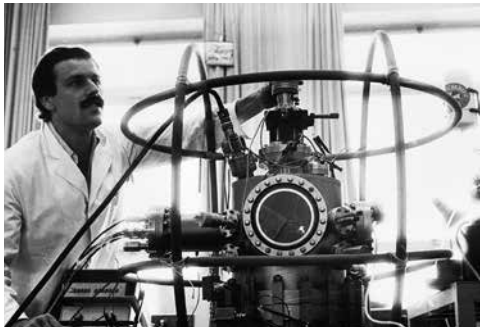


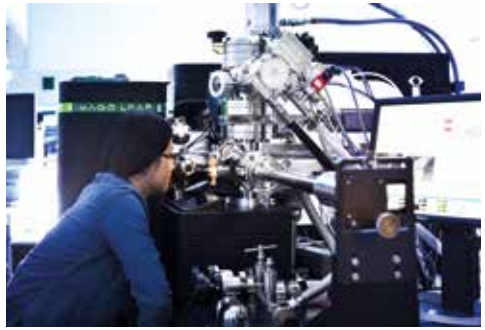
Interfacial research at the MPIE: An employee at the ultra-high vacuum apparatus for measuring the oxygen enrichment on iron crystal surfaces, 1978.

stry was forced to reduce its annual expenditure on the MPIE. This almost meant the end of the institute in the late **1990s**.

Structural renovation and strategic reorientation at the turn of the millennium

Since the turn of the millennium the facilities and equipment of the MPIE have been updated to the latest state of technology with comprehensive redevelopment as well as restructuring measures. In addition, its research activities were oriented towards interdisciplinary work to an even greater extent. Today, this takes place in close cooperation with industry, supporting the development of the MPIE from a materials-oriented laboratory to a modern research institution which studies complex materials in a holistic context of construction, production and extreme environmental conditions.

Employees of the institute while strip casting in the 1990s.



For 100 years, the MPIE conducts material research, since 2009 also using the 3D-atom probe tomography. © Frank Vinken

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More information regarding the history of the MPIE can be found at http://www.mpie.de

A scientist adjusting the Kelvin probe which allows him to monitor whether a polymer coat protects against corrosion and heals damage, 2013. © Frank Vinken

100 YEARS 1917–2017

MAX-PLANCK-INSTITUT FÜR EISENFORSCHUNG

One Science Century.

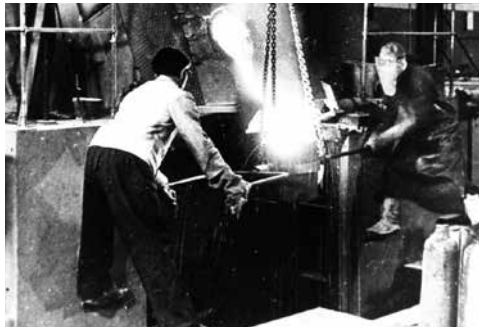
Rheinische Metallwaren- und Maschinenfabrik in Düsseldorf where the Kaiser-Wilhelm-Institut für Eisenforschung was located from 1920 until 1935.

»One can therefore say without objection that something fundamental and abiding needs to happen regarding the invigoration and consolidation of our scientific research activities. The present state of fragmentation of our scientific activities within the narrower framework of the iron industry must not on any account be allowed to persist.«

These are the words used by the former managing director of the Verein Deutscher Eisenhüttenleute (VDEh) (Association of German Steel Manufacturers) Otto Petersen, advocating the creation of a joint research institute on 19th June, **1917**. This was followed by an unanimous decision, during a meeting at the Stahlhof, Düsseldorf, to establish the Kaiser-Wilhelm-Institut für Eisenforschung (KWIE) under the umbrella of the Kaiser-Wilhelm-Gesellschaft zur Förderung der Wissenschaften (KWG) and the VDEh as the principal financer. The institute was renamed as »Max-Planck-Institut für Eisenforschung« (MPIE) after the end of World War II.

First years of the Kaiser-Wilhelm-Institut für Eisenforschung and the newly built institute, 1935

Due to the economic problems following World War I, the institute initially resumed its activities on a modest scale at the Eisenhüttenmännische Institut of the Technische Hochschule Aachen in **1918** before finding temporary accommodation at an industrial hall of the Rheinische Metallwaren- und Maschinenfabrik in Düsseldorf in **1920**. The principal task of the KWIE was to conduct basic research in all areas of metallurgy to improve the quality of German steel products. A particular research focus lay on the improved utilisation of the domestic low iron ores. Since **1926**, the KWIE also realized armament orders for the Reichswehr.



Two employees of the institute's department of metallurgy while casting metall, 1935.

An interior shot of the microscope room at the metallography department, around 1935.

With the boom in the iron and steel industry due to the rearmament during the Nazi era, the industry provided funding for a new building which had been planned for a long time. In the autumn of **1935**, the KWIE relocated to new buildings at Düsseldorf-Düsseltal where the institute still resides. After relocation to the new buildings, the KWIE developed into one of the most advanced materials research institutes worldwide and thus into a scientific location relevant to defence during the Third Reich. From the summer of **1943** onward, the major part of the institute had to relocate to the Clausthal Mining Academy due to bomb damage from air raids.

Reconstruction at the end of the war and the »Max-Planck-Institut für Eisenforschung«

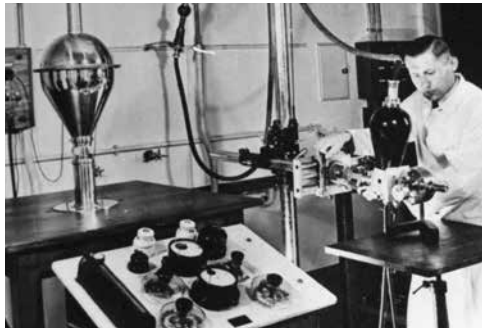
After the end of the war, the institute, which had relocated to Düsseldorf in the meantime and had been purged of all contents connected to the military, was granted permission by the Allies to resume its work in February, **1947**. The reconstruction of the institute began at the same time.

This aerial view shows the main building, the hall construction and the auxiliary buildings after completion in the autumn of 1935.

Following the renaming of KWG as Max-Planck-Gesellschaft zur Förderung der Wissenschaften (Max Planck Society for the Advancement of Sciences) the KWIE was renamed to »Max-Planck-Institut für Eisenforschung«.

During the course of these changes, the MPIE focused on physical metallurgy. While the institute had previously pursued a national perspective, it has become increasingly involved in international research relations since the 1950s. Especially following the founding of the European Coal and Steel Community (ECSC) it became part of a Europe-wide network of experts. The institute expanded repeatedly during that time.

In **1971**, the MPIE changed its legal form into a limited liability company and from **1980** onward both VDEh and MPG agreed on funding it in equal parts. At the same time the institute's focus changed to studying the basics of metallurgical process technology and materials science. The steel crisis which had been escalating since the mid **1970s** had long-term consequences for the institute, too, as the indu-



Inside the X-ray laboratory, around 1935.