

## Cultural Heritage Printed in Steel

With this guide the Frederiks Værk Museum of Industry wants to present and visualize Frederiksværk as one of 25 national industrial heritage sites in Denmark.

The guide presents a brief introduction to 22 plus some more of Frederiksværks most important places and buildings and is a perfect starting point for a historical sightseeing tour on foot or bicycle for anyone who wishes to explore the fascinating history of more than 250 years of cannon and gunpowder manufacture.

The buildings and structures presented in this guide have been selected for their historical importance, their architectural value and because they make up a unique cultural and historical environment.

Contrary to most other boroughs in Denmark, Frederiksværk did not evolve around a church or a market place. Instead it was meticulously planned as an armament production facility on an industrial scale. For more than two centuries, gunpowder, guns, and cannonballs were manufactured on location to supply the Danish navy and armed forces.

The canals were the most important preconditions for establishing what was to become the largest industrial town in the country. The waterpower cleared the way for a very special town cast in iron and bronze and hammered in steel and copper.

Take a walk along the canals with this guide in hand and experience Frederiksværk's exciting industrial history.

### 1 The Agate Polishing Mill

(Arresødalvej 99 by the parking lot)

In 1717-19 a canal was dug connecting Lake Arresø to Roskilde Fjord. Frequent flooding of farm land near the lake had been a growing concern for years and King Frederik 4. eventually ordered a canal to be dug to provide a permanent outlet for the lake. However, the resulting potential for water-powered machinery was not exploited until 1728, when four gemstone specialists were called in from Germany to run an agate polishing mill. The raw agates came from Norway and were turned into jewellery, snuff boxes, walking cane handles and other luxury items. The polishing mill was closed in 1749 but had a brief unsuccessful revival in the 1760s. Even though the buildings no longer exist the location is of great historical

importance as it was the start of industry in the area.

### 2 The Arsenal



(Torvet 20)

Built around 1800 this half-timbered house served as an arsenal for The Royal Danish Artillery and Rocket Corps. Following an extensive restoration by the Danish architect Anton Rosen in 1924, the building was finally converted into a museum in 1932. The small house next to the Arsenal is an Ammunition Storage.

### 3 The Mansion



(Torvet 1)

This architectural gem was built sometime between 1794 and 1804. Presumably it was designed by the Danish architect Andreas Kirkerup, but there is a lack of written evidence and the original drawings are lost.

Serving originally as a residence for the director of the factories, E. P. Tscherning and his family, the Mansion was later occupied by foundry owner Anker Heegaard until it was refurbished to house the administrative offices of the United Iron Foundries (DFJ). The building was listed in 1919. It was handed over to the Frederiks Værk Museum of Industry in 2009.

#### **4 The Foundry**



(Gjethusgade 5)

The foundry was built in several stages from 1761-1767 on the orders of the founder of Frederiks Vaerk, Major General J. F. Classen. It was originally a gun foundry. Royal Building Inspector Nicolai Eigtved and his successor, Laurids de Thurah, have both

been suggested as designers of the foundry although no written evidence exists.

In 1858 the foundry was taken over by Anker Heegaard who reorganized the production into civilian industry. From 1929, The United Iron Foundries (DFJ) owned the building, and in 1971 it came under the administration of the municipality of Frederiksværk.

More than 200 years in the service of heavy industry had taken its toll and the foundry lay in ruins for a number of years.

In the late 1980s the foundry was reconstructed and in 1990 it was opened to the public. The Foundry is recognized as unique within Danish industrial architecture.

#### **5 Forge and Template Workshop**

(Gjethusparken 4-8)

This building from about 1900 housed a forge and a template workshop belonging to The Anker Heegaard Factories. Later, it was used by The United Iron Foundries. It is the only remaining modern structure of the large industrial complex which used to dominate the town centre. The original facade of the building has been largely preserved.

#### **6 Peyrembert's Gun Forge**

(Torvet 45)

In 1751 the French gunsmith Etienne Jandin de Peyrembert erected a forge and two other buildings containing water-powered hammers and a horizontal boring machine. In 2007 the Frederiks Værk Museum of Industry excavated the site and determined the precise outline and location of the buildings. Peyrembert was rumoured to be a skilled gunsmith, but none of the guns produced under his supervision passed the tests of the commission. In 1756, he was relieved of his duties by King Frederik 5. who thereupon granted Just Fabricius and J. F. Classen permission to take over the facilities.

### 7 Water Turbine



(Torvet 45 by the canal)

This small yellow building from around 1930 is part of a power station which supplied electricity to The United Iron Foundries. Under optimal conditions the water turbine inside will produce 35 hp. In 1977 both the house and the turbine underwent an extensive restoration. Today it is managed by volunteers.

### 8 Grain Mill and Grindstone

(Strandgade 1A-D)

This so-called mill is in fact two half-timbered houses from around 1800. The eastern end housed a grain mill while the western contained a grindstone. In 1839 the western end was converted into a sword and knife workshop.

### 9 Von Würden's House

(Strandgade 7B-D)

The engineer Frederik von Würden had this house built to accommodate his apprentices around 1830. In 1829, von Würden constructed Denmark's first steam engine in Frederiksværk for the English owned Copper Mills. The building has been described as unique and especially worthy of preservation.

### 10 The Brass Workshop



(Strandgade 12)

Originally a part of J. F. Classen's military industrial complex, this house was built in the 1760s as a brass and sieve workshop. Up until the 1890s it contained a shop and a workshop, and later it became the home for the first serving director of the Frederiks Værk factories and his family. Some 15 houses of this type were built, but only few remain. Even so, they are known locally as

"Classen houses". Listed in 1984, the house has undergone a sympathetic restoration.

### 11 The Ropemaker's Workshop

(Strandgade 20-22)



This is another "Classen house" from the 1760s (notice the similarities to the brass workshop). Until the 1880s it was a ropemaker's workshop and also housed some of his workers. During the 1970s, number 22 was thoroughly modernized, whereas number 20 has kept its original appearance. Both houses are listed.

## 12 Skjoldborg



(Valseværksstræde 5)

The master of the local copper mill, Thomas English had this house built for himself and his family in 1804. He was in the process of establishing a copper rolling mill, which would supply copper plates to the Royal Naval Shipyard in Copenhagen and to the Royal Mint.

The mill was situated in the area between Skjoldborg and the canal. In 2004, it was excavated by the Danish National Museum. Later the mansion was taken over by the firm Suhr & Son and the local merchant, K. A. Larssen. Today it houses a centre for voluntary social work.

## 13 The Foremens' Residence

(Allégade 39-41)

Two of the gunpowder mill foremen and their families lived in this semi-detached house which was built in 1896 by the Danish

Ministry of War. The industrial development of Frederiks Værk meant an increased demand on housing especially for the workers. As a consequence a number of houses were built to accommodate the employees and their families.

## 14 The Workers' Dwellings

(Allégade 49-53)

In addition to the Foremens' residence (number 13) the Ministry of War built these workers' dwellings to meet the growing demands on accommodation. Although they are not remarkable, they are still a very significant part of Frederiks Værks industrial history.

## 15 Residence for the Director of the Gunpowder Mill

(Allégade 55)

In 1901, this house was built as the official residence for the director of the gunpowder mill. Notice the differences in style and size from the workers' dwellings (number 14).

## 16 The Gunpowder Mill 1761-1890s



(Krudtværksalléen 1)

The area around Krudtværksalléen and Syrevej constitutes one large production complex in which most of the buildings date from the period 1840-1895. Today, a part of the historical industrial environment is an open air gunpowder mill museum managed by The Frederiks Værk Museum of Industry. From a national as well as an international perspective the whole area is unique, due to the fact that many of the original buildings and machines have been preserved and are still operational and driven by waterpower.

## 17 Cooper's and Carpenter's Workshop

(Syravej 7)

This characteristic building from 1840 was originally a cooper's and carpenter's workshop. However, it has also served as a canteen for the powder mill workers as well

as offices. Notice the bell tower on the roof. It was used to call the workers.

### 18 Charcoal Burning Facility



(Krudtværksalléen 8)

Being one of Frederiksværk's oldest buildings, the Charcoal Burning Facility was built in the 1760s as a saltpetre laboratory and gunpowder weigh-house. Following a fire in 1768, the house was restored and charcoal ovens installed.

The special granite boulder construction and the completely intact 1890s charcoal ovens inside are significant seen from an industrial historical perspective and the building ought to be listed.

### 19 Saltpetre and Sulphur Warehouse



(Krudtværksalléen 8)

This building was erected in the 1760s around the same time as number 18. The two buildings share many similarities including the granite boulder walls. They are probably the only ones of their type in Denmark. Here saltpetre and sulphur was stored before being brought to the mills together with charcoal in order to be turned into gunpowder.

The Saltpetre and Sulphur Warehouse is a unique monument within Danish industry and as such should be listed.

### 20 The Gun-Cotton Factory

(Syrevej 6)

The Gunpowder Mill took up production of gun-cotton in the early 20<sup>th</sup> century, and to meet the demand, two separate buildings were erected in 1916. The simple design of the buildings with its characteristic details should be preserved.

### 21 Wash House for Smokeless Gunpowder

(Syrevej 53A)

This building was built as a warehouse by the Ministry of War in 1906. Notice the beautiful coat of arms above the door: The letters "FK" (Frederiks Værk Gunpowder Mill) and the crown on a blue background beneath.

### 22 Drying and Mixing House



(Syrevej 53)

This building has been nicknamed "The Banana" because of its shape and colour. It was built as a drying and mixing house for smokeless powder. Three of the outer walls are made of solid concrete, while the fourth is made from lighter materials. This is to direct any explosion that might occur away from other structures thus minimizing the damage.

Similar precautions were taken much earlier when the mills along the canal were constructed (see also number 16).

### **Other Industrial Sites in Frederiksværk**

Below please find a presentation of three complexes which are not on the mapped route. They have been included because they represent significant industrial buildings typical of their time. They also played an important role in Frederiksværk achieving its status as one of 25 national industrial heritage sites in Denmark. Being still fully operational, these complexes can only be seen and experienced from a distance.

### **23 The Harbour Foundry**

(Havnevej 25)

This building was commissioned by the United Iron Foundries in 1939 and was built by the Danish architect Axel Høegh-Hansen who had also planned the fashionable Centre for Contemporary Art in Aarhus. The structure is a sectional steel frame with brickwork infill. It was one of the most modern foundries of its time, and was in use as such until 1992.

### **24 The Danish Steelworks**



(Havnevej 33)

The first constructions of this facility were erected in 1940-42 on a tongue of land reaching out into Roskilde Fjord. This factory is the only one of its kind in Denmark. For a long period of time it was one of the biggest employers in the country with as many as 2800 workers. The Danish Steelworks suspended its payments in 2002, but new owners took over and continued the production, renaming the company DanSteel.

### **25 The Electro Steelworks**



(Havnevej 47)

When it was built in 1974-76, this was among the most modern steelworks in Europe. Danish architects and entrepreneurs worked together on the construction of this enormous building using plastic-coated steel panels. A foreign steel magnate bought the business in 2007.