

# Welcome to the Euskirchen LVR-Museum of Rhineland Industry!

We hold our regular tours of the cloth factory in German. These sheets provide you with the essential information you need in your own language to help you follow the German tour. On the maps provided, you will find the main machine displays and overall layout of the museum.

If you enjoy our museum, why not recommend us to your friends and family? We offer special group tours in Dutch, French and English if requested in advance.

# Factory courtyard

## Fabrik-Hof

The L-shaped main building (1) was completed in 1801 and until 1843 was used as a paper mill. The factory then went on to become a spinning and fulling mill and later the actual cloth factory. The house, complete with office and cloth store (2), and the machine and boiler house (3) for the steam machine were built during the 1860s.

Ludwig Müller bought the factory in 1894 and set up a cloth factory carrying out all of the basic steps involved in making cloth from loose wool under one roof.

The majority of the machines purchased by Ludwig Müller at the turn of the century remain in the factory today. In 1929, he handed his business over to his son Kurt Müller who continued to work with the old machinery up to 1961 when he was forced to stop work due to insufficient contracts.

But he remained hopeful that he might start the business up again at some later date and so left the factory exactly as it was on its last day of operation. It was not until the 1980s that specialists in historic monuments came across this unique example of the industry and technologies of the past.

And so it was that the Müller cloth factory was added to the LVR-Museum of Rhineland Industry, run by an association of the towns and districts in the Rhineland. The idea behind the museum is to keep the different factories involved in their original state and location and to open them to the public. Other sections of the Museum of Rhineland Industry can be found in Oberhausen (metal), Bergisch Gladbach (paper mill), Engelskirchen (Engels spinning mill with topic focus on energy), Ratingen (Cromford cotton spinning mill), Solingen (Hendrichs drop forge) and across Westphalia.



Please do not touch the historical machines and other artefacts in the cloth factory. In this way we will be able to keep them in optimum condition and for as long as possible so other visitors can enjoy them too.

Have fun on your tour!

# Willowing

## Wolferei

The willowing equipment was only used when needed. For the majority of cloths, different types and categories of wool were mixed together. The choice of these wools was crucial in determining the production process to be followed. The factory head undertook this task personally.

Three to four workers would take the different wool batches spread on the floor to what was known as a “mixing table” (1). A special oil was used to soften the wool and a carding mill (2) to mix it. During this process, small pieces of dirt would fall out of the wool. The wool was then pushed back through the carding machine several times by a fan.



*1 Mixing table*

*2 Carding mill, Chemnitz/Saxony 1898*

*3 Tearing mill to shred old wool fabric, Chemnitz/Saxony 1915*

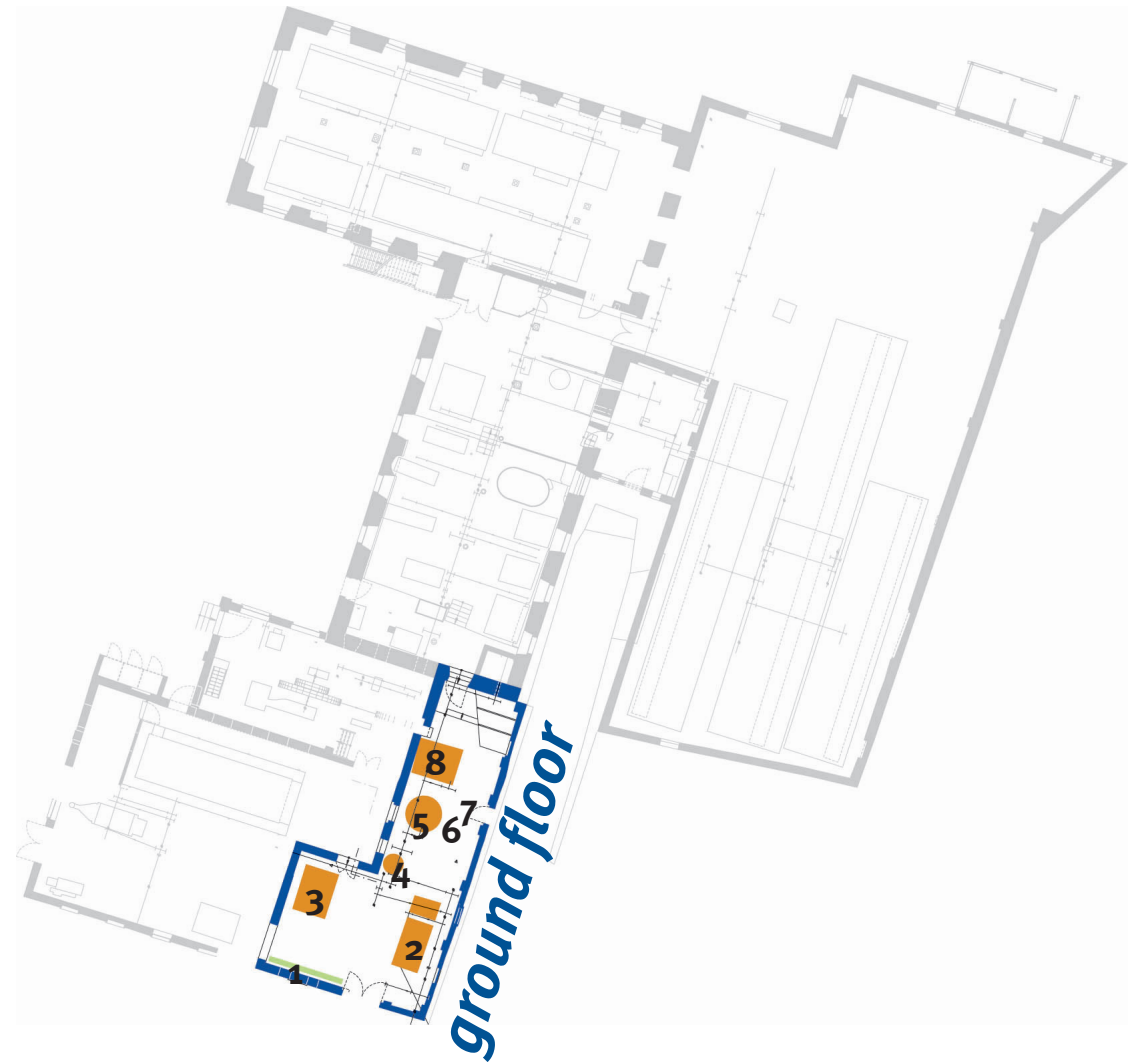
*4 Machine used to create sample felts, 1928 second-hand buy*

# Dyeing

## Färberei

The dyeing process was also only used where needed and was one of the most demanding jobs done in the whole factory. The factory head drew up the dyeing formula and weighed out the dyes himself. One worker noted down a dyeing formula on the wooden door that led out to the Erft millstream to make sure no-one forgot it!

A foreman and one assistant would operate the dyeing machines. The two vat-dyeing machines were used to dye loose wool in the mass while the special piece-dyeing machine was used to dye individual pieces of finished cloth. The wastewater from the dyeing process flowed directly into the Erft millstream untreated.



1 Film on the working conditions in the dyeing workshop

2 Vat-dyeing machine with crusher, Aachen/Rhineland 1914

3 Universal speed dryer, Lennep/Rhineland 1910/11

4 Centrifuge, Viersen/Rhineland 1937

5 Vat-dyeing machine, Aachen/Rhineland 1939

6 Drainage pipe for dyeing fluids

7 Door with chalk notes

8 Piece-dyeing vat with steam cover, 1918/1935

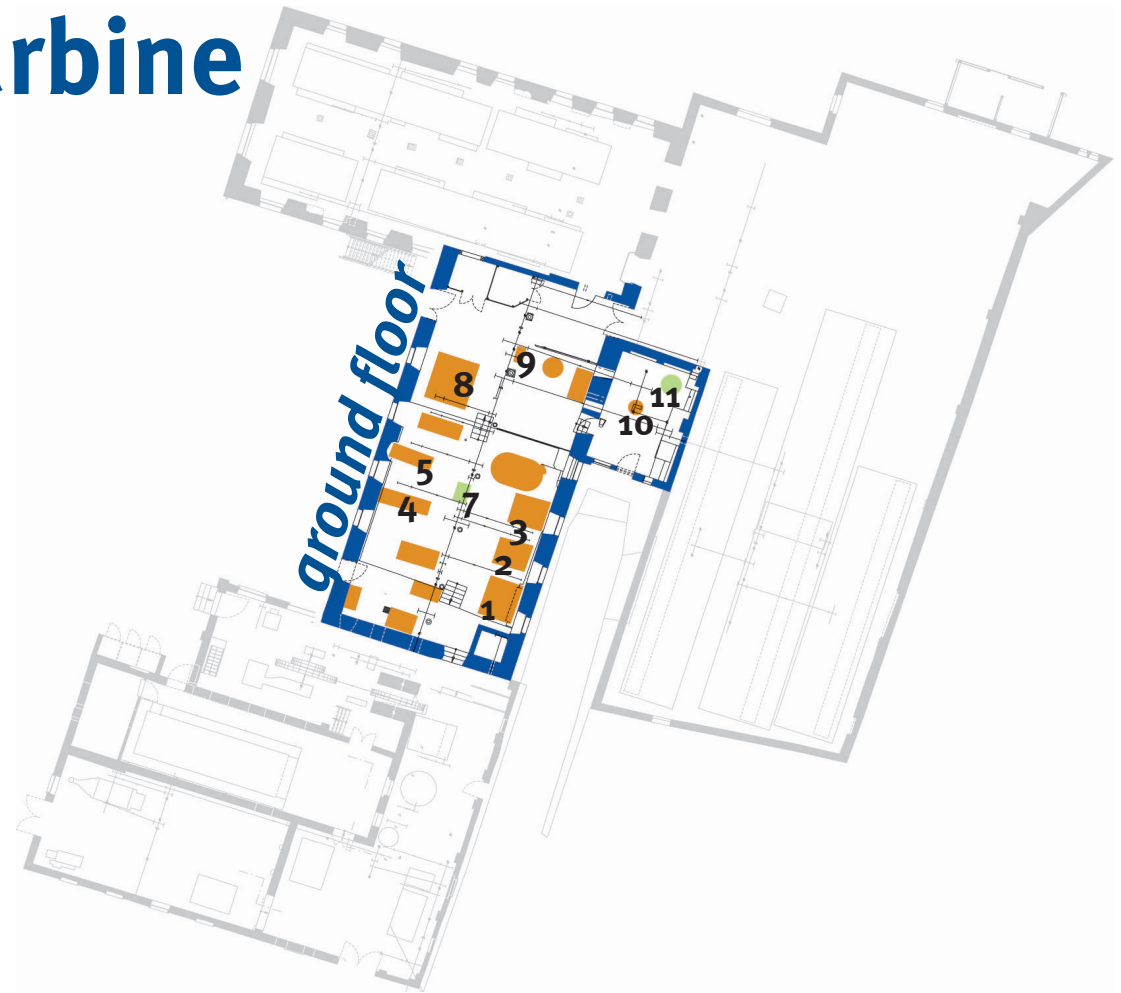
# Wet finishing and turbine

## Nassappretur und Turbine

The workers entrusted with the wet finishing process had considerable experience and were highly dextrous. The fulling foreman would most often work alone, calling on helpers from other departments only for physically demanding tasks. These are the oldest machines in the whole factory. They used a great deal of water. The washing machines (1/2/3) removed any soiling from the woven cloth and the fulling machines (4/5/6) provided a combination of friction, heat and moisture in order to compress and felt the fabric. The model transmission installation (7) shows how all of the machines were powered by belts and shafts.

The raising machine (8) carding thistles raised the damp fibres once again creating a uniform surface that was easy to handle.

The Erft millstream flowed through the turbine room powering the turbines (10) that would generate some 22 hp. A long belt would then carry this power to the transmission shaft in the wet finishing workshop. A full-scale model of a turbine (11) shows just how this would have worked.



1 Washing machine, before 1894

2 Washing machine, before 1894

3 Washing machine, before 1894

4 Fulling machine,  
Aachen/Rhineland before 1894

5 Fulling machine,  
Aachen/Rhineland before 1894

6 Fulling machine, Aachen/Rhineland 1938

7 Transmission model,  
8 Twin raising machine,  
Aue/Saxony, purchased 1928

9 Centrifuge, Chemnitz/Saxony 1907

10 Francis turbine,  
Heidenheim/Württemberg 1913

11 Turbine model

# Carding

## Krempelei

Two workers would operate the two impressive carding machines (1/2). The carding process was based on three individual steps: first of all, rollers with small hooks would straighten out the tousled wool fibres; next, the soft wool was sorted and then twisted to create a loose slab yarn that was ready to be spun into fixed yarn on the spinning mules in the next-door shed hall. A complex system of slatted frames carried the wool from each section of the machine to the next.

The wooden hands (3) indicate the different jobs that were done in the carding workshop, such as filling, cleaning and oiling.



1 Carding machine (three-way),  
Werdau/Saxony 1913

2 Carding machine (three-way),  
Kiel/Schleswig-Holstein 1950

3 Hand display

# Spinning

## Spinnerei

After carding, the loose slab yarn was spun, using a pulling and twisting motion to render it unbreakable. The spinning mules (1/2/3) worked in two phases, much in the same way as hand spinning: the long frame with the rotating spindles would first of all pull away, stretching and turning the yarn, then would travel back in to wind the yarn onto the bobbins.

One person was needed to operate the machine, another to supply fresh materials, another to re-attach any torn yarns and a last to replace the full yarn cases with empty ones. Sometimes these workers would walk as much as 15 kilometres in just one working day! After spinning, the yarn was ready to be prepared for weaving. The spinning mill is located in the shed hall, which was built in 1922, making it the most recent of the factory buildings. The vast space available here was used for maintenance work on the carding equipment, to store wool and to stack up old machinery and replacement parts (6). The workers' bicycle stands and lockers were housed inside this building as well.



1 Mule spinning machine,  
Chemnitz/Saxony 1898

2 Mule spinning machine, Bremen 1950

3 Mule spinning machine,  
Chemnitz/Saxony 1897

4 Dust-removal machine/beating mill,  
Werdau/Saxony 1916

# Weaving

## Weberei

All fabric is made up of closely woven warp, or lengthwise, and weft, or crosswise, yarns. The loom shuttle would fill the weft yarn into the warp yarn. The weaver can choose different types and styles of weave by setting the loom accordingly.

Five to six piece-work weavers would work here together: the older weavers would operate one loom each while the younger ones would operate two looms at the same time. The factory had a total of 16 looms, some dating back to before the turn of the 20th century. When the factory eventually closed, some of the looms were no longer in operation and were kept as a source of replacement parts.

1 *Small everyday work items*

2 *Some personal effects left in the factory by the workers*

3 *Weaving equipment store*

4 *Weaving machine, Chemnitz /Sax. 1922*

5 *Weaving machine, Großenhain/Sax. 1939*

6 *Weaving machine, Chemnitz/Sax. 1922*

7 *Weaving machine, Großenhain/Sax. 1939*

8 *Weaving machine, Chemnitz/Sax. 1894*

9 *Weaving machine, Chemnitz/Sax. 1914*

10 *Weaving machine, Chemnitz/Sax. 1925*



11 *Weaving machine, Chemnitz/Sax. 1894*

12 *Weaving machine, Chemnitz/Sax. 1914*

13 *Weaving machine, Chemnitz/Sax. 1897*

14 *Weaving machine, Chemnitz/Sax. 1897*

15 *Weaving machine, Chemnitz/Sax. 1898*

16 *Weaving machine, Chemnitz/Sax. 1898*

17 *Weaving machine, Chemnitz/Sax. 1894*

18 *Weaving machine, Chemnitz/Sax. 1925*

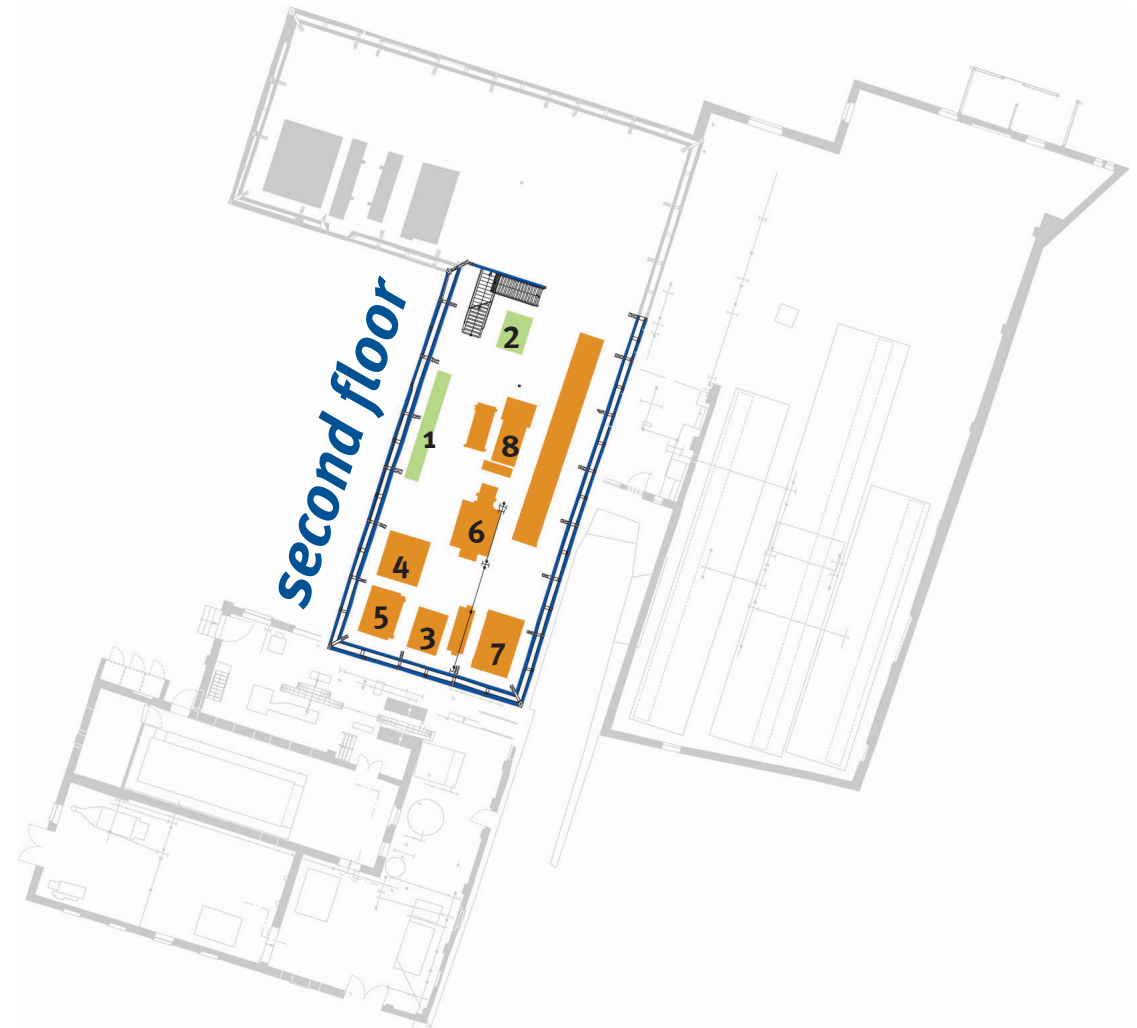
19 *Weaving machine, Chemnitz/Sax. 1896*



# Finishing

Before the cloth could be delivered to the customer, it was first of all sent to the finishing workshop for quality control. Three to four checkers would look for any errors in the cloth through a viewing frame (1) and would remedy these. This was the only job in the factory done by women.

Different wool fabrics have been placed at the entrance (2) as examples of the different finishing stages. The surface of the cloth was steamed (3), shorn (4/5), pressed (6) and decatized (7) to give it structure, shine and hold in accordance with the customer's wishes and to ensure it was resistant to creasing, crumpling and shrinking. After this last step, the cloth was folded and rolled up (8) and placed into the cloth store.



1 Viewing frame and checking table  
with work tools

2 Cloth at different stages of finishing

3 Cloth steamer, Crimitschau/Saxony 1915

4 Cloth shearing machine, Aachen/  
Rhineland 1913

5 Cloth shearing machine,  
Aachen/Rhineland around 1885

6 Press, Crimitschau/Saxony 1919

7 Finishing decatiser, Crimitschau/Saxony 1919

8 Doubling, measuring and winding machine,  
Crimitschau/Saxony 1919

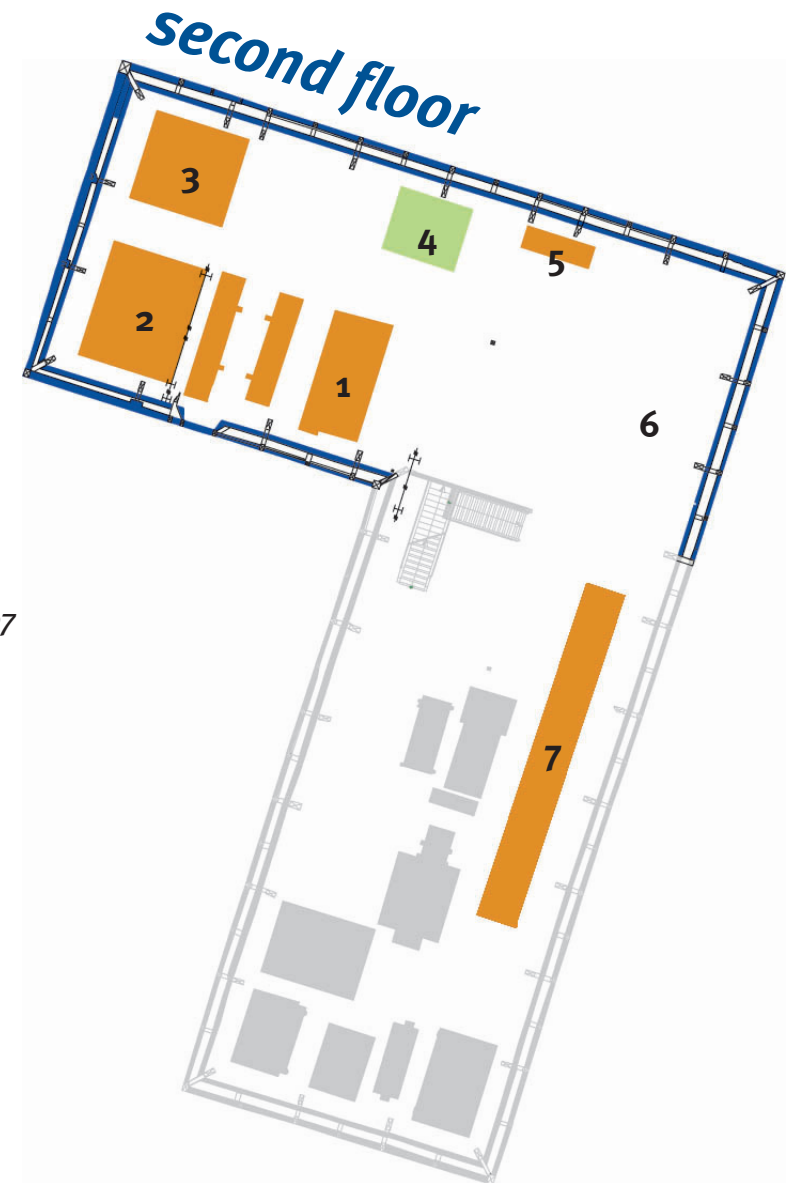
# Weaving preparation

## Webvorbereitung

After spinning, the beamer would work the yarn to be woven into the right shape. Depending on the desired appearance of the final cloth, 2000 to 4000 different yarns would be placed alongside one another and wound onto the beaming machine warp beam. Calculating how many yarns were needed and the exact order in which they should be used was a complex job that required a high level of precision.

The weft yarn was wound onto loom shuttle cases. The twisting machine (3) could be used to bind two yarns together to create a particularly strong yarn or a special effect in the cloth. The beamer was responsible for all of the weaving preparation while the weavers carried the boxes of yarn and the warp beams.

- 1 Beaming machine, Chemnitz/Saxony 1907
- 2 Gluing machine, Chemnitz/Saxony 1907
- 3 Warp beam store
- 4 Display on transporting materials inside the factory premises
- 5 Weft winding machine, Chemnitz/Saxony 1897
- 6 Yarn lift
- 7 Twisting machine, Eupen/Belgium 1917



# Machine room

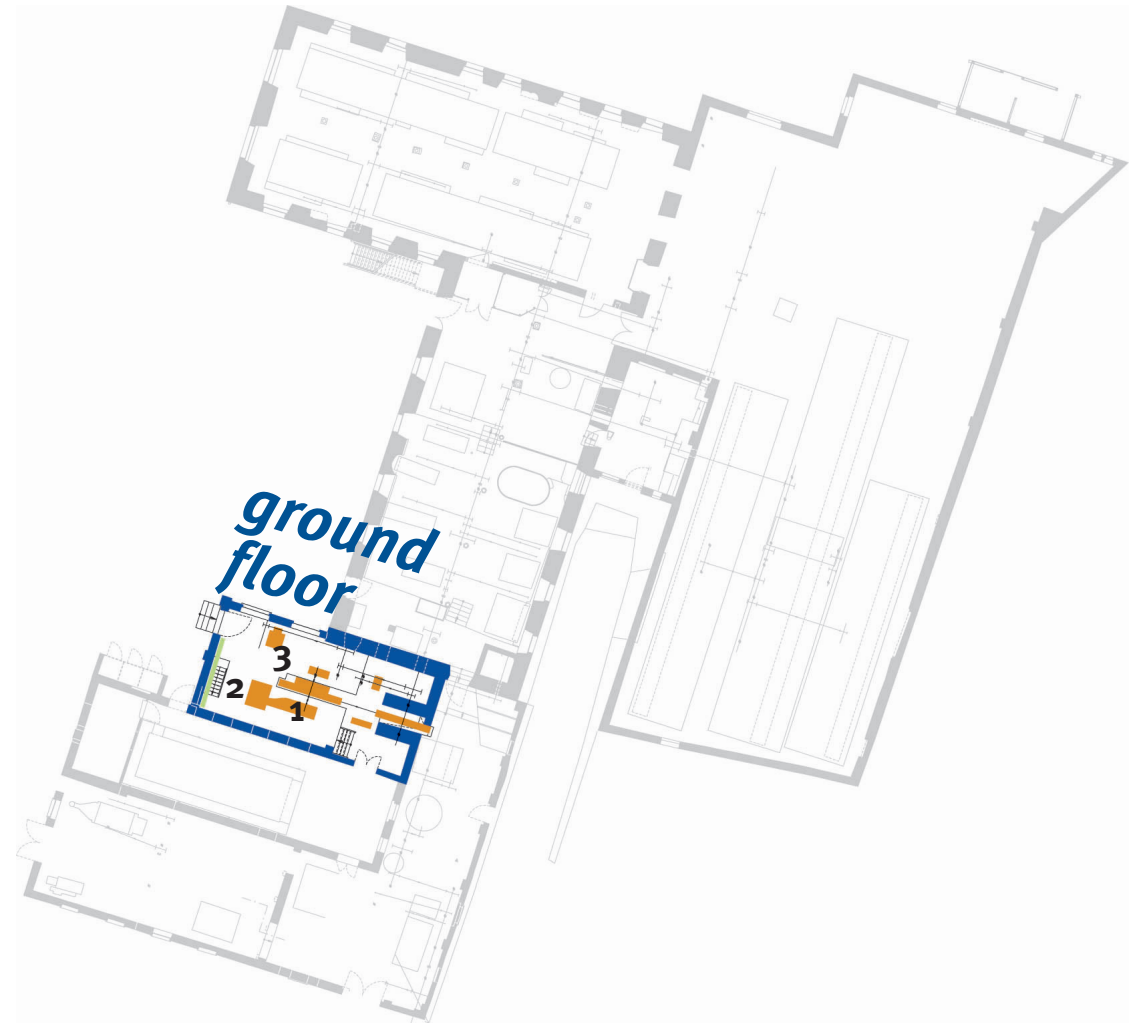
## Maschinenhaus

The 80 hp generated by the steam machine (1) was ample to power all of the equipment in the entire cloth factory. The machinist was also in charge of operating the steam-fired boiler in the neighbouring room.

Today, the machine is no longer powered by steam, rather by pressurised air from a newly installed underground compressor installation.

The steam machine operating model (2) shows how the steam travelled and how the control system worked to open and close the valves on a regular basis, thus powering the cylinder piston.

The steam machine also drove the AEG generator (3) which provided the electricity needed for the factory lighting. A low voltage circuit carried power to the lamps in the production rooms right up until 1961.



- 1 Steam machine (single-cylinder valve-drive piston steam machine), Otto Recke (Rheydt/Rhineland), 1903
- 2 Steam machine model
- 3 Lighting generator

# Boiler house

## Kesselhaus

The boiler (1) generated steam for operating the steam engine. But also for some other stages of production like dyeing or the (scarce) heating of the factory large amounts of hot steam were needed. The fireman burned black coal and lignite. At the same time he was responsible for the smooth operation of the steam engine.

The visual installation (2) allows a look into the double-flue boiler. The two flame tubes, through which the hot smoke went, run in longitudinal direction. The boiler was filled about two-thirds with water. The steam, rising above water level, was collected in the hidden dome and from there directed to the steam engine.



*1 Steam boiler (double-flue boiler),  
Aachen/Rhineland1907*

*2 Visual installation*

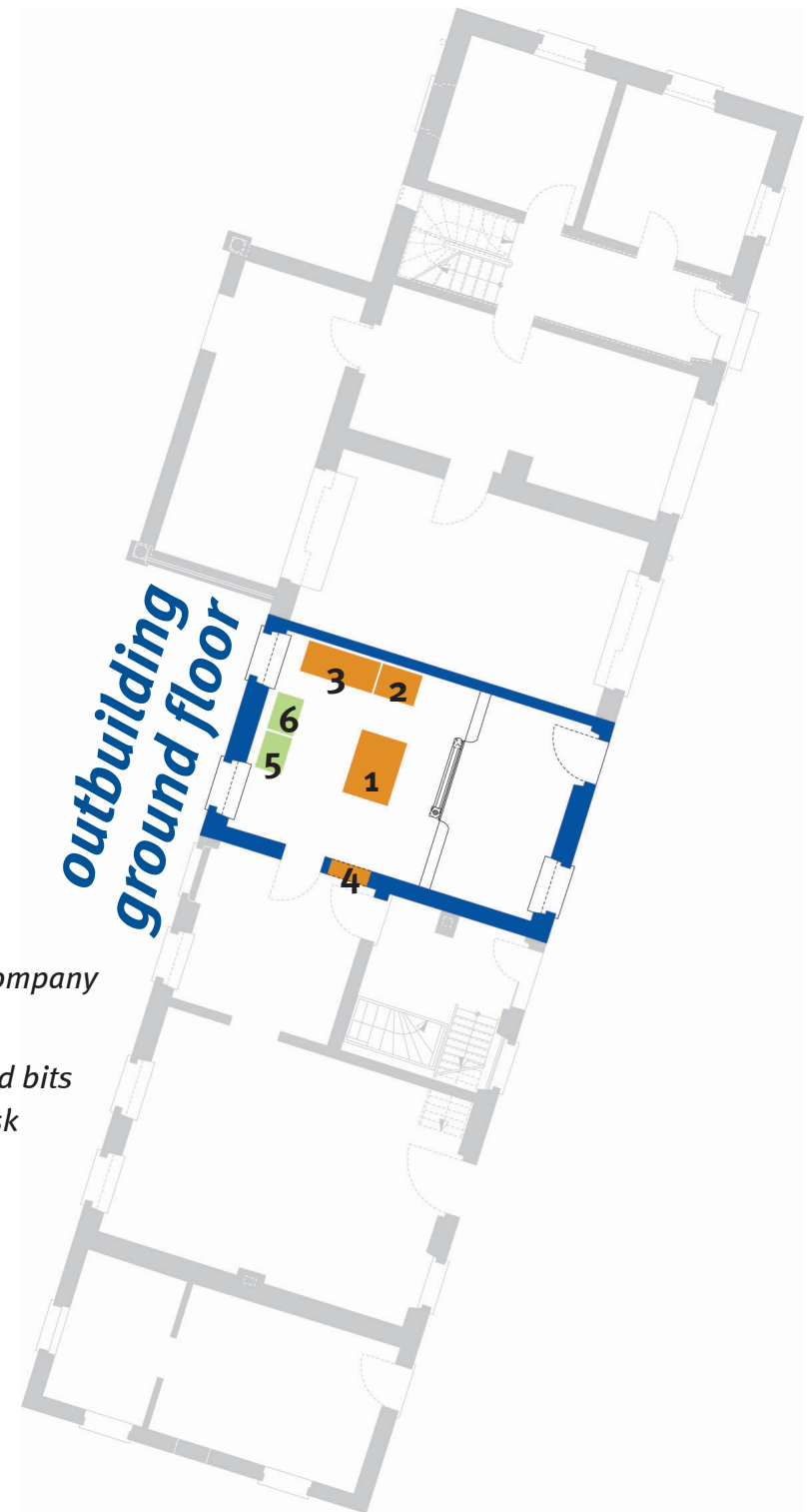
# Office

## Kontor

The office staff managed the purchase, production and sale aspects of the cloth factory as well as all necessary personnel and payroll arrangements. Mr Müller would greet wool traders in the reception area and study the quality of the wool at the window.

The office manager was assisted by one commercial employee and one trainee. Ten years after the closure of the factory, Mrs Müller turned the office into a florist's shop. It has been partially restored to its original condition on the basis of details provided by former staff.

- 1 *Manager's high desk*
- 2 *Trainee's small desk*
- 3 *Commercial employee's large desk*
- 4 *Safe*
- 5 *Display cabinet with typewriters and company books*
- 6 *Display cabinet with office supplies and bits and pieces taken from the manager's desk*



# Technical office

## Technisches Büro

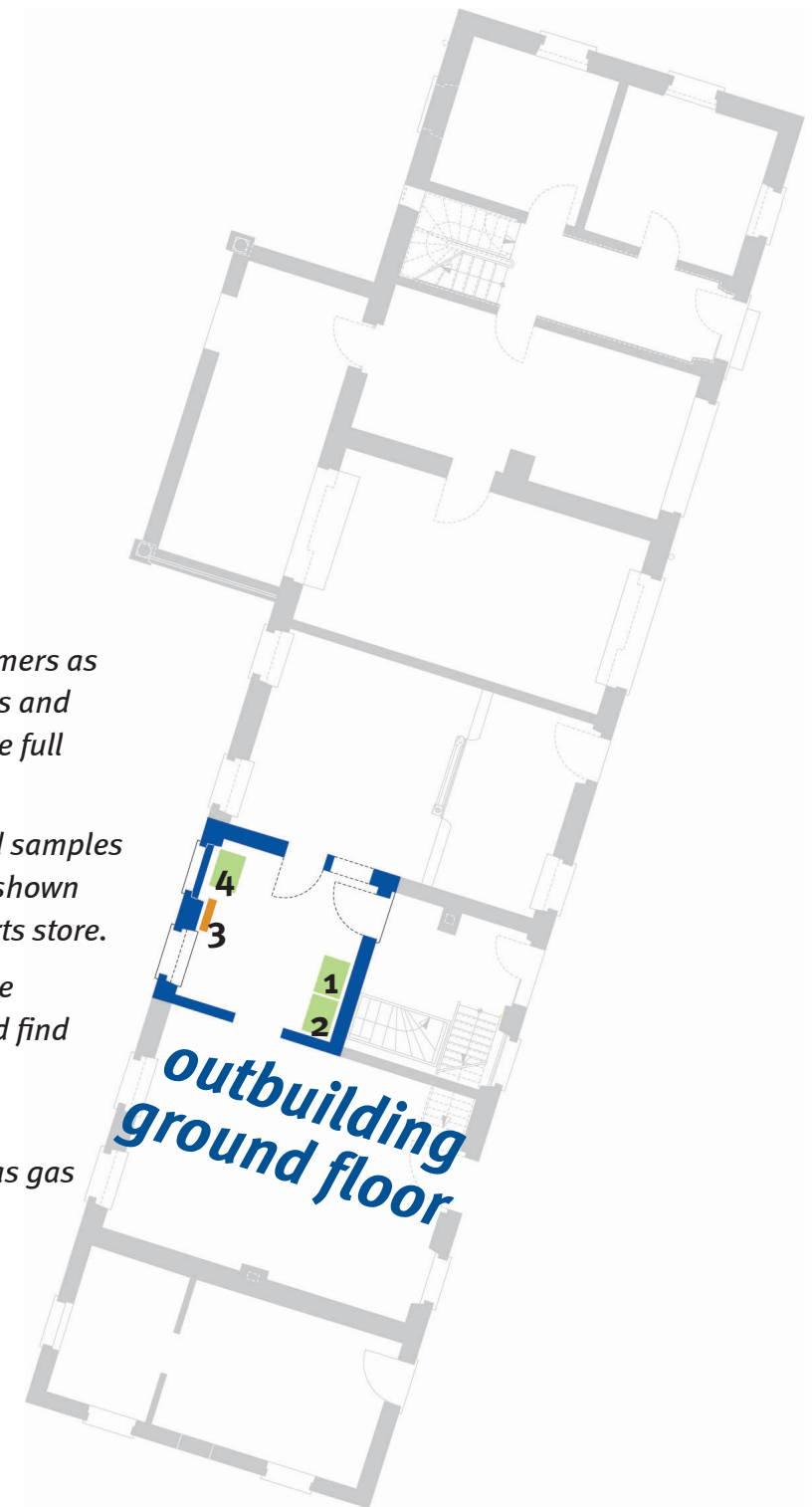
In the technical office, cloth samples (1), dispatch forms and some objects from the Second World War (3/4) were found. After the factory was closed in 1961, Mrs Müller used this room to store the materials she needed for her florist's shop. It has since been partially restored.

*1 The cloth samples were sent to customers as a taster of the end product. The samples and sample books offered an overview of the full range of cloths produced at the factory.*

*2 The Müller cloth factory also received samples from other traders – the wool samples shown here were found in the replacement parts store.*

*3 Safe door: American soldiers blew the door open in 1945, believing they would find secret documents or money behind it.*

*4 Other artefacts from the Second World War were also found here, such as gas masks, an air-raid first-aid box and fire-fighting equipment.*



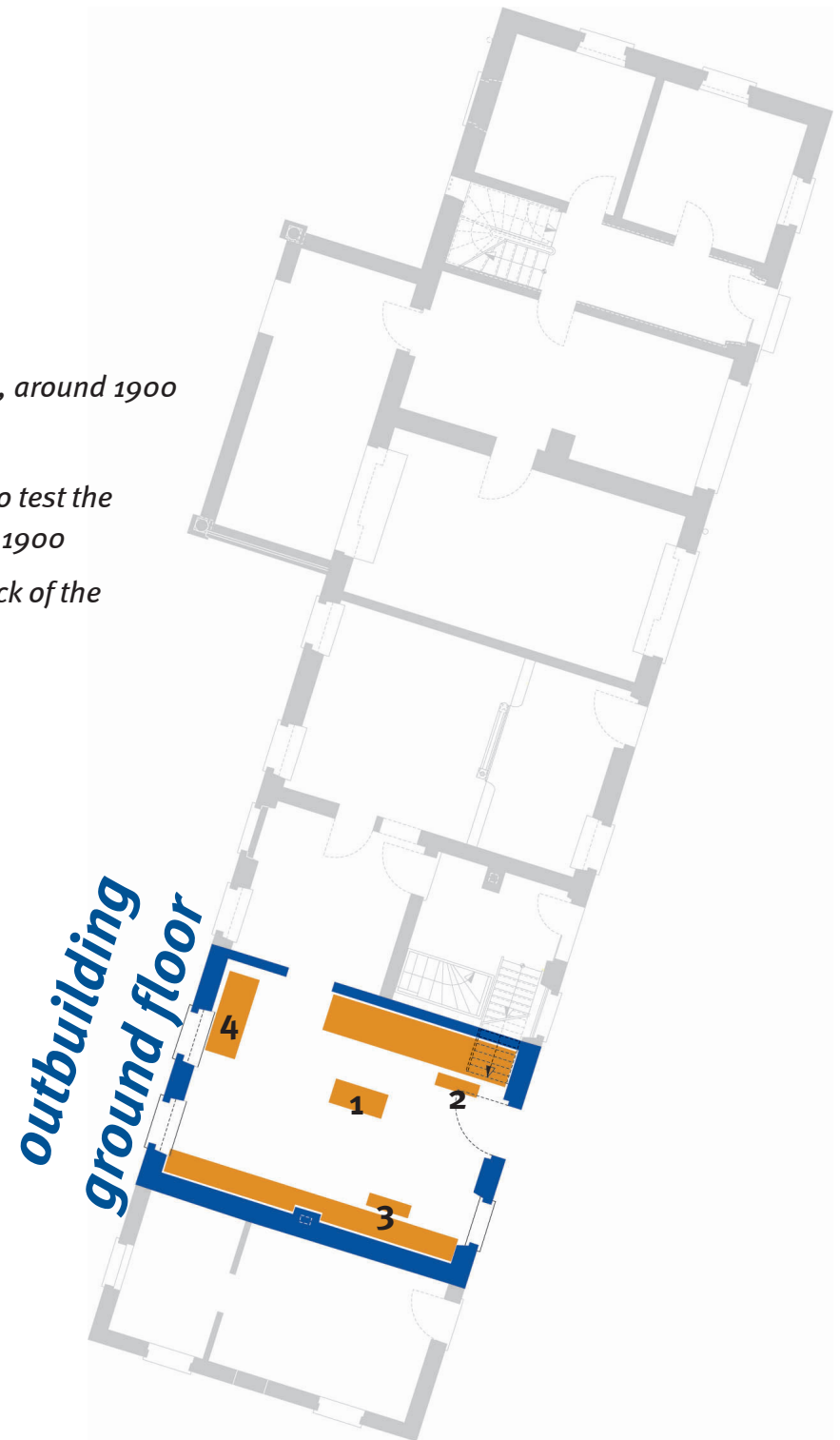
# Cloth store

## Tuchlager

The commercial employee and the trainee managed and supervised the cloth store. The finished cloth was dispatched to customers from here. Either Mr Müller or the factory accountant would carry out a last check on the quality of the cloth which was then packaged up by the trainee.

As the wares in the store were seen as unused capital, every effort was made to ensure the finished cloth only remained in the store for a short time. Only a few sorts of loden with standard patterns were stocked up continuously. Uniform fabrics were dispatched immediately and were never placed into the store.

- 1 *Brigitta sample cutting machine, around 1900*
- 2 *Cloth press, around 1900*
- 3 *Cloth stretching machine used to test the resistance of wool fabrics, around 1900*
- 4 *Viewing frames for the final check of the finished fabric*



# Dye cupboards, replacement parts store and company archive

## Farbkammer, Ersatzteillager und Archiv

This area was used to store both new and used replacement parts for the factory machinery (1). The workers were only permitted to enter this room in exceptional cases. The display cases house a selection of objects taken from the replacement parts store. The files held all of the factory's correspondence from 1894 to 1961. In order to best preserve them, the actual documents and books are now kept in a modern archive.

The two dye cupboards (2/3) were used to store the chemicals Mr Müller needed to make up his dyes for the dyeing workshop. Once the factory had been closed down, Mr. Müller sold his larger dye stores.

- 1 Replacement parts store and company files, large dye cupboard
- 2 Small dye cupboard
- 3 Display cabinet with dyes (no longer in their original packaging)
- 4 Display cabinets with parts from the replacement parts store

