Where Modernization in Japan Began

SATSUMA SPIRIT
HERITAGE OF INDUSTRIAL MODERNIZATION IN KAGOSHIMA

Sites of Japan’s Meiji Industrial Revolution
Listed as UNESCO World Cultural Heritage Site in July 2015
The origins of ‘Shuseikan’ with its brilliant and sophisticated technology

In 1852, full-scale construction of the reverberatory furnace began.

In the 19th century, as countries such as Britain, France, and the U.S.A. made steady forays into Asia, the Satsuma Clan at the southernmost tip of Japan was the first to face threats from foreign countries. The move to take caution against foreign advances intensified in the Satsuma Clan after China was defeated in the First Opium War in 1842. Nariakira Shimadzu, who became feudal lord of Satsuma in 1851 believed it necessary to make Japan a strong and wealthy nation equal to other countries, not only by reinforcing armaments, but also by encouraging new industries. He thus built a factory complex called ‘Shuseikan’ in Iyo, Kagoshima City. Focusing the efforts of the domain on producing modern cannons and shipbuilding, as well as the construction of reverberatory furnaces, he eventually succeeded in building the furnaces singlehandedly. The modernization projects carried out during the short seven years of his succession as feudal lord extended over a variety of fields, but in 1858, Nariakira passed away suddenly before accomplishing all that he had set out to achieve.

After his death, the projects were drastically downsized. However, during the Anglo-Satsuma War in 1863 triggered by the Namamugi incident, the Satsuma Clan experienced firsthand the overwhelming difference in power between them and other countries, such as Britain with her modern fleet. This led the people of Satsuma to realize the importance of modernization that Nariakira had advanced.

The reverberatory furnace that fuses Satsuma’s traditional technology with Western technology

At the end of the Shogunate period when Japan was under its seclusion policy, Western technology required for modernization was assimilated from Western texts. As the Satsuma Clan was already skilled in Satsuma pottery, iron smelting, and stonemasonry, they adapted these traditional techniques and independently constructed a reverberatory furnace. The remains of the reverberatory furnace show slatted stonework, a technique not mentioned in Western texts. This reveals the advanced level of the Clan’s technical capabilities.

Stone bridge masonry techniques

Production of fire-proof bricks used in the reverberatory furnace incorporated techniques from Satsuma pottery, and the furnace itself was built using traditional stonemasonry techniques.

Satsuma pottery techniques

The reverberatory furnace that fuses Satsuma’s traditional technology with Western technology

The slanted stone platform is the lower part of the combustion chamber wherein iron is melted. The stones are fitted so well that not even a razorblade could be inserted between them. This demonstrates the sophistication of stonemasonry skills.

In 1852, full-scale construction of the reverberatory furnace began.

The stone foundation of the reverberatory furnace. There were originally two tower furnaces built atop the foundation.

The reverberatory furnace that manufactured cannons from melted iron was built according to a translated foreign text.

There is an opening for ventilation at the center of the remaining stone foundation.

SINCE 1852
Shuseikan Reverberatory Furnace
Located within Sengan-en

Lord Shimadzu’s initiative of the Shuseikan Project had a great influence on the modernization of Japan.
Japan’s oldest surviving Western-style machinery factory

SINCE 1865
Former Machinery Factory
(now Shokoshuseikan museum)

In 1865, the Shuseikan Modernization Project restarted.

After the death of Nariakira Shimadzu, the Satsuma people who witnessed the difference in power with other countries in the Anglo-Satsuma War recognized the importance of the Shuseikan Project that Nariakira had carried out. The Satsuma Clan stepped up on modernization and industrialization by actively absorbing new technologies and knowledge such as through dispatching students to Britain in 1865. It also directly imported sophisticated machineries from the West.

The resurrected Shuseikan Project engaged in many projects, from iron production and shipbuilding, to the development of machinery manufacturing, cotton-weaving, glasswork, and Satsuma pottery. Through the wisdom and efforts of many people, these projects turned Nariakira’s dreams of modernization, and of creating a strong and wealthy nation, into reality.

The Former Machinery Factory was constructed in 1865 by Lord Tadayoshi who inherited Nariakira’s ambitions, based on the factory that was destroyed in the Anglo-Satsuma War. As the oldest surviving Western-style machinery factory in Japan, it shows us today how the factory used to look like in bygone days.

The Former Machinery Factory was constructed using locally sourced welded tuff, and since completion it has been referred to as the ‘Stone Home’. It is designated as a National Important Cultural Property. Chisel marks can be seen on the carefully stacked stones. The Japanese architectural style called ‘Kamebaraishi’ can also be seen at the building’s foundation.

A shaper made in 1863 by a Dutch machine tool manufacturer is housed in Shokoshuseikan museum.

Steam engines were used to power the factory. A large cog wheel that conveyed power to the machines within the factory is on display in the center of the museum.
The foundation for the spinning industry, which became a key industry in the Meiji period, was laid down by Kakutaro Ishikawa and others, who exhorted the importance of Nariakira’s ideas. After the completion of Kagoshima Spinning Mill in 1867, Sakai Spinning Mill was constructed in 1870. Ishikawa became a government official after the Meiji Restoration, and was involved in the construction of spinning mills across Japan, including the silk mill in Tomioka and spinning mills in Aichi and Hiroshima. The engineers of Kagoshima and Sakai thus spread the spinning technology of Satsuma cultivated since Nariakira’s time throughout Japan.

In 1867, Japan’s first Western-style spinning mill was completed.

The modern spinning industry was a key industry in Japan in the Meiji period. It is said that Nariakira focused on the spinning industry so as to manufacture sail cloths for their Western-style ships. After his death, Kakutaro Ishikawa, who had undertook the study of western sciences by means of Dutch language in Nagasaki and was in charge of the construction of the reverberatory furnace thus promoted by Nariakira, conveyed the importance of the spinning industry to Satsuma feudal lord Tadayoshi. With his persuasion, the Satsuma Clan sent delegates to Britain to purchase spinning machinery from Platt Brothers & Co., Ltd., and also requested for engineers to be dispatched to Japan as instructors. In 1867, Kagoshima Spinning Mill, Japan’s first Western-style spinning mill, was completed. The lodging for British engineers (Foreign Engineer’s Residence) was also completed, and the engineers set about giving technical instructions to the mechanics. The people of Satsuma, who were already skilled in manufacturing broad weaving looms, mastered the skills for Western-style steam-powered spinning in just a year. In the Meiji period, their skills and knowledge eventually spread to other spinning mills throughout Japan.
World Cultural Heritage

‘Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining’

What are the ‘Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining’

From the latter half of the 19th century to the early 20th century, Japan has achieved rapid industrialization in heavy industries (iron and steel, shipbuilding, coal mining). The ‘Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining’ are composed of a series of industrial heritage sites (including active industrial facilities) that attest to the journey of rapid industrialization in chronological order. The sites are located in Kyushu, Yamaguchi and associated regions (8 prefectures and 11 cities), and although they are geographically scattered, as a whole they have the outstanding universal value as they are extremely rare in terms of world history in that they show how the science and technology of the West converged with traditional Japanese culture to modernize in such a short time.

Component parts in Kagoshima

The Satsuma Clan situated in the southwestern point of Japan was the first to be threatened by foreign powers. In 1840, faced with heavy pressure to trade from European and American countries, the Clan engaged in modernization. The Shuseikan Project initiated by Nariakira Shimadzu who became feudal lord in 1851 engaged in the construction of reverberatory furnace and mechanization of factories, further laying the foundation for Japan’s rapid modernization that was to come. Kagoshima’s three component parts are: the Shuseikan (comprising the site of the reverberatory furnace, the Machinery Factory, the Foreign Engineer’s Residence), Terayama Charcoal Kiln, and the Sekiyoshi Sluice Gate of Yoshino Leat.

Chronology of modernization in Japan

<table>
<thead>
<tr>
<th>Year</th>
<th>1851</th>
<th>1857</th>
<th>1858</th>
<th>1865</th>
<th>1867</th>
<th>1869</th>
<th>1890</th>
<th>1901</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Launch of the Shuseikan Project</td>
<td>Completion of Niryama Reverberatory Furnaces</td>
<td>Completion of Shuseikan Machinery Factory</td>
<td>Completion of Kusuge Slip Dock</td>
<td>Start of operations at the Imperial Steel Works, Japan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shokoshuseikan museum &amp; Sengan-en</td>
<td>Site of Reverberatory Furnace</td>
<td>Site of Hashino Blast Furnace</td>
<td>Site of Kagoshima Spinning Mill</td>
<td>Site of Kagoshima Spinning Mill</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The Foreign Engineers’ Residence (Ijinkan)</td>
<td>How to get there: From JR Kagoshima-Chuo Station, take the Kagoshima City View, the Machi-meguri bus or local buses (3 companies) to ‘Sengan-en-mae’</td>
<td>Enquiries: Shokoshuseikan museum TEL.099-247-1511, 1551</td>
<td>Enquiries: Culture Assets Division, Kagoshima City TEL.099-227-1962</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Getting inscribed to the UNESCO World Heritage List

World Heritage Sites are sites that transcend national borders and are shared by all mankind and transmission to future generations.

‘Yakushima’ was listed in 1993 as Japan’s first World Natural Heritage Site. ‘Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining’ are listed as World Cultural Heritage Site on 8th of July 2015.