Papers/Publications of HRC in 2007

No.	Title of Academic Paper	Magazine Name/ Conference Name	Serial No	Academic Paper Category	Author
1	Analysis of Environment Impact in Rural Hydropower Engineering	"China International Power Generation Technology Conference", Shanghai, China, June 5-6, 2007. China Power Enterprise Association, State Grid Utility		International Academic Conference	Chen Xing
2	Factors Contributing to the Development of SHP in China	UK <Renewable Energy World> No.9-10, 2006，PennWell	ISSN 1462-6381	Foreign Academic Journal	Pan Daqing
3	Environmental-Protection and Ecological Problems in SHP Development and Countermeasures	《CHINA RURAL WATER AND HYDROPOWER》, No. 2, 2007.	ISSN 1007-2284	Domestic Chinese Core Journal	Zhao Jianda Cheng Xialei Zhu Xiaozhang
4	The Recent Development of Environmental Integration of SHP in Europe	《CHINA RURAL WATER AND HYDROPOWER》, No. 9, 2007	ISSN 1007-2284	Domestic Chinese Core Journal	Zhao Jianda
5	Analysis on Small Hydropower Investment and Financing in China	《CHINA RURAL WATER AND HYDROPOWER》, No. 11, 2007	ISSN 1007-2284	Domestic Chinese Core Journal	Cao Lijun
6	Reflection on Developing "Green	《China Water Power & Electrification》,	ISSN 1673-2243	Domestic Chinese Ordinary	Chen Xing

	Hydropower Attestation" in Rural Hydropower Sector	2007.7.		Journal	
7	Analysis of sediment position in reservoir of Luozhahe cascade No.1 Hydropower Station	《SMALL HYDRO POWER, 2007.10.	ISSN 1007-7642	Domestic Chinese Ordinary Journals	Li Zhiwu Zheng Naibo
8	Research on Optimizing Development of Small-sized Cascade Station	《China Water Power & Electrification》, 2007.7.	ISSN 1673-2243	Domestic Chinese Ordinary Journal	Li Zhiwu
9	Research on Hydropower Exploitation Model of Downstream Reach of Luozhahe River	《SMALL HYDRO POWER》, 2007.12.	ISSN 1007-7642	Domestic Chinese Ordinary Journal	Li Zhiwu
10	Inquiry of Strategic Guidelines for Development of Small Hydropower Technology in China	《SMALL HYDRO POWER》, No. 1, 2007	ISSN 1007-7642	Domestic Chinese Ordinary Journal	Cheng Xialei Zhu Xiaozhang
11	Technical Level of Small Hydropower in China and Its Difference with International One	《SMALL HYDRO POWER》, No. 2, 2007	ISSN 1007-7642	Domestic Chinese Ordinary Journal	Cheng Xialei Zhu Xiaozhang Lu Jianping