

## Hypermarket Mechanical & Electrical Design review, project supervision and commissioning

### Project Background

In 2008 a major hypermarket chain initiated a major step-change program to improve the quality and reliability of the refrigeration systems being installed in its new stores. The objectives of the program were to raise overall store energy efficiency, to improve system quality and to decrease refrigerant usage rates. To meet these objectives the client engaged Baseline Technical Services to supervise and quality control new store refrigeration systems. Based on the success achieved in the first phase of the project, Baseline's scope of works was then increased to incorporate all major mechanical and electrical systems including store HVAC, lighting and digital control systems.



### Summary

*In 2008 Baseline was contracted by a major hypermarket retail china to help improve the quality, reliability and energy efficiency of the mechanical and electrical (ME) systems being implemented in its new stores. To meet these objectives Baseline provided supervision, quality control and commissioning services for all of the client's new and retrofit projects.*

*This process has been carried out on over 200 projects helping achieve an 8.7% increase in overall store energy efficiency and a 50% reduction in refrigerant usage.*

*The reliability of the ME systems and indoor comfort standards were also greatly improved.*

### Baseline's Role

Baseline was contracted to review all refrigeration, HVAC, digital control and electrical designs in order to ensure conformance to the customer's technical specifications. Baseline's engineers then carried out on-site quality checks and tests with any deficiencies uncovered being reporting to the contractors for rectification. Final system testing and commissioning was supervised and validated by Baseline.

A KPI system was also implemented to track and report on the performance of each equipment supplier and installation contractor for each new store. This system was implemented to ensure the applicable contractor or supplier rectified all deficiency items identified during the design review and quality supervision process in a timely manner. Baseline also implemented a computerised system to digitize the entire process from the design review through each of the site inspections and the final commissioning.

The goals of this project were to:

- Minimise full life-cycle costs and maximise energy efficiency;
- Minimise on-going refrigerant usage.
- Identify and rectify any issues during the full design and construction projects

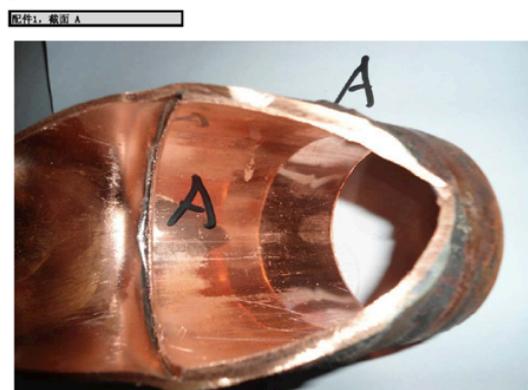
### Baseline's Services To Meet Those Goals

1. Review of all mechanical and electrical design documentation and generation of deficiency reports;
2. On-site quality checks at various stages throughout the construction process;
3. System pressure and evacuation tests using digital data logging equipment;
4. Full commissioning including refrigeration pressure drop, non-condensable gas tests, control system point-to-point tests and HVAC functional tests;
5. On-going analysis and reviews of new technologies and approaches applied in the client's new and retrofit projects.

Wujiang Fenhu Store  
Debrieffing Report 2nd—Ref. Quality 1st  
May-18-2012

配件	配件1					
配件描述	机房内中温冷凝器回液管 弯头Φ67					
系统	中温系统		制冷剂		R404A	
部位	截面A Φ67		截面B Φ67		截面C	
焊料填充率	Min	Max	去毛刺	Min	Max	去毛刺
是否冲氮	100%	100%	Limited	100%	100%	NA
焊条含银量	Yes	Yes	Yes	Yes	Yes	NA
	15%			15%		

评价  
1.管道焊接质量优秀, 焊料渗透率100%  
2.管道无氧保护优秀, 管道内清洁明亮  
3.管道A处切口, 管道毛刺清理不彻底, 有待加强



### Project Results and Benefits

- 15% to 20% reduction in refrigeration system energy usage.
- 50% reduction in brazed connections in refrigeration plant and 20% on pipework.
- The previously high pressure drops between the compressor racks and refrigerated fixtures were eliminated from new stores.
- 50% decrease in refrigerant usage intensity.
- 8.7% improvement in overall store energy efficiency.