Study on the Protection and Reuse of Industrial Heritage in Resource-Based Cities—DaQing

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Abstract. Industrial heritage, which is a new type of human cultural heritage categories. It has significant meaning to improve the grade of the city and to keep the city region characteristic as well as the maintenance of urban historical style and features. With the development of urban industrialization process, as a resource-based city, Daqing has rich industrial heritage. This paper systematically summarizes the value characteristics of industrial heritage in Daqing by means of literature search and field investigation. Besides, it combines with domestic and foreign outstanding industrial heritage protection and reuse method, which are proposed for Daqing petroleum industrial heritage protection and reuse feasibility Suggestions.

1. Research Background

Daqing is an important petroleum resources city in China. 50 years of development has formed a wealth of industrial heritage resources. This paper provides the feasibility of the scheme for oil industrial heritage protection and utilization of Daqing on how to deal with the relationship of the industrial heritage and urban properly and correctly solve the problem between sustainable development of resources city and the protection of industrial heritage reuse problem, which has important practical significance of advice and reference value.

2. Industrial Heritage Development Abroad

The International Committee for the Conservation of the Industrial Heritage was established in 1978. As the first global organization to explore the protection of industrial heritage, which has made great contributions to the protection of the world industrial heritage. The International Committee for the Conservation of the Industrial Heritage (TICCIH) adopted nizhny tagil charter in July 2003\textsuperscript{[1]}, which described the concept and value of industrial heritage and research the importance of protecting and recycling. Besides, it formulated related standard and methods in view of Industrial heritage research.
### Table 1. The United States, Japan, Britain's industrial heritage research results summary.

<table>
<thead>
<tr>
<th>Countries</th>
<th>Time</th>
<th>Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>America</td>
<td>In 1972</td>
<td>Scholar Symonds[^2^] wrote <em>preservation and perspective in Industrial Archaeology</em>, which provided a new method and research angles for American heritage of history and culture.</td>
</tr>
<tr>
<td>America</td>
<td>In 1978</td>
<td>Theodore[^3^] Published <em>Industrial Archeology: A New Look at the American Heritage</em>, which put forward the importance of industrial heritage. Furthermore, he summarized the status quo and the feasibility of the protection of heritage by analyzing case of some industrial heritage.</td>
</tr>
<tr>
<td>Japan</td>
<td>In 1986</td>
<td>Japanese scholars ShanJiJunXiong and QingTianQingZhi[^6^] collaborated <em>Japan's industrial heritage, industrial archaeology research</em>, which summarized the protection method of industrial heritage from the angle of methodology according to discuss the connection between the history of books, museum and industrial heritage.</td>
</tr>
<tr>
<td>Japan</td>
<td>In 1997</td>
<td>Japanese scholar XiCunXingFu published[^7^] <em>hometown glamour club</em>. The author analysed the case a canal and took the feasibility of the industrial heritage protection who adopted the way of protection. Besides, he illustrated the importance of industrial heritage through lectures and crosstalk sketch.</td>
</tr>
<tr>
<td>Japan</td>
<td>In 2004</td>
<td>Japanese scholar JingShangMin summarized in detail to Japanese industrial heritage protection. and elaborated the existing problems and solution of Japanese industrial archaeology.</td>
</tr>
<tr>
<td>British</td>
<td>In 1998</td>
<td>British scholar Marily palmer[^8^] compiled <em>Industrial Archaeology. principles and practice</em> who discussed the protection methods of Industrial heritage according to collect real case to study analysis and combine with the years of experience in industrial heritage protection and utilization.</td>
</tr>
<tr>
<td>British</td>
<td>In 2005</td>
<td>Eleanor and Jamers[^9^] collaborated Industrial Archaeology. Future Direction. It took the feasibility analysis to the Industrial heritage resources and manufacturing through the detailed study of the industrial heritage protection practical cases.</td>
</tr>
</tbody>
</table>

[^2^]: Scholar Symonds
[^3^]: Theodore
[^4^]: American scholar Dougla
[^5^]: Japan HeiYanJunLang and YuZhiZhengMei
[^6^]: Japanese scholars ShanJiJunXiong and QingTianQingZhi
[^7^]: Japanese scholar XiCunXingFu
[^8^]: British scholar Marily palmer
[^9^]: Eleanor and Jamers
3. Domestic Study Condition

3.1 Achievements in the Literature of China

China's paper literature are divided into industrial heritage protection in China theory and practical application cases of two parts.(tab. 2)

<table>
<thead>
<tr>
<th>Theory research aspect</th>
<th>Industrial heritage protection case study aspect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic scholars Kongjian Yu and Wanyu Fang\textsuperscript{10} wrote exploring China's industrial heritage who discussed related theory of industrial heritage who summarized the typical industrial heritage in our country.</td>
<td>Boying Liu and Kuang Li published \textit{Beijing industrial architectural heritage protection and reuse study}. They put toward the stages of research and methods of industrial heritage according to the summary of Beijing industrial heritage protection and reuse study, which provided significance for other cities of industrial heritage\textsuperscript{13}.</td>
</tr>
<tr>
<td>Jixiang Chan summarized some problems of existing in the industrial heritage protection research in China. Furthermore, he put forward solutions\textsuperscript{11}.</td>
<td>Song Zhang and peng Chen composed \textit{Analysis of industrial heritage Status quo and reuse situation analysis in Hongkou district of Shanghai} who elaborated the feasibility of industrial heritage protection and reuse operating practice in terms of view of urban planning and transformation. The industrial heritage protection in our country could be carried out successfully\textsuperscript{14}.</td>
</tr>
<tr>
<td>Aifang Li, Junping Ye and so on wrote \textit{A comparative study of domestic and foreign industrial heritage management system}. They Put forward the practical Suggestions to our country industrial heritage protection law through the comparison of the heritage management laws at home and abroad\textsuperscript{12}.</td>
<td>(author collate the article to draw by myself)</td>
</tr>
</tbody>
</table>

4. Daqing Industrial Heritage Research

4.1 Industrial Heritage Protection Status Quo of Daqing

Industrial heritage is microcosm of a city civilization development and also is the witness of several generations of hard work, which record the developing course of Daqing people in the industry. There summaries of Daqing industrial heritage quo are as follows.(Tab. 3)
Table 3. Daqing industrial heritage protection.

<table>
<thead>
<tr>
<th>Determine time</th>
<th>Ruins and sites</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>Song Ji Well 3</td>
<td>It was the first well in Daqing oil field and national key cultural relics protection units.</td>
</tr>
<tr>
<td>2005</td>
<td>Oil field battle command post—second yard</td>
<td>It had been named as the provincial cultural relics protection units by Heilongjiang province.</td>
</tr>
<tr>
<td>2006</td>
<td>No. 2, cluster Wells production platform, petroleum meet for great battle Pledging conference square, Daqing exhibition building, Hongqi village Rammed-earth houses, Storage and transportation terminal sales branch, Sewing factory site, West water, The central telephone station, Entrepreneurship village, Xu deep 1 well, Putaohua oil refinery site, East depot, south three Oil depot, North second water injection station, The 16 joint station, Bei 16 Wells in the 16 areas, north 1-5-6-5 Injection Wells, Birthplace of “Three, fourth, eldest, yan” — the fourth team</td>
<td>Daqing city established 18 industrial heritage sites. Daqing determined the first industrial heritage the municipal cultural relics protection units.</td>
</tr>
</tbody>
</table>

(author collate the article to draw by myself)

4.2 Analysis of Characteristics of Daqing Industrial Heritage Value

The International Federation of Industrial Heritage Protection in Russia issued the "Lower Tajell Charter" that the industrial heritage has history, technology, society, architecture or scientific value. The following is a detailed analysis of the value of the historical value of the oil industry in Daqing.(Tab. 4)
Table 4. Analysis on the value of industrial heritage in Daqing.

<table>
<thead>
<tr>
<th>Value types</th>
<th>Representative heritage</th>
<th>Connotation values</th>
</tr>
</thead>
</table>
| Historical values| Song Ji Well 3                           | (1) Industrial petroleum heritage witnesses the development of petroleum industry which has profound significance for understanding industrial civilization development.  
(2) It ended the situation of no oil in our country.                                                                         |
| Economic values  | Daqing oil field history museum          | (1) Industrial factory renewal can save a lot of the processes of tearing down and building, which reflects the economic value of industrial heritage protection and reuse.  
(2) The large-span industrial factory building brings many possible for reuse.  
(3) Reusing the industrial heritage and industrial tourism projects can increase the city charm and bring to the city's economic comprehensive benefits. |
| Social values    | Iron man Jinxi Wang memorial, Daqing museum, Ten thousand square, The 16 joint station | (1) They make people have sense of social identity and belonging.  
(2) The petroleum industry development impacted on the Daqing economy and even the society as a whole.  
(3) They are true portrayal of the social development stage.  
(4) They are education for future generations. |
| aesthetic values | Hongqi village Rammed-earth houses       | (1) It reflects the aesthetic view of Daqing battle period. Furthermore, it real reflects the lives of the people in Daqing petroleum battle period.  
(2) It has a unique style, which has iconic role and the unique aesthetic value. |
| Technological values | No. 2 platform cluster Wells, Xu deep 1 well | Industrial waste workshop, production facilities and production processes can record a period of industrial technology level and have good technical value. |
| Rareness values  | Iron man the first well, Bases of five spade start a revolution | Daqing petroleum industrial heritage has local uniqueness. It reflects the Daqing unique industrial and landscape, which has special value and certain representation in Daqing. |

(author collate the article to draw by myself)
4.3 The Deficiencies and the Development Strategy of Daqing Petroleum Industrial Heritage Protection and Reuse

4.3.1 Daqing Industrial Heritage Protection and Reuse Existing Problems Analysis

(1) Industrial heritage protection in a single form. Many petroleum industries heritage protection adopt the museum form, such as Iron man the memorial, Daqing oilfield history museum. Daqing oil field of science and technology museum. However, museum display number is limited.

(2) The petroleum industry heritage protection consciousness is not strong. Many residents don't understand industrial heritage concept, so many old industrial heritages didn't get good protection.

(3) Petroleum industrial heritage has an important influence in the formation of Daqing city texture. However, in the process of industrial heritage protection and reuse. Industrial heritage protection failed to combine with urban planning reasonable. Does not consider the relationship of between reuse of industrial heritage and urban overall function, the urban industrial structure, the urban public facilities.

4.3.2 Daqing City Industrial Heritage Protection and Reuse Strategies

(1) Daqing petroleum industrial heritage protection should adopt developing a various of protection patterns such as exhibition hall, Park landscape pattern, Multi-purpose activity center mode and so on. Daqing city can be combined with the concept of industrial heritage tourism, joining new features in the original industrial buildings to form heritage park type of industrial cities. For example, we can ensure the rammed-earth house architectural heritage complete and reappearance and shape industrial landscape image through the way of heritage park.

(2) Establishing industrial heritage value evaluation system and related laws and regulations. We should define to accord with Daqing regional characteristics of industrial heritage scheme by analyzing particularity and unique regional characteristics about type of petroleum industrial heritage. Moreover, based on Industrial heritage protection refer to multidisciplinary, we should request practitioner sector having a broad knowledge. Only in this way can better to protect industrial heritage. At the same time, government should improve popularize strength of the industrial heritage protection to the citizen literacy and enhance the consciousness of the protection of the citizens.

(3) The industrial heritage protection and reuse combined with urban culture and cultural industries, so as to enhance the connotation of urban culture. Daqing is known as"green oil city, the city of natural lake, north springs of the township". Therefore, we can combine petroleum industrial heritage with urban culture and promote urban tourism industry for citizens and tourists to create a open city space, attracting modern people to understand the oil industry culture and the Daqing spirit and feel the beauty of the natural environment of Daqing, which can promote the city image and grade.

5. Summary

Our country resources city industrial heritage protection and use of scientific theory system have not been formed and researched on theory and practice of learning the ropes around here.
Therefore, we should retain and utilize the existing industrial heritages to the maximum and put forward the relevant theoretical basis, taking into account the economic, social and environmental needs of urban development. Furthermore, we should take measures to local conditions from the perspective of the overall research of Daqing industrial heritage protection. We should create the iconic regional urban landscape to promote the sustainable development of Daqing economy and bring profound significance for Daqing economic and culture.

References


[14] Song Zhang, Peng Chen. Hongkou district of Shanghai industrial heritage status and reuse situation analysis[A]; In 2010 China's third session of the first academic conference on industrial building heritages[C]; 2010.