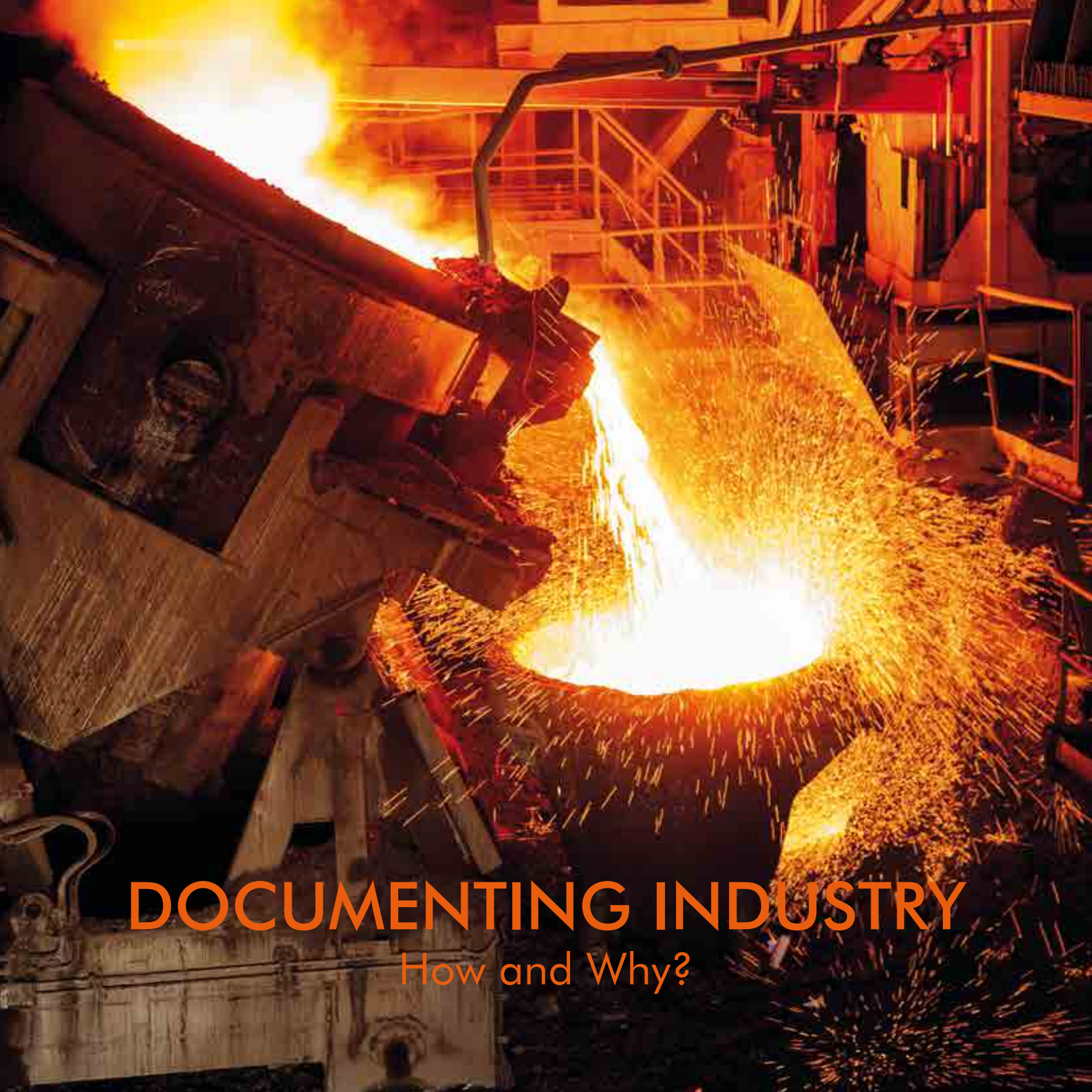
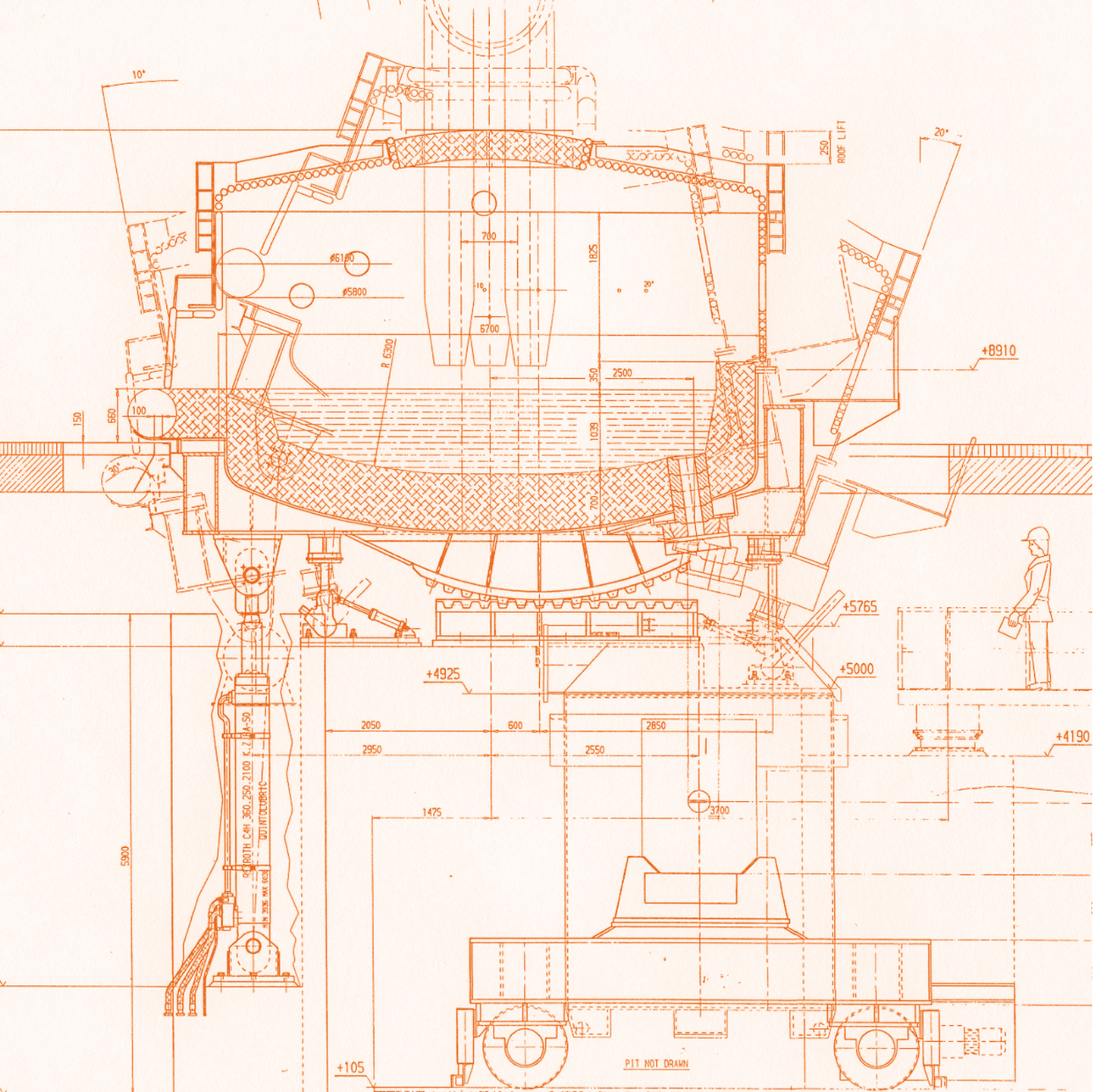


DOCUMENTING INDUSTRY

How and Why?



DOCUMENTING INDUSTRY

How and Why?

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JERNKONTORETS BERGSHISTORISKA SKRIFTSERIE 50

Published by:
Jernkontoret
Box 1721
111 87 Stockholm
www.jernkontoret.se
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Graphic design: Maria Källberg-Johansson.

Cover: Galerie Art Silk 300 g
Insert: Galerie Art Silk 150 g
Typography: Futura
Printing: Digaloo Digitaltryck AB, Stockholm.

ISBN: 978-91-977783-9-8
ISSN: 0347-4283
First edition 2014
Translation: Charles Phillimore 2016
Checking of facts: Anders Tenebäck
Checking of translation: Elisabeth Källgren, Anna Lindgren
and Helene Sjunnesson.

Foreword

In the provinces of Sweden one may come across former industrial establishments dating back a very long time. Where the mining and metallurgical industries are concerned, there still remain buildings and installations from the 18th century which are sufficiently well preserved to offer the visitor a very good picture of how operations were run.

The closer to our period we come, however, the more seldom such works are found. The reason for this state of affairs is that the industries of today are much too complex and expensive to retain. When an investment is made, the existing plant is normally demolished and the new one is then built on the same site. So today's industry, especially process industry, gradually disappears and leaves no traces for future generations.

At a number of conferences, Jernkontoret's Historical Metallurgy Group has discussed the issue of how best to preserve the cultural heritage of modern process industry. Together with Tekniska museet, the Swedish National Museum of Science and Technology, a conference was arranged on the following subject: "Memory loss or focus: how to discuss and retain knowledge of the steel industry's present production equipment". This took place in the autumn of 2007.

One outcome of this conference was a pilot study at the Ovako steelmaking plant in Hofors. The pilot study led to several positive results and also to a book on the documentation of a modern steel production plant: *"Nedslag i verket. Dokumentation av modern stålindustri – exemplet Ovako Hofors"* (Documentation of the modern steel industry: the example of Ovako at Hofors) with Anna Lindgren and Helene Sjunnesson acting as Editors-in-Chief.

Published in 2011, the book was a major success which was esteemed by employees, municipalities, museums and schools. It meant that the work on the preparation of the book here was given fresh impetus.

Jernkontoret – in November 2010 – sent out invitations to a seminar to discuss the question: "Is there a place for some kind of publication to act as an inspiration source and handbook for the documentation of modern process industry?" There was an impressive response to this initiative; the proposal that emerged from the discussions was to prepare a book which would act as an inspiration and pathfinder for such documentation.

The book that you now hold aims to be a stimulating source of inspiration. But it is equally a methodological guide for the documentation of modern process industry.

The publication here looks at how to awaken interest amongst different social groups in documenting contemporary industrial history. It also considers how people, not least young people and school students, can be motivated by industrial and technical issues. It examines how company management and employees can be involved in the documentation work, thereby strengthening awareness of the cultural legacy of industry as a resource for the future.

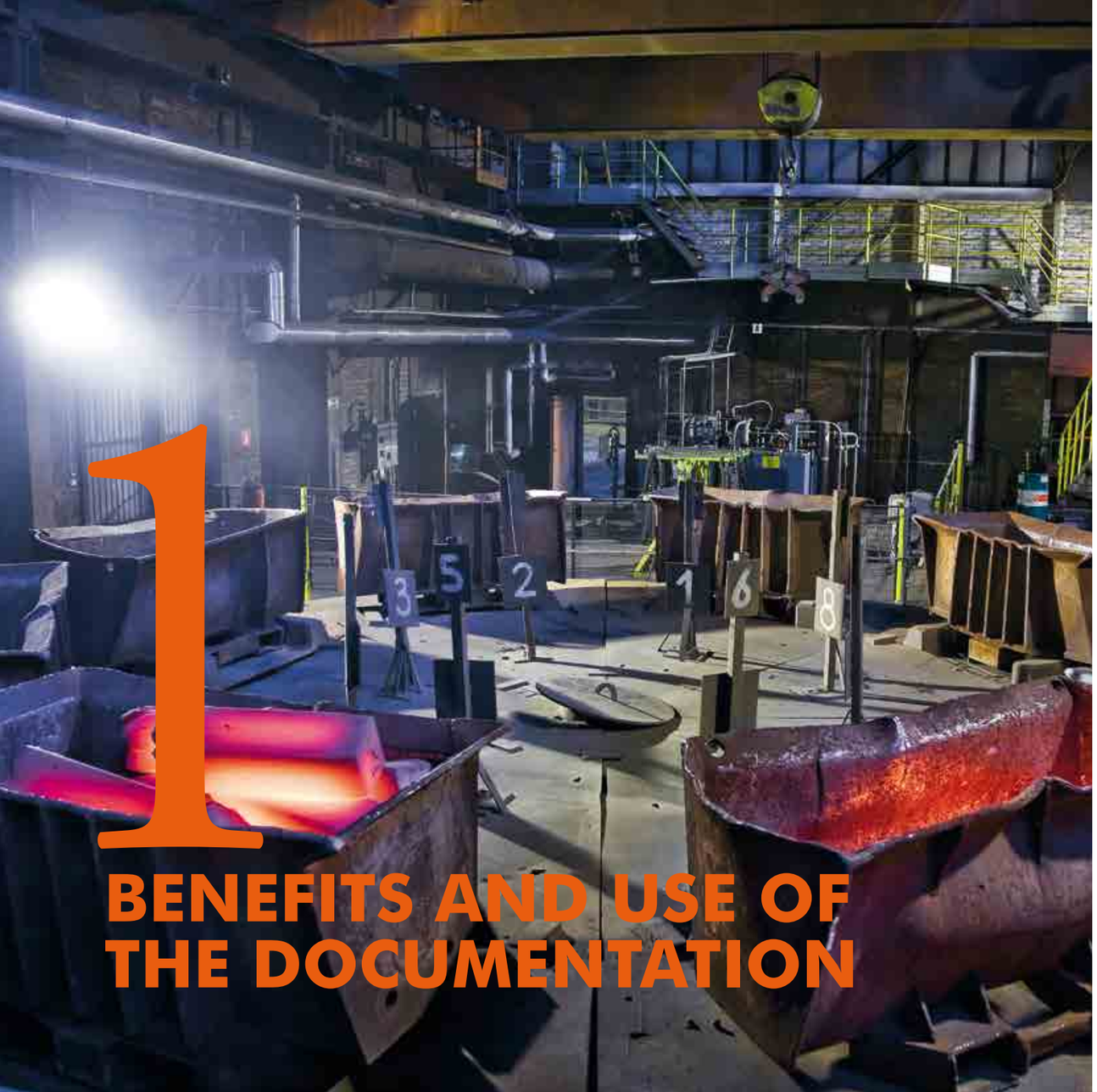
Within Jernkontoret, the project committee "Handbook for documentation of process industry" functioned as a steering group, a scientific advisory resource and a reference group for this book.

Jernkontoret's Historical Metallurgy Group wishes to thank all those who have participated in the project. At the same time, we wish to highlight the fact that many who have worked on this project have done so entirely on a voluntary basis.

We would also like to express our gratitude for financial assistance from Gästriklandsfonden, the King Gustaf VI Adolf foundation for Swedish Culture, the Åke Wiberg foundation as well as the Allan Wetterholm foundation for archaeological training and research at Örebro University.

After enquiries from Australia and Canada, among others, the book was translated into English and published digitally in 2016.

Orvar Nyquist
Chair of Historical Metallurgy Group
Jernkontoret
The Swedish Steel Producers' Association



1 BENEFITS AND USE OF THE DOCUMENTATION

This book focuses on the documentation and recording of modern process industry; examining how one can do it, who can do it and what results it can bring about. But, not least, the book focuses on why one should do it.

To document and is to collect, conceptualise and conserve knowledge. To document is also to create a value that can be turned to good use in a specific human enterprise or activity.

Documenting industry is something that can be done in different ways; the forms of documentation and recording will be shaped by the particular project. Sometimes this may take place within the framework of the company itself, sometimes through engaging experts from museums, archives or companies specialised in such activities. The initiative for documenting may arise from both industry and external stakeholders. In this book we particularly wish to make the case for documentation as a joint enterprise - projects where the relevant industry, cultural heritage bodies, archives and others all collaborate.

What can we gain from this?

When such varied stakeholders work together, inevitably they will have different motives for their participation and different expectations where the results are concerned. It must, therefore, be legitimate for each and every one to ask the question "What can we gain from this?"

The example of Ovako at Hofors

One clear example of how such documentation can lead to significant and unexpectedly positive results is seen in the following: the wide-ranging project carried out at the Swedish manufacturer of engineering steel; the Ovako AB plant in Hofors, Gästrikland, during 2008 and 2009. The instigator behind this documentation project was Jernkontoret working closely with Tekniska museet, the National Museum of Science and Technology in Stockholm and Länsmuseet Gävleborg, the County Museum of Gävleborg. Wholly decisive, however, was the fact that the management at Ovako realised the potential inherent in a documentation effort; they consequently involved themselves in the project in a whole-hearted way.

It was important, moreover, that the documentation process was anchored within the local community, which actively contributed to the project and, once it was concluded, could then utilise the results in different contexts. The fact that it involved acquiring knowledge relating to a fully operational modern industry was a key starting point, even if the work inevitably came to include a historical perspective also.

The Ovako documentation was a collaboration project and, for the various stakeholders, this work implied gains at different levels. For the museums, it resulted in both methodological development and a valuable collection of knowledge. For the standard bearer of Sweden's steel industry, Jernkontoret, the benefit was seen in new forms of collaboration and a contemporary perspective on activities relating to the history of metallurgy. For Ovako in Hofors, the project provided tools for explaining its own operations and the technical process involved, but also for highlighting the company's identity and its importance at the production sites and in the local community. For all those involved, the documentation implied an investment with a future payback.

History marketing

To run a company is to look forward rather than backward. It is one of the principal conditions of running a business to always strive onwards, to reach out for the future. But it is also a fact that all companies have a history and this indeed can be used to help drive the company forwards.

The view of a company's history (and its archives) as being not really relevant, a dusty throwback to the past and of no utility to present day operations – all this has undergone change. During the restructuring and phasing out of industrial production sites that took place in the 1970's and 1980's, documentation efforts could be perceived as an ominous sign – when the museum people turned up with their cameras and recorders and so it became known that the end of the road was not far off! As the company finally ended up in the museum and its archives it had, as it were, been defined as history. Now, however, many speak of history as a resource, not least in a marketing context. There is even a term for this: History Marketing. The company's history can be used for the purpose of creating business advantage.

How, then, can History Marketing be applied? There are a couple of important starting points: a company's history is unique. It cannot be copied by any other. This in itself is a resource, a competitive advantage if you like. In a world of constant change, its history indicates stability. In presentations of the company or in more business critical situations, making

A brand is filled with content, but how does it correspond to the company's industrial activities? Industry documentation such as that of Abba Seafood in Kungshamn (Sweden) from 1998, undertaken by the National Museum of Science and Technology, can certainly contribute to clarifying this.

use of historical documents, illustrations and objects show that the company – even if it is relatively new – has always been marching to the future as well as being stable over time and thereby credible. The history thus becomes a resource which demonstrates both ambition and continuity.

Historical examples enable one to show that innovation and the rethinking of accepted ideas and products are qualities to which the company in question has always been dedicated. At the same time, however, it is important not to get stuck in what may be called the nostalgia trap. Of course it is stimulating to familiarise oneself with advertising or indeed products from a past era but the connection with the present day must not be forgotten.

The past, in other words, constitutes a cultural capital that can help to drive a company forward. History marketing or the active use in different contexts of a company's history can create business value. Documentation and associated interpretation tie together the past, the present and the future. It creates a clear picture of what a company's identity is and frequently also serves as an indicator of its future direction of travel.

This documentation, moreover, comprises valuable historical material for the future. Through contemporary documentation the company builds a tool for the history marketing of the future.

"In this region we have an extensive and fine inheritance, stretching back several hundred years. We need to manage and develop this. The heritage we have is something we have every reason to be proud of. A sense of pride is so important in shaping successful companies. Personally, I think that we should have slightly greater confidence in this area than what we have at present. Not least this applies here in Hofors."
Sten Lyckström, Plant Manager Ovako Hofors, SVT Gävle-Dala 27/3/2009.

Document what is taking place now!

To document the present is as important as cherishing what has been in the past. We frequently overlook the importance of what happens today – the present we sometimes take for granted; it fulfils our momentary aspirations but we seldom reflect on how and why we do as we do. The everyday, normal and established is sidelined or overshadowed by the exceptional and non-typical, despite the fact that it is often the everyday that really counts.

The utility of the documentation of contemporary industry is not only connected with a responsibility for future generations and future historians. Where Ovako in Hofors is concerned, one of the principal insights gained by the company management was the direct value to the company of properly documenting the production processes and keeping the technical drawing systems in an orderly fashion (e.g. to facilitate retrieval).

By taking time to formulate and describe their method and approach, so that they become understandable for outsiders, they themselves also acquire a perspective on their respective activities. The insight may arise that there are other more rational methods than those currently employed. Consequently, the documentation may also lead to change and improvement.

Often enough, the documentation is a selective effort or targeted measure which is limited in time. However, the company management at Ovako observed that one should really document the company's development and history on an ongoing basis. To this end, procedures are required and to work out such procedures a targeted measure also constitutes a golden opportunity. In view of major changes in operations or in the event of an ownership shift it may be particularly appropriate also to initiate a documentation process.

"For me, as plant manager, the company's history is important. It is here that one finds an explanation for why our company culture takes the form it does. The industrial process is in constant change but it's impossible to preserve all the old process environments. Through documenting them we can continue to develop our operations without wiping out what has been such an important everyday experience for many people. I believe that as a company we have a really important responsibility. The book itself became a much appreciated summer present for all our employees."
Matilda Hoffstedt 2014, Plant Manager at Cementa in Skövde on the documentation of the cement plant in Skövde 2012.

Knowledge appropriate for building a company culture

Knowledge concerning the company's business operations, and its values, which the documentation process engenders

has a value both internally (within the organisation itself) and externally (in interaction with society at large). Shared perceptions concerning what a certain workplace has been, what it is now and where it is heading create a context for the employees – a special community of feeling. This is the foundation of a strong company culture and contributes to pride about the workplace and one's own professional knowledge.

Such a company spirit is clearly a resource in periods of prosperity and expansion but possibly even more so when business operations are facing challenges and difficult choices.

A clearly profiled company culture plays a large role also externally and on several different levels. In the relationship with customers, collaboration partners and other stakeholders it holds an edge over its competitors. Moreover, where recruitment of new employees is concerned, the company culture is an essential foundation for informing – dispassionately and in a balanced way – what the company is, and what indeed it stands for. It becomes more desirable to apply to a workplace with a clear profile.

The company in the community

It is not possible for any industry to live detached from the rest of the world. Companies are important driving forces in society; they are often key stakeholders with important standpoints on topical issues at the same time as their operations may result in problems for, or even a threat to, the natural environment and people's well-being.

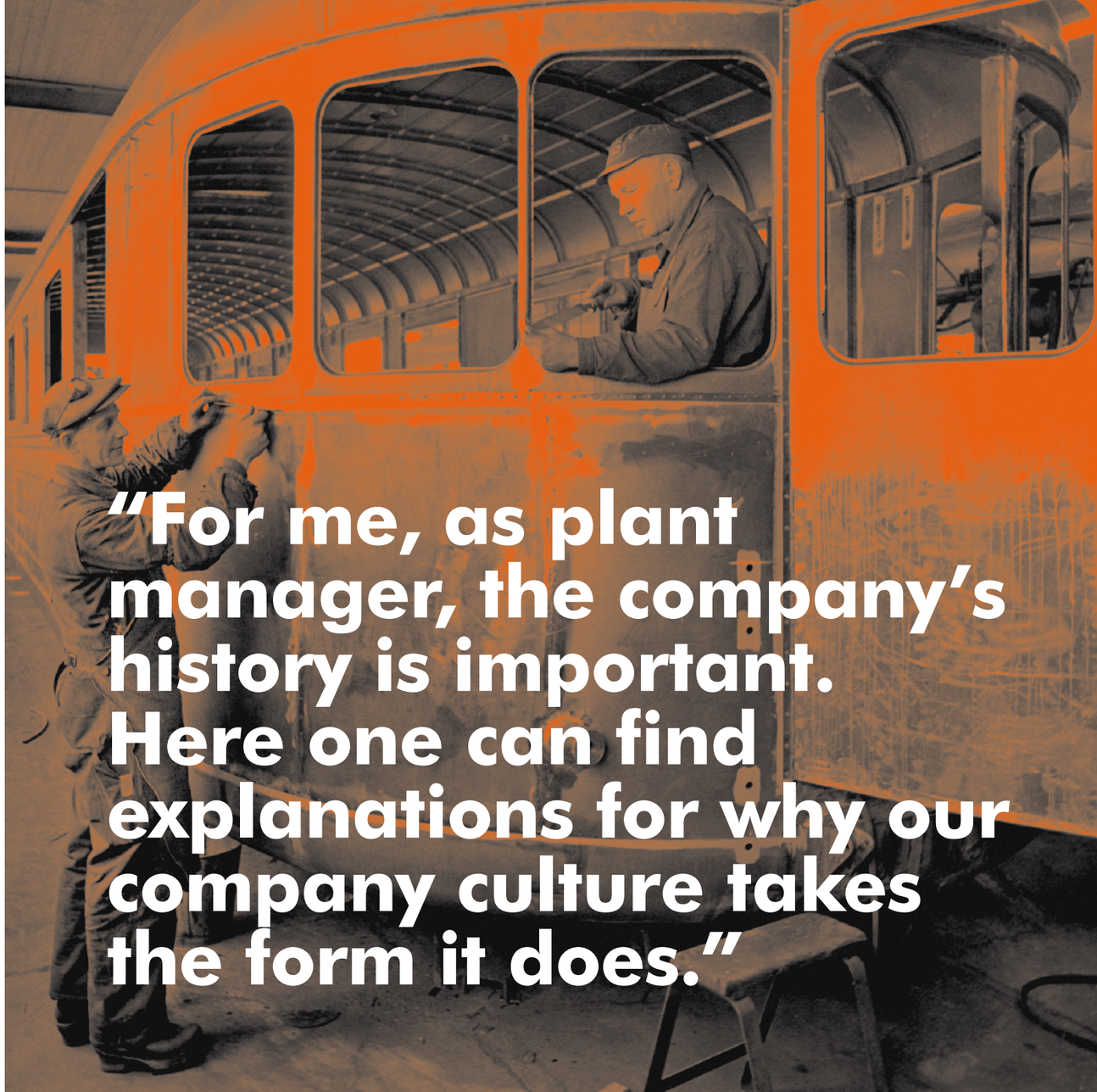
The interaction between companies and the society in which they operate is not self-evidently easy to grasp; it needs to be formulated and clarified both for those who live in the vicinity and for the employees. Here, too, documentation (and interpretation) may play an important role through viewing the company and its production in a wider context, a community or social context. This is especially important for awakening interest amongst children and young people who, in today's media din, may find it hard to see the contemporary significance of production industry.

The social responsibility of companies is no new phenomenon. But in recent years the concept has come to be consolidated under the term Corporate Social Responsibility (CSR). Through depicting the company's history, it is possible to show how industry, at different times, has acted and reacted in its encounter with the wider world and thereby affected both people and the environment. The documentation can also show how the relationship between society and industry is developed in our own time; it can show which strategies there are to promote a sustainable development in future.

Documentation can:
- Provide a vantage point from which to view the production site, the production, the skills and the company.
- Strengthen self-esteem, pride and solidarity at the workplace and in the locality.
- Create a counterpart to negative portrayals of industry in the mass media.
- Create a PR value that can no longer be achieved through advertising campaigns and publicity.
- Build a foundation for recruitment and business contacts.
- Reduce vulnerability through making available the knowledge in an archive inventory e.g. in legal cases.
- Provide material for marketing, history of technology research, books and exhibitions.
- Clarify the company's innovations and spearhead competence, historically and in the present day.
- Give a picture of the industry now for future reference.
- Profile the company as a societal stakeholder.
- Interest children, young people, other members of society and politicians in the company's operations.

Cultural heritage institutions gain from documenting in collaboration

Until now, we have mainly considered the benefits that may accrue to the company that is the focus of a particular documentation project. It should not really be necessary to point out how important it is for museums and archives to work with active and targeted documentation. For several decades, such activities had a leading role in city museums, county museums, central museums and archival institutions. However, during the 21st century a clear regression has taken place in this respect. Other aspects are prioritised and the scope for co-ordination and knowledge exchange and sharing is reduced – with insufficient resources often being cited as an excuse.



When the Swedish Samdok network for contemporary studies and collecting (founded in 1977) ceased operating in 2011, this was clear evidence that things had changed. Rather than a sign that contemporary documentation has exhausted its potential however, the event should be understood as an expression of the need for new forms of working, new collaboration partners and indeed new incentives for such activities. This book, therefore, is intended as an inspirational book also for memory institutions such as museums and archives.

To document on the basis of cooperation rather than through having an individual, external actor or cultural institution approach a company has advantages for the company to be studied but also for the participating cultural institutions. One advantage is that it offers an opportunity to try out new methods and forms of collaboration; possibly even more important than this is that such collaboration opens the door to expertise – technical and process-related as well as knowledge of the company's organisation and its employees.

How can the documentation be utilised?

Let us be clear: the documentation of a company is not carried out for its own sake. It results in what is hopefully content-rich material. To make use of this material then creates added value for the documentation. We shall now discuss and exemplify why one might wish to have such documentation material, how it can be utilised and for what purpose. What are the long-term positive effects of this documentation material?

New perspectives

A documentation endeavour can be an eye-opener into the need for ongoing documentation. Implemented and archived documentations make it easy for the company to extract its history, to find explanations for changes undertaken and background material for innovations, production equipment, environmental work and much else besides.

Formerly, the so-called company man or retainer was an ideal at many workplaces whereas the person who would change job and workplace frequently might be branded as a drifter. Today that is not longer the case. Those who have remained for a long time, perhaps as long as 40 years, at a workplace and can explain previous changes implemented - and how things were done before - are becoming ever fewer. This also makes continuous documentation more important than ever.

The documentation process often induces a sense of pride in people who are able to contribute their own experiences and stories. It can also raise interesting questions about the self-perception of the locality and specific occupational roles and how they can become more positive (or less negative). From a company perspective, these are important questions where recruitment measures, for instance, are concerned.

"To be able to shape one's future, it is essential to understand one's history and where one comes from. Consequently, it is important to document production processes and methods for future generations. In this respect, one could say that we, like many other companies in the sector, have failed in modern times."
Sten Lyckström, Plant Manager Ovako Hofors, SVT Gävle-Dala 27/3/2009.

Cooperation in focus

A joint project is a way of encouraging local and regional organisations to cooperate. Here there are all sorts of opportunities for new contacts that can be rewarding in several different ways. Read more about collaboration in Chapter 2.

Has the relevant company any production at other sites? Is there interest internationally in getting to know the documentation methods and experiences from your documentation? Have documentation processes been carried out in other countries that you would like to be acquainted with? A documentation endeavour may mark the initiation of an international exchange. Let others know about your work within the company, relevant industry associations and international associations concerning a possible interchange of experiences.

Future research

Today's production is tomorrow's history. Within many companies, change and ownerships shifts can be rapid. Old buildings are replaced by new ones; investments in modern industrial machinery mean that the old industrial equipment is sold off or sent to scrap. Nor should one assume that a specific type of production in future will take place at the site

Large-scale industrial equipment, like this rotary kiln from Cementa's plant in Skövde, represents a cultural heritage that is hard to preserve. It therefore entails special documentation requirements.

“To be able to shape one’s future, it is essential to understand one’s history and where one comes from.”

where its historical roots are to be found.

What form will tomorrow’s cultural heritage from the industries of today really take? A properly collected and archived documentation material is a source for future research. It documents the history of technology and engineering, building, business culture and working conditions.

It is true that we cannot assert with any certainty precisely the questions that will be most important for the historians of the future to answer; we can, however, provide future research with as rich, balanced and well-documented material as possible. We can enable many different voices to have their say. We can also illuminate the process technology and the social and organisational aspects we find essential today in such a way that the focus and analysis of researchers is facilitated. Thereby we create preconditions that enable the industrial activity, and the workplace we wish to illuminate, to be included in the writing of tomorrow’s history of technology. But more indeed than this – it will form part of the industrial heritage of tomorrow.

“The photos give a fascinating picture of industrial environments where you can almost feel and hear the sparks fly. Even though, image by image, they portray the process from melted scrap to finished tube and rings, it is only when I read the associated book that the process is clarified. The exhibition mainly offers pictures of the working environment where unfamiliar technical terms and information texts can be hard to grasp. The supplementary studies in the book, on the other hand, are very detailed and comprise solid documentation which future historians will be thrilled with. Stage by stage of the production process is illustrated in detail in a story that is not only that of Ovako Hofors but rather that of the whole modern steel industry.”
Kristian Ekenberg, Arbetarbladet 16/11/2011, review of the book Nedslag i verket. Dokumentation av modern stålindustri – exemplet Ovako Hofors.

Books, reports and articles

To present the results of the documentation in book form, on the web or in the form of articles for journals and anthologies is a good way of creating an enduring description. A book is kept safely in libraries and the format does not run the risk, like a digital format, of becoming unreadable in line with technical change. Paper copes with age significantly better than digital storage. Books, moreover, are static and unlike web pages, for example, are unchanging.

Send the report to everyone who contributed to the documentation and disseminate information on where it is available for sale. Ensure also that the publication is sent to regional and local libraries so that it becomes searchable in library catalogues. The library in the locality may also be able to make it available for sale. If the report is placed on the Internet it becomes accessible for many people. Could the company perhaps give it to its employees as a Christmas present?

“We use the book as:
- Published information concerning our activities for the surrounding district on the island of Gotland e.g. the book is available at libraries and schools.
- Text book for our new employees; it is very important that our employees know about our history and they also get the process engineering description.
- We have used it as a “Christmas present” for all our employees.
- Reference book to rely on when questions arise concerning the company’s history.
It’s really satisfying for us as company that the first 90 years of our plant’s history is incorporated in a book of this kind.”
Bo Collin, 2014, Personnel Manager at Cementa in Slite (Gotland) on the documentation of the cement plant at Slite 2009.

Meetings and seminars

It is a good idea to extend invitations to seminars or information meetings before, during and after the documentation process. The seminar form provides an opportunity for informing about the planned, ongoing and concluded documentation while viewpoints can be shared and new contacts established. The seminars can be arranged in terms of local and regional collaboration and possibly also with the support of industry or trade organisations. The seminar form can sometimes also attract local and regional media.

Mass media and social media

Why not invite the mass media to make a report during the documentation process? To portray an industry from inside is of general interest. Why not invite journalists to make a visit to the production process? They can make a report from many different perspectives e.g. societal, technical and even artistic.

With the aid of social media, it is possible to disseminate information on the documentation work. Social media really facilitate participation and can rapidly provide input to a documentation process. New contacts can also be found this way.

Lectures

The results of the documentation can also be disseminated to many people through talks and lectures. Lectures and talks can be given for employees at a company, on planning days for teachers at local schools, for municipal employees, at museums and archives. Why not invite yourselves to the local libraries to talk about the documentation?

Study circles

A documentation process can also be carried out as a study circle with support from a study association. A book or a report from the documentation can constitute study material in a study circle that may then carry out more specialised work on the material. A study circle may also involve producing material on some aspect that falls outside the limits of the documentation work.

Exhibitions

Documentation material also serves as a basis for an exhibition. An exhibition may enable several people to assimilate and experience the documentation together and, in this way, the exhibition may be a good starting point for discussion. The exhibition offers good opportunities for collaboration of many different kinds.

Examples include the actual work of preparing the exhibition and associated activities such as special shows, storytelling events and seminars in connection with the exhibition. Possible exhibition premises may be available at the company, at the local or regional library, museum or archives or even at a homestead museum. The relevant exhibition can also be arranged as a touring exhibition.

A good exhibition which reaches out to the appropriate target groups demands well documented material. A broad selection of interview material procured via audio, film and text, bird's eye views and sound, photos and objects offers greater scope for choosing the appropriate genre for the exhibition e.g. photographic or three dimensional as well as subject and specialism.

An exhibition really can be so much more than mere randomly chosen objects in display cases with explanatory texts. In a three-dimensional display, for example, the story is experienced through the entire room. Component parts such as pictures, films, sound, display objects and texts are woven together and experienced in harmony to create a unified effect.

An exhibition may also be a powerful communication medium to create interest, to be a vivid experience or to provoke. One way of making the subject more intense and interesting is to set people in the centre of the story.

If the documentation is then to become an exhibition that reaches out to a broad public, it is a good idea to collaborate with a museum with experience of working with exhibitions and that already has an established visitorship. Some museums also have experience of taking exhibitions on tour to different places in the region.

Artistic representations

The documentation of an industry and an industrial site can be used as background material to give expression to issues and perspectives with the aid of art, theatre, dance film and music. Artistic forms of expression enable configuration and interpretation. Could there, perhaps, be a theatre club in the locality or a school that would like to interpret the industry's history and its current role in theatrical form?

Points to think about when you arrange an exhibition:

- Make an inventory of the documentation material; what is appropriate in an exhibition?
- Choose the purpose, goal and target group.
- Take your time with planning.
- Draw in the exhibition on a site plan of the premises.
- Write short and easy-to-grasp exhibition texts.
- Make the visitors active participants in the exhibition.
- Call on expert assistance when you need it.

With their different activities, the museums are able to reach out to many children and young people who may become the engineers of tomorrow.

How can companies work together with schools and potential future employees?

School students appreciate making visits to the industries in the localities where they live. Where the company has the opportunity, specific viewing programmes can be produced for – and offered to – the schools. The school students or pupils then have the possibility of working on the knowledge and insights acquired from the specific industry in different subjects. Another alternative is to invite the teachers in nearby schools to make study visits so that they can obtain a practical foundation for the teaching material that can awaken the interest of the students in technology, history and the future of the place where they are living.

To have teachers and students experience an industry through their own senses can also be a valuable investment. Remember that school students are the employees of tomorrow! Most industries today are dependent on there being sufficiently motivated and well-educated young people who could conceive of working at the company.

In recent decades the cutbacks in operations experienced by heavy industry have led to declining population figures in many traditional industrial communities. Production increases while employee numbers fall and the training requirements for the personnel needed for running the plant undergo change too. It is, therefore, quite common that one ends up in a downward spiral. Young people leave these localities as they see no future; at the same time the company finds it more difficult to recruit competent personnel into a community perceived to have drifted into a backwater.

For the documentation of a modern industry, it is therefore also important to investigate the community around the industrial plant. What is the perception of the community in question? What kind of picture is presented by the mass media? What self-image is held by the inhabitants and what vision have the young people of the future? How do the students view the specific industry as a workplace?

A documentation project can create cohesiveness in the locality. If the schools are involved, then this facilitates dialogue between the younger inhabitants and those of an occupationally active age. The documentation of an industry can be performed by students or the students can use the published documentation as a material to work with. Regardless of the arrangement chosen, the documentation can be a way for the students to discover the industry in question.

Guidance for teachers

Self-evidently the best facility for reaching out to young people is through the school. A teacher's guide gives the teachers a tool that is relevant for the school and with which it can teach about the industry and society. A teacher's guide should also be followed up by an introduction or welcome day for teachers where they are able to make a study visit to the relevant industry and have the possibility of discussing how the material can be used.

Who can produce a teacher's guide? Those who work with a documentation project can weave this into the project and cooperate with the schools and nearby museums and archives. Who does one turn to, when it comes to creating a teacher's guide? Which category of teacher? Most often it is the 13-18 age-range approximately of school students that have most need and possibilities for using such material.

It is true that one can also work with children of a younger age, but then the setup must be adapted to the age group. This proposal is intended, above all, for teachers in civics, history and Swedish but it is also possible to produce material for subjects within everyday science or technology or some other subject. If there is time and opportunity, it is always good to try to create a reference group of relevant teachers.

The work of a school is steered by syllabuses; it is a good idea to be able to refer to a text in the syllabus so that the teacher, in a quick and simple way, is able to appreciate the utility and benefit of the work material.

A teacher's guide needs to be complemented with factual material. In order to understand how an industry has come about and how a community has emerged one must investigate the historical preconditions. Which needs in society and which political decisions have steered the establishment of operations and changes during different periods? Which prerequisites in the form of natural resources, power sources and manpower have enabled us to build up the industry in this specific locality? A short history that is rooted in these issues is a good start for factual material for teacher guidance.

The teachers may need to obtain suggestions concerning more comprehensive background material for their own part and tips about what there is to find where the students are concerned. This may relate, for example, to company history, advertising material, newspaper articles and links that may be a good starting point for the students to practise source criticism (information evaluation). Here, documentation material or a documentation report may be very helpful. Even when the pupils or students live in the locality where the industry is situated, and see the plant every day, or have family members working or who have worked for several generations at the company, it is not certain they have seen the inside of the plant. It is a good idea to give your contact details to some department at the company which can arrange study visits.

A student assignment may be to write, to record or to film his or her own account connected with this subject. It is a good idea to formulate questions that the students can reflect on with the background material and a possible study visit as backdrop.

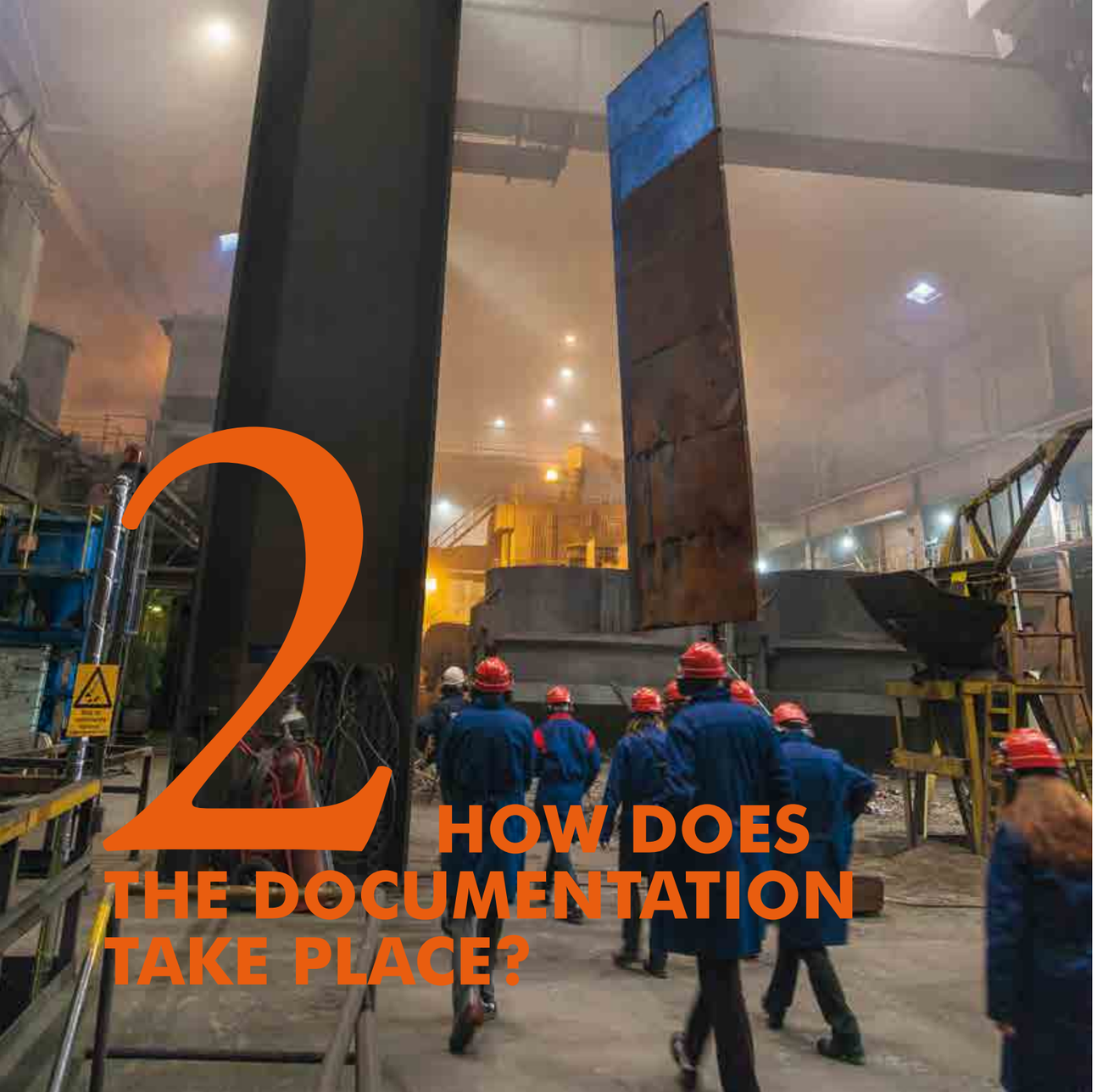
"As long as Ovako stays, then Hofors will also remain. Ovako, after all, accounts for about one half of total employment in Hofors. That amounts to several thousand employees. If Ovako disappears then Hofors will disappear also. Then there won't be anything left here. But I believe that Ovako will remain. I think that ball bearings and such like will continue to be needed in future also. Even if flying cars are built they will still require ball bearings. /…/ There will be a need for steel. We will need to call on the steel industry. It may be necessary to come up with new ideas about what the steel should be used for and also what one must do to it so that steel will be needed in future also. /…/ Then I think Hofors will stay this size more or less. It will look roughly as it does today. Everything is here, more or less – it's just a question of adapting to the times. If new products arise then they must be acquired. It won't be any problem here in Hofors."
Extract from an interview in Hofors 2013, from a project with about 80 young people from Hofors, Ljusne and Norrsundet in Gävleborg County as well as Alby in Stockholm County

Use the students' own accounts as the starting point and compile questions that you discuss together in class. Examples may include the following: how the locality is affected by the fact that it is a company town with a single large employer; how what has happened in the past affects the present situation in the locality; what the population changes in the town are due to; whether the locality in the future also will be characterised by the industry and trades that have been so important up till now.

"Will iron and steel continue to be produced here for another two thousand years? Is it possible to develop the technology in another way in future? Does what has happened in the past affect the present situation with us? Which education and training will be required in order to make a living in future?"
From the teacher's guide produced for Hofors The County Museum of Gävleborg 2013

The work of the students can be reported and shown in many different ways; here one can think in broad terms and the teachers can then adapt the report to those skills the students need to practise most. Naturally, traditional reports in written or oral form can be prepared but also filmed reports, dramatisations, photo collages, work with sound or other forms of presentation. If the students allow this, the regional or local museums may be interested in archiving for reference purposes the accounts of the young people in order to obtain a document of how the life situation and picture of reality appears during a specific period.

Proposals for the setup of the teacher's guide
- Target group
- Purpose
- Historical perspective
- Factual material
- Student data
- Report



2 HOW DOES THE DOCUMENTATION TAKE PLACE?

To document an industrial operation can deliver many gains for all those involved. A precondition for this, however, is that the documentation must be well prepared and anchored in the company documented; a further precondition is that the documentation team makes use of documentation methods in a properly considered way. This chapter is about how you can prepare and carry out the documentation of an industrial activity; what you should bear in mind and, not least, how you can collaborate with different stakeholders.

Work together!

It's a good idea to seek to collaborate with others in the locality. Where the industry is operating there are frequently competencies and resources that you can make use of. You could, for example, ask the municipality's Culture Department and/or Industry and Trade organisation if they wish to involve themselves in the documentation project.

Members of a local photography club may be interested in being involved in photographic activities during documentation. Pensioner associations may also wish to help in different capacities e.g. perusing relevant literature and archives. One or other study association may wish to organise a study circle. The local history society could be asked to participate during the documentation process and for its contributions to historical data and information.

Trade union organisations may also be asked if they wish to be involved in some way, possibly in fact checking or helping with networks and contacts. Schools in the local area may wish to carry out some further specialisation work on the industry's history and present-day production. Or why not allow schoolchildren to formulate questions for the documentation?

The collaboration with regional organisations may also add different competencies and resources in the documentation work.

In this context, consider contacting the County Administrative Board (länsstyrelsen), the Regional Council (Regionförbundet), the County Museum, the regional archives and regional associations to see whether they wish to participate in some way. To bring together different bodies in the joint assignment has many advantages. A documentation effort that is carried out jointly by the company and cultural heritage organisations is enriching for both, and not least for many people in the community. In a documentation project many can work together with the company e.g. associations, schools, researchers, municipal, regional and national stakeholders as well as the relevant industry association.

The more who are involved in the project, the greater its dissemination while the knowledge built up and accumulated benefits more people. In this context, there is also a possibility of interesting the mass media in describing the industrial operations from other viewpoints than the usual ones.

Conceivable collaboration partners

- Companies
- Local history society
- Pensioner association
- Study association
- Photo club
- Trade union organisations
- Compulsory School
- High School
- University
- Municipal trade and commerce organisation and culture administration
- Museums and archives at local, regional and central level
- County Administration Board
- Regional Council
- Industry association

Preparation and anchoring of the projects

The documentation must be anchored not only in the management at the plant but also amongst the personnel who will meet the documentation team and who may be interviewed or photographed. It is important that they know in advance that the documentation is to be carried out as well as its purpose. It is also right that they are given the possibility of abstaining from participation. In the project the company contributes both necessary knowledge, material and time. Consequently, successful cooperation depends on a good relationship with both the management and the employees concerned. At the same time, the approval of those in positions of responsibility is required to be able to start the documentation work.

An initial contact with the company can be made by way

of the appropriate trade association. The company management or someone with an interest in the company history at the company may be able to report on the earlier work with documentation and written material available at the company. In many cases no inputs have been made for several years. If you come from outside it is also important that you carry out research (consultation) before the field documentation starts so that you are more or less familiar with operations and can formulate relevant questions. As a support in preparation and for the documentation work itself you can make use of a reference group. Representatives of the company, the municipality, the local history association, museums and archives may form part of such a group, being able to contribute with relevant experience and knowledge. Be ready to request a site plan of the industrial plant as well as an organisational chart. Read up on the company itself and the sector in which it is active. How well stocked with relevant material on the plant is your local library, archive and museum? What has the mass media reported on the industry in question?

Despite an extensive collection of material, you do not need to be an expert when you come to a documentation site. It may indeed be an advantage to be able to point out one's lack of expert or inside knowledge; that way it can be permitted to ask all the 'stupid' questions! The documentation also gains from the production and processes being described from different perspectives. Last but not least, it is essential that the descriptions can be understood by more than just those familiar with the industry.

To work with one or two knowledgeable company representatives in the documentation process is a way of acquiring an introduction to the workplace and the employees; it is also a way of obtaining proper comprehension of the activities. At a company it may be difficult to call on the time of the employees, except for a shorter period. One alternative to the participation of actual employees is therefore the involvement of those who are recently retired from the company. They frequently have a good insight into the organisation and operations. When you build up a documentation team it is important that you get to know one another and are agreed on your roles.

A documentation team may consist of one or more of the company's newly retired employees, a photographer and the researcher. It is the person who interviews and takes notes and who has an overarching responsibility for ensuring that the project's goals and the questions at issue are translated into practical activities. The knowledge, on the part of the company representatives, of the actual production, its processes and equipment plays a crucial role in the documentation. Furthermore, the contact with employees is facilitated where the documentation team is introduced by someone who the employees know. The person who participates from the company side needs to have experience from the current production process. This person can supply documentary material and data, explain the process, vouch for facts and lead the tour within the production area.

The researcher asks questions; makes notes; proposes vantage points for photos and appropriate subjects and selects possible objects to collect. This person also has responsibility for final material and textual compilations. The photographer has an important role in documentation projects and in the interpretation of activities through the photographs.

For the researcher and the photographer it may also be a

Examples of project organisations

Documentation on a team basis

Steering group
Project manager
Company management
Documentation team
Pensioner from the company
Photographer
Researcher
Reference group
The company
Municipality
Local history society
County museum/municipal museum
Regional/municipal archive

Documentation carried out by former employee

Steering group
Project manager
Company management
Documentation team
Industry expert/former employee
Photographer

Industry has always operated in an immediate local context also. How can the surrounding community be described and which are the important stakeholders there?

good idea to leave the documentation team occasionally and to venture out into the plant itself in order thereby to capture impressions, ideas and stories from other employees.

Purpose, perspectives and questions at issue

Before the documentation is commenced you should think carefully about the purpose of the documentation. Consider the questions which you wish to have answers to. Which knowledge is it that you wish to capture and that should be preserved for posterity? Is it knowledge of the machinery, the production process, the products, the work environment, co-existence at the workplace or something else entirely which is most relevant?

In a workplace there are many different stories and perspectives. All who work there have their own story and, in addition to this, there is also a larger narrative for the plant in question that can be supported by written and archived documents.

With such a diversity of stories the operations can be scrutinised on the basis of a series of different reference viewpoints such as class, gender, generation and ethnicity. Or why not adopt subjects or themes such as environmental work, workplace culture, IT, knowledge transfer? Think through in advance which viewpoints, subjects and issues are of central importance for this documentation.

Other narratives are clarified by the physical environment. What story is told by the site and the buildings themselves? Processes and process equipment, products and production have all set their stamp on the environment. What form does this structure take? What is there in terms of physical traces and tree rings? Which traces has the work produced? What does the visitor experience in terms of sensation? Try and be receptive and curious. Through being seen out and about in the plant environment and listening, many narratives can be introduced.

Sometimes it is only after a visit to the documentation site that it becomes clear which the truly relevant questions at issue and perspectives are. Plan therefore follow-up visits. Weave in documentation to your working of the material and reflection on the same. Go back and test out your ideas and thoughts.

Levels of detail and setting limits

It is impossible to cover all the different dimensions of a plant and the production that takes place there. So it is important to define the questions at issue clearly and determine a suitable level for the work. The funding of the work is obviously a factor that guides the setting of limits as well as the appropriate level for the work in question. Another factor is the target group. At whom is the documentation aimed? Too high a technical level, where the presentation of the work is concerned, can make the work difficult to understand. A pedagogical and interesting approach is in many cases preferable.

Think carefully how the texts in the work are formulated and which register (tone and style of writing) is used. Attempt to provide nuanced descriptions. The task of achieving a good description is greatly facilitated through the technical specialists and those producing the documentation working well together. Before the work starts properly, there should be clear awareness of any limitations established in terms of what may be documented. There could be parts of the production process that the company does not wish to show or other types of restriction.

Many industrial plants have a long and eventful history. Buildings have been added or demolished; certain parts of the operating plant have found a new use or maybe even been allowed to stay as they were. To an outsider, such older parts, not least in contrast to the more modern parts of the facility, may be perceived as exciting and full of information about its industrial past.

From the company's side, however, there may not be a desire to display such remnants of a previous era; for them they may be the backside best hidden away from view!

Where the documentation is concerned, it is important to find a balance between what the company wants to show and the value of capturing just those parts of the plant that are frequently of great interest. A dialogue with the plant management is essential though in many cases there is a positive attitude from the very start. It is always desirable that the company checks the facts and offers its viewpoints before the work is actually published.

Critical view of the sources

All sources, whether oral or written, are more or less subjective. They are characterised by the situation from which they emerged and the person who formulated them. Consequently, it is important to use the collected material with critical awareness of the sources. In connection with documentation projects that include oral narratives, it is always a good idea to state that these narratives are based on memories. We all know that memories or recollections may be more or less erroneous, especially where details are concerned.

What kind of information is it that is disclosed in the interviews? Is it such information as is based on experiences, judgements and feelings or is the information of a factual character? The latter may need to be double-checked against other sources. During a documentation process you should also continually be asking the

question: "who is saying what and why?" It cannot be ruled out that there are constraining reasons for different statements e.g. that certain occurrences or indeed the course of events described may have been amended in some way to better fit into the narrative of the individual's own career at the plant or similar. Are there conflicts that may affect the descriptions in different ways? Similarly, written sources also are based on memories and may be marked by personal motives. You should therefore apply the same source critical perspective when written sources are utilised.

The photo-documentation is shaped by the framework that the documentation team establish at the documentation site. Consequently, it is also important to account for the photo-documentation from a source critical perspective. Which are the places where photography has been permitted? Where has permission for photography been denied? Which persons and operations are highlighted by the company management and how do these selections mirror the workplace as a whole? What kind of picture does the viewer obtain from the photos of the workplace? Does this picture accord with the impressions that the documentation team have acquired on site?

The integrative cooperation model that we have advocated in this book also accommodates special requirements for a source critical approach. Users of the material can justifiably ask how far the collaboration has gone and whether the documentation team has been able to maintain its independence and thereby capture other narratives than those the company management has wished to emphasise. The purpose of such collaboration must never be to adopt the role of a spokesman for the industry concerned.

What limitations has the company established for the project in respect of participation by the employees, having access to premises and documents? Why have just these sources, premises and documents been made accessible for the documentation team? What is not accessible and why? It is quite acceptable to ask the company to explain their reasoning concerning decisions on such issues.

Once the documentation material is archived, it is important that the following is clearly shown: the context within which the material has been collected; who or which have participated in the documentation; the conscious choices made on the occasion of the documentation. This opens the door for ethical and source critical standpoints in the case of future communication of the documentation.

Checklist for preparations

- Establish contacts and propose collaboration.
- Seek collaboration at the site/locality.
- Create a project organisation.
- Get to know one another.
- Settle the funding issue.
- Decide about the time schedule.
- Request basic information on the plant.
- Read about the plant, the company, the sector, the site/locality.
- Think through the knowledge goals, questions at issue, different perspectives.
- Determine the documentation methods and scope of the documentation as a whole.
- Procure technical aids for the documentation.

Methods

There are a series of methods to capture and record the narratives that a workplace transmits and also to document the physical environment and the processes that occur. All of these methods have their advantages but also their limitations and preconditions. Consider carefully which methods to choose for the documentation. Don't be afraid of fresh ideas; alongside more traditional methods new and untested concepts may be used.

Walking Talking

It is not infrequent that the first method the documentation team uses during its time in the field is something that has been designated "walking talking". A representative from the

company shows the team around and answers questions. This is a good way of obtaining an initial understanding of the plant operations with its premises, processes, logistics and organisation. Why not speak to those you meet during the tour of the plant? This is a golden opportunity to identify potential interviewees – those who will be your informants. You can write down notes (memos) and impressions during the tour.

The first encounter with an unfamiliar industrial plant is frequently overpowering. One struggles to grasp and understand everything. Don't be put off by the fact that initial impressions are slightly disordered and even chaotic for a while. Be open and focus on your own experience of the plant and site. In due time, the pieces will fall into place. For further reflection, you can seek out a quieter corner to look through a site plan of the facility and an organisational chart of the company. Be ready to write down your perception of what has been said at this stage and request to have it checked to ensure that you have understood everything correctly.

You are now beginning to build up a spine of knowledge about the workplace and its operations; this you can then use as a foundation for adding layers of knowledge comprising stories and images.

Participant observation and field diary

A traditional working method amongst ethnologists is participant observation with preparation of a field diary. By way of gradually disengaging from the guide at the workplace in order to seek one's own observations and contacts and, at the same time, to note down impressions, the documentation team takes the step into participant observation. This method is often deemed to assume that the one who is documenting wholly enters the informants' own world, works like them and lives like them during a period of time.

Where workplace documentation is concerned, however, it is nowadays often difficult to get permission to take part in the work. This is principally owing to insurance issues. A participant observation can, however, also imply that the person documenting participates as an observer in the environment to be described and notes down experiences and impressions. What form does the work take? Which are the key items of equipment and the different elements or stages? Which norms and standards are conformed to and complied with at the workplace concerned? Which problems and satisfactions characterise working at the plant and what is the social interaction like?

It is a good idea to keep a field diary with observations, reflections and even practical notes during the entire documentation period. The diary will help you later to recall your experiences, impressions and thoughts and is also a good tool for preparing in-depth interviews. It is also a good idea to work together with others. Two persons see more than one and the questions at issue can be discussed together. Moreover, being two of you, it can also feel more reassuring, since unavoidably, as an outsider, one is an odd and alien feature.

Interviews

One of the most important methods for documenting the stories, experiences and viewpoints of other people is the person-to-person interview. Interviews are particularly suitable for capturing information concerning people's experiences, thoughts and perceptions; they are less appropriate for collecting what can be described as objective facts (e.g. year, technical data etc.). Another risk is that the interview material may be characterised by denial, suppression and putting the record straight.

Identify those you wish to interview and attempt to include persons with different occupational roles and of different gender, age and backgrounds. Prepare the interview by writing down certain key themes and knowledge goals as well as a basic structure for the interview, with main questions and subsidiary or supplementary questions. Make sure you inform the intended interviewee, the informant, about the project and its purpose, as well as how the interview will be stored and used. You can request contact details so that the informant can subsequently scrutinise and correct the interview transcript i.e. the written interview.

The interviews can be carried out in many different ways but we recommend in-depth interviews which usually take up to an hour or two. It is a good idea to begin with questions that focus on the interviewee's background in order to be able to better understand and assess what is then stated in the interview.

Start the interview with a main question. Avoid questions that can be answered with a 'yes' or 'no'. If you assess that the interviewed person may develop or expand his or her answer further, it is a good idea to ask the person to do this or to ask the person what he or she means or implies. Try to

Individual perspectives and personal experiences can provide the documentation with valuable knowledge which is not found in statistics and official documents.

pick up interesting loose threads in order to extract more details (how the person did something) and further depth (how the person was thinking at the time). Should the conversation drift away from the subject, try to lead it back to what you need to focus on.

Avoid taking over the interview with your own recurring reflections and questions that seek to steer the answers too much. Keep your own input both brief and to-the-point.

It is certainly a good idea to record the interview. There is good digital sound recording equipment available for which the cost is not excessive. Ensure, however, that the recording is printed as text also. This makes the interview easier to grasp and more searchable. You can either print out or transcribe the text yourself or contract out this work. If you choose the latter, you must ensure that you edit the raw transcript material in order to ensure that any names and the context are correct. The informant should have the chance to examine the transcript and put forward factual corrections. When both parties are agreed on the transcript and interview the Usage Agreement, concerning how the interview may be used, is then signed.

Witness seminars and group interviews

The witness seminar is what we call a documentation form that can best be described as a combination of group interview and panel discussion. It comes into its own for capturing stories and experiences of the same or similar events, environments or places. The participants can compare and complement their experiences with one another. This interaction can ensure that information, which otherwise would not have emerged, can be documented.

Checklist for interviews

- Identify and contact the informant.
- Prepare the interview through formulating a number of subjects and follow-up questions.
- Check the recording equipment to ensure that it functions well during the interview
- Carry out the interview.
- Transcribe the interview.
- Send the transcript to the informant.
- Edit the transcript.
- Sign the Usage Agreement with the informant.

The risk with this documentation form is that the stories that then emerge during the seminar can then be corrected with the accent put on agreement. An excessively wide seminar subject can, moreover, mean that the documentation material becomes too thin and lacking in information. The method demands a good moderator who can move forward the discussions rather than a series of monologues. The moderator should be an authority within the area without being too involved in the events or environments that are the focus for the seminar. Designate the moderator in good time before the seminar and prepare him or her with questions and relevant background information e.g. the CV's of the various participants.

Decide on a seminar subject with clear boundaries. Consider carefully the participants. Do you wish to focus the seminar on agreement or dissent? Avoid, where possible, a group composition where a single participant represents too major an authority or is too dominant in relation to other participants. It is probably better to interview such a person instead. Another question to think about is whether the seminar should be held in front of an audience or not.

The seminar may properly be started with the moderator presenting the seminar theme or subject, the focus, the setup of the relevant seminar as well as the seminar participants. The moderator should have thought out a clear thread for the discussions to follow in advance. The panel members are all involved in the discussion with a concrete issue they may discuss and talk about. In order for all the panel participants to have proper scope, the witness seminars may certainly last for a period of about four hours.

Plan to have at least one coffee and snack break; this is a chance to chat and socialise. Make sure also you reserve enough time at the end of the seminar for questions from the audience if you decide to hold the seminar in public. But make sure you have a wireless microphone which the questioner can speak into; otherwise the relevant question will not be included in the sound recording. You may wish to supplement the sound recording with a film record of the witness seminar.

Sound recording

Sound recordings can be used during interviews and witness seminars but they also function as a documentation method in themselves. A process industry produces sound. The sound

Checklist for witness seminars

- Formulate the subject/theme.
- Decide on the date.
- Designate moderator and participants.
- Send out the invitations to panel members including instructions.
- Book premises, film team where appropriate, photographer, catering and coffee etc.
- Decide issues and running schedule.
- Check recording equipment.
- Implement the witness seminar.
- Transcribe the sound file.
- Send the roughly edited transcript to the seminar participants for scrutiny and correction.
- Final editing of the transcript.
- Edit the raw film to DVD or similar accessible format.

of production sets its stamp on the environment. The sound is produced by machines and other process equipment, by vehicles and conveying devices. It may be one of the following: the deafening clinking of the glass bottles in the brewery's bottling plant; the roar from the several storey high limestone crusher in the cement factory; the whistling clatter when plastic granules rush past in the barrel system for the injection moulding of plastic parts.

Hearing protection is sometimes a requirement when visiting a particular production area although other sounds may be less obtrusive, more subtle or indeed of a rhythmical nature. The sound, moreover, is part of the first-hand narrative of working in the plant. It is a good idea to record and preserve this ambient noise.

The quality of the sound in a recording is decisive for its utilisation. It is hard to delete poor sound quality and consequently the recording location/situation is decisive. If you conduct an interview, you should remember to carry out the interview in a room with the preconditions for good quality sound. Choose a room that does not echo; that does not make the informant's voice sound hollow; where there is no distracting background noise such as fans or other electric equipment. Remember that it is up to you to create the facilities for the informant to make his or her voice heard in as good a way as possible and also for posterity to listen to and assimilate the narrative of the interviewee.

A first step, before the actual interview, is to try out the equipment in the room where you plan to carry this out. Test the equipment, make a recording and then listen to how the room and the voice sound in the selected location. Carry on testing until you feel satisfied. Also consider carefully the technology you choose to employ. Different sound situations demand different microphones. An omnidirectional microphone is sensitive to sound from all directions. The lapel microphones that are placed directly on the person who is speaking can facilitate the audio work significantly. Directional sound can limit the recording of annoying noise interference during the recording.

Photography

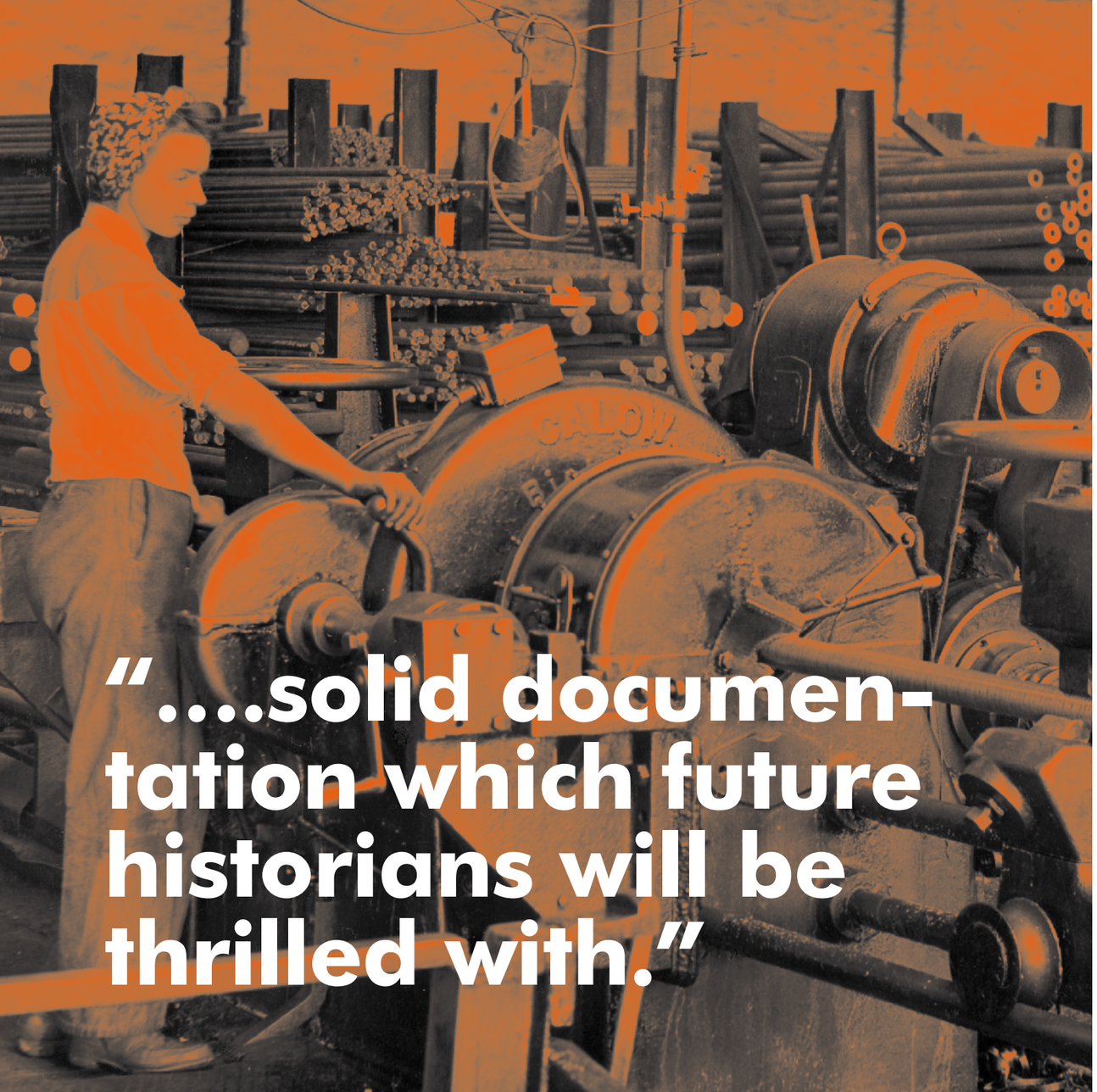
Photography is a valuable documentation medium that can be used in many contexts. A photographic image may be anything from an artistic interpretation of an industrial milieu to a more strict and formal representation of the same milieu or a portrait photo of an informant. To document a complex industrial environment with the aid of the camera is not the easiest thing to do. The photographer out in the field may often have to tussle with complex light conditions, crowded premises and what is at times an incomprehensible muddle of devices and other production equipment.

Sometimes the environments are dusty, hot and noisy. The difficulties may become major challenges but the reward comes when that special photo shot is suddenly fixed.

To communicate images, like other communication, calls for a sensible strategy before you begin. Bear in mind that it is you, as the person documenting the industry, who determines what is deemed to be more or less important. A photo can never be wholly objectively taken. Consider, therefore, the goal of the documentation process, the message that you intend to convey to the target group and indeed the broader context. What do you wish to say? Whose views do you wish to focus on? Who do you wish to reach? How do you wish to reach them?

Like all other documentation work undertaken in groups, the photography should be planned together. Different group members have received different impressions and insights and can offer different starting points and suggestions as to what the photography should include.

A witness seminar can bring together people with unique knowledge and long experience. In the discussion new insights are born where there is scope for inspiration.



“....solid documentation which future historians will be thrilled with.”

The often scarce time spent in the field, moreover, needs to be planned with others. The short and cold days of the winter season should be avoided. Bear in mind too how the light falls, at different times of day, so that not all buildings need to be shot in backlight. A beautiful evening light can be captured with a little planning. It is important to include both bird’s eye views (overviews) and detailed shots. Try to get up on to a roof or similar to get good views from up high. Photography that is not dependent on daylight e.g. interiors with artificial lighting can be saved for the evening. Remember that more complex light conditions require a camera stand (tripod).

To capture shots of people may require certain preparations but sometimes a spontaneous question on the spur of the moment is sufficient. Make sure you get a signed consent from the persons you photograph. On the consent are noted the name, contact details and how the pictures may come to be used. Such a procedure also facilitates future contacts with those portrayed. When taking pictures of and filming people you should also consider the signals from the person depicted.

Bear in mind that the photos may play a determining role in how the viewer will perceive the interview and the person interviewed. To take a photo of a person from an angle below may project an impression of power whereas a shot taken from above may make the person appear as inferior in some way. Body language, facial expressions, activity or passivity, standing or sitting, how the background is made to appear, the composition of the picture, colours and so on also determine which feeling or story arises when the viewer interprets the picture. Do not fall into the snare of documenting people in a way that strengthens social conventions and stereotypes.

Digital technology enables one to take many photos and just one day in the field may result in hundreds of shots. In order to keep all the different images in order there are several things that should be considered. Take with you a site plan of the plant and note down where the pictures are taken and preferably also what that represent. Such a listing of images is invaluable for the upcoming work. Don’t forget to take shots of the more peripheral parts such as conveying equipment, water and heat supply systems, power sources, the laboratory and operations centre. Utilise the opportunity that is offered and allocate a little extra time for a more experimental kind of photography.

Transfer the images to the laptop at the end of the day. As soon as possible and this is best done in the immediately following days when memory and impressions are still fresh the images should be sorted out and catalogued.

Filming

To film an industrial environment and its production has many advantages since the visual motifs, the sounds and movements can be captured in one go. Nowadays it is easy to film. A mobile phone can help you make short ‘memo notes’ in the form of film clips. Filming can therefore be used both as a tool during documentation and as an independent documentation method. A film pilots the viewer through the plant and shows how the production takes place. A narrator’s voice makes the report pedagogical while interviews with employees and other persons supply a further dimension. A historical flash-back can also be enclosed in different ways.

A film can be really concrete and, for instance, demonstrate the elements of craftsmanship in the work at a plant. It can show how a plant operation is started and how running and maintenance take place.

Consider the fact that it is seldom a good idea to just set the camera on a tripod and take film footage of the production and its equipment. The film media instead demands an idea, an interpretation of what is to be filmed. The film itself becomes a story. Before it is time to film an industrial operation it is a good idea to first think through what is to be filmed and – as part of this work – produce a simple film script. If you wish to use filming to document an interview you should also take into account that there is no reason to make a long interview if you know that you will only use a shorter part of the material. Prepare the questions to be asked and the storyboard before you meet the informant.

It is sensible to test the camera before the interview and allow the interviewee to get used to it. Not everyone is comfortable with an interview situation. The specific prerequisites of the room on the occasion of the interview are also important. Remember not to place the person in backlight in front of a window since the person risks becoming less prominent in the picture.

Film both interiors and the interviews in order to have a greater opportunity to use the material in different contexts.

Artistic interpretations

Process industries in operation are multifaceted and complex environments which speak to all our senses. Here you have

a card to play in the documentation work; namely the fact that the person who is not present daily in the industrial environment often notices other things than the person who is present there on a daily basis.

How can an artist provide something of substance in the context of documentation? The distance separating the artistic and engineering worlds may seem altogether too large. However, to have the "soft" artistic values meet the "hard" technical values is an exciting way of creating something new; something unexpected. Process industries are often rich in contrasts with visual impressions abounding, as is the sensation experienced of sound, vibrations and smells. All this can be set out in an artistic way.

An artistic interpretation may consist of a fictional text, a theatrical performance, a painting, drawing or sculpture. It may also take on more experimental forms such as installations or films. Historically, it was not uncommon that artists were hired by a company in order to document, interpret or provide publicity for a business operation. An artist could, in this way, elevate the company's status.

Why not set up a cooperation project between companies and education and training in the arts? To have prospective artists come face to face with industrial environments could offer both partners important experiences and interesting results.

Autobiographical accounts and collecting of memories

To collect written autobiographical accounts and memories is a time efficient way of potentially obtaining many different narratives within a given subject area. This can be carried out digitally and social media may be used in this work.

It is an unfortunate fact that certain memory collections have resulted in very few contributions. A precondition for a successful collection is to convey information about the collection to the target group and also to ensure that there is an incentive for informants to write their memories down and send them in. It may be that such a memory collection should take the form of a writing competition with the opportunity to win an interesting prize within the specific target group.

Ensure that the collection project has the right to publish and to use the written accounts. These accounts may constitute excellent material for a webpage or an anthology. If these accounts are to be made searchable on a webpage, for instance, it is a good idea to identify search words in the written accounts submitted and list them together with information such as the author's name, heading and page number.

Inventory of buildings

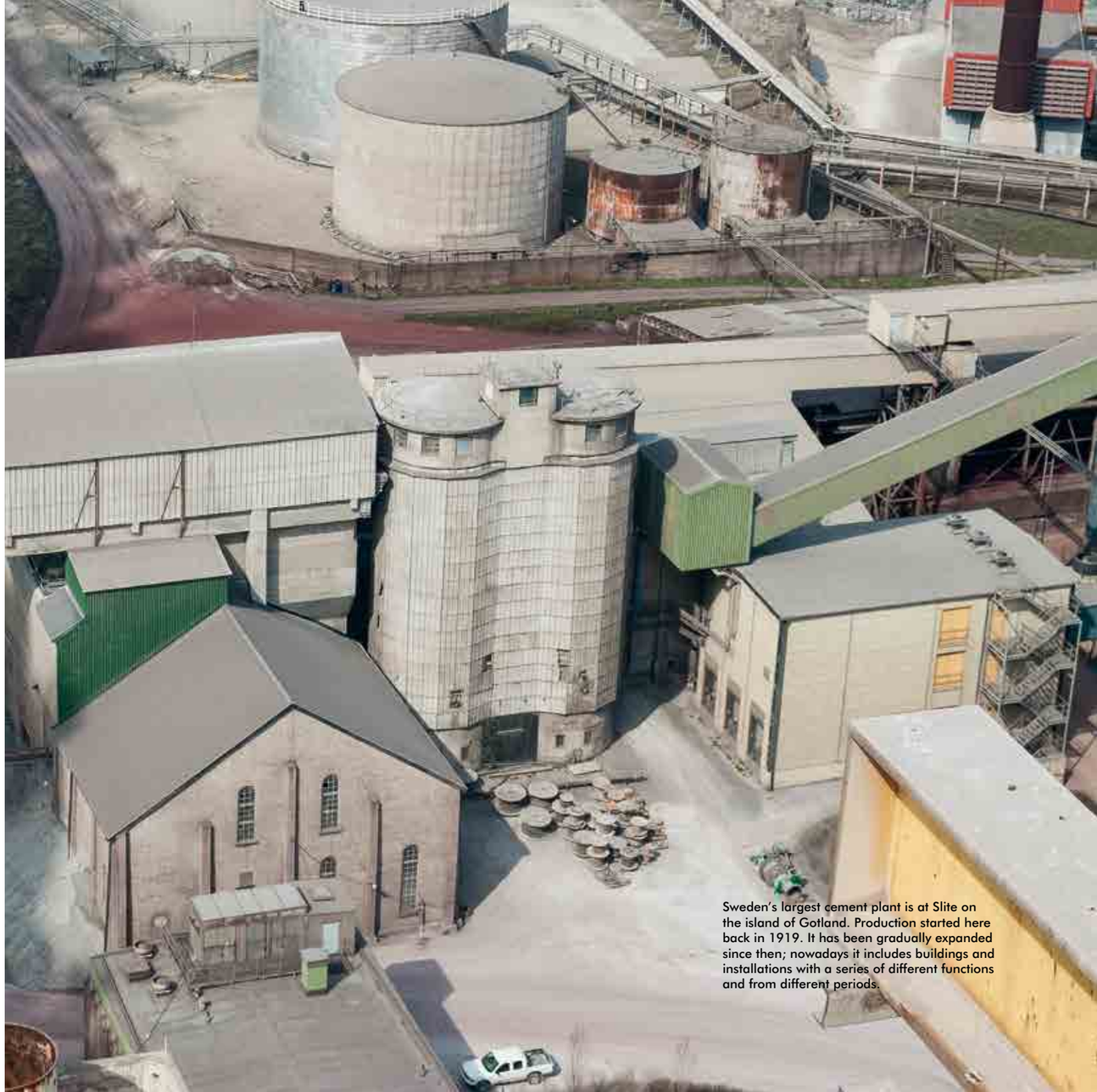
Industrial buildings have much to say. Through making an inventory of buildings and structures, knowledge and information on the built environment can be compiled. There are different types of inventories and the ambition level may properly be determined from case to case.

The explanation for production buildings at an industrial site is the production equipment contained therein. These buildings, however, are also consciously designed and thus bear the stamp of the time when they were built. Office buildings and sometimes housing are often associated with the industrial site. There are also facilities that are not considered as buildings but, nevertheless, should be included in the inventory such as silos, filtration plants, weirs or dams, water courses, fences, storage facilities, cranes, conveyance systems etc.

Sometimes older inventories are obtainable. Ask the company, the municipality, the local and regional museum and local history society if they have inventories, drawings, construction plans, site plans and so on. For the purpose of a building and structure inventory, an inventory form is a good tool.

The Swedish National Heritage Board (Riksantikvarieämbetet) has drawn up a model for inventories based on the so-called Building Register. The register is an information system concerning the cultural heritage of buildings in Sweden. It is accessible via the National Heritage Board's own website and, so long as resources are available, a building inventory can then be carried out in accordance with this model. An alternative is to produce one's own form where the type of industrial plant, construction material, architect, year of construction and history are all registered.

Archive materials in the form of drawings and photographs can be of great help in interpreting the history of the buildings including their rebuilding, refurbishment and enlargement. Interviews with employees and local historians can provide information on the buildings and their functions over time. During an inventory of buildings, photos of the relevant buildings and other elements in the surrounding environment should be taken so that all frontages and especially interesting details are documented.



Sweden's largest cement plant is at Slite on the island of Gotland. Production started here back in 1919. It has been gradually expanded since then; nowadays it includes buildings and installations with a series of different functions and from different periods.

What story is told by the objects collected during the documentation?

Inventory of production equipment

It is particularly important to document the production equipment. It can tell much about the production carried out at the company's premises. Few companies find it possible to preserve the production equipment which is replaced by new; consequently it is of great importance that the heavy machinery is documented when it is still operational.

When the production equipment is discarded it is either scrapped or sold on, quite frequently abroad. The inventory of process equipment can take place through drawings being studied and interpreted; the equipment is described in its process phase and the machine operators and engineering maintenance fitters working with the machinery are interviewed. Questions to be answered include the following: when and by whom the production equipment is manufactured; how the machinery is constructed and how the production process works. To enable the explanation of the production equipment and the processes in a pedagogical manner, appropriate use can be made of site plans, summary of facts, drawings and other types of image. See examples of this in Ch. 4.

Collecting objects

Whereas libraries collect books and archives of primarily paper-based documentation and photographs, it is the job of the museums to collect, conserve and provide access to objects and artefacts. The management of all this is far-reaching and entails a requirement for storage space and a stable administering organisation over time. This is really difficult to build from the ground up. Societies, private persons or indeed companies that wish to collect objects for a museum-type collection should therefore seek cooperation with an existing and appropriate museum.

Discuss with others those objects perceived to be interesting to collect. What story does the object tell? The object tells a story – but of whom or which? Is the object typical of its time and environment or is the object unique? Can the object function as a symbol for something? Can the object be exhibited? How easy is it to collect and conserve the object?

Many key objects in industry are, by their very nature, impossible to preserve at a museum. This may refer to large-scale and cumbersome production equipment. Certain equipment today, moreover, is computer controlled and dependent on digital systems. Discuss what you can do to document such equipment. Are there manuals, drawings or other documentation that may be preserved instead?

Ensure that you document the history of the relevant object. Who was it that made the object? When? How was the object used and by whom? When was the object procured and why? What has the object signified for the users and their surroundings?

Why was it that the object stopped being used and what happened with it subsequently? Collect manuals for the object in question as well as photographs of its use where this is possible.

Archival inventories

Even where the relevant documentation focuses on our own time, it is essential to insert some type of historical description. How a company handles – and has handled – its archive material varies a great deal. There is often material that relates to the company both at the plant itself and elsewhere, for example with the local history society or in municipal and county archives. The smaller the company the more important it is to carry out local searches. Where the documentation is focused on engineering and production, then material such as technical drawings, site plans, photographs and process descriptions are worth seeking. Good descriptions can also be found in the company's internal educational and training material.

As a general rule, companies were better at documenting their operations a good while ago; a fact that is mirrored in employee newsletters, the golden era of which was during the 1950's and 1960's.

The following factors have, in many cases, meant that the management of archive material has fallen by the wayside: the accelerating pace of change in business; far-reaching computerisation; the ownership of industry which has often become more distant from shop floor operations and the more intense concentration of present day business on present and future concerns.

This makes it all the more important that companies review and get to grips with their archive situation! An approach that may well take up time but one that pays off in the longer term in a number of different ways. The failure to maintain company documents and records in good order is costly. And when it is time to produce a book for the company's jubilee a well organised company archive is priceless.

Archives and museums as preservers and mediators

Let us be clear. By itself, a company's documentation, in its various forms, seldom has any real value. The documentation must be managed in such a way that the results and documentation material are accessible and in usable form. It is only then that the documentation acquires a value. It is, therefore, essential that the material is preserved in a way that does not put at risk its existence or even facilitate its disappearance.

Documentation material that ends up on the researcher's bookshelves or in basement storage, in the longer term, tends to become abandoned material. Before the documentation process starts you should ensure that the material created and collected can be kept and made accessible at an existing cultural institution with the resources to take care of the material in a professional way. This guarantees that the material is cared for and made available for use, whether within a short-term or long-term perspective. The only cultural heritage institutions that preserve and make available all kinds of documentation material (archive documents, photos, films, books and objects) are the museums. In general, they hold both collections of objects as well as an archive and library.

In order to make the material properly accessible, the cultural heritage institution should have its archives and collections of objects searchable on the Internet or at least information to the effect that a specific archive or object collection is kept there.

Several archive databases nowadays support the web publishing of scanned documents which makes the material very easily accessible. When the documentation is anchored with the company management it is appropriate to discuss the issues arising from archives. Does the company have any restrictions concerning how the documentation material can be made accessible? An agreement should be signed between the cultural heritage institution and the company documented specifying whether the material can be wholly accessible or whether the company wishes to have restrictions in the form of time-limited secrecy on all or parts of the material, or indeed limitations concerning how the material may be made accessible (e.g. through Internet publishing).

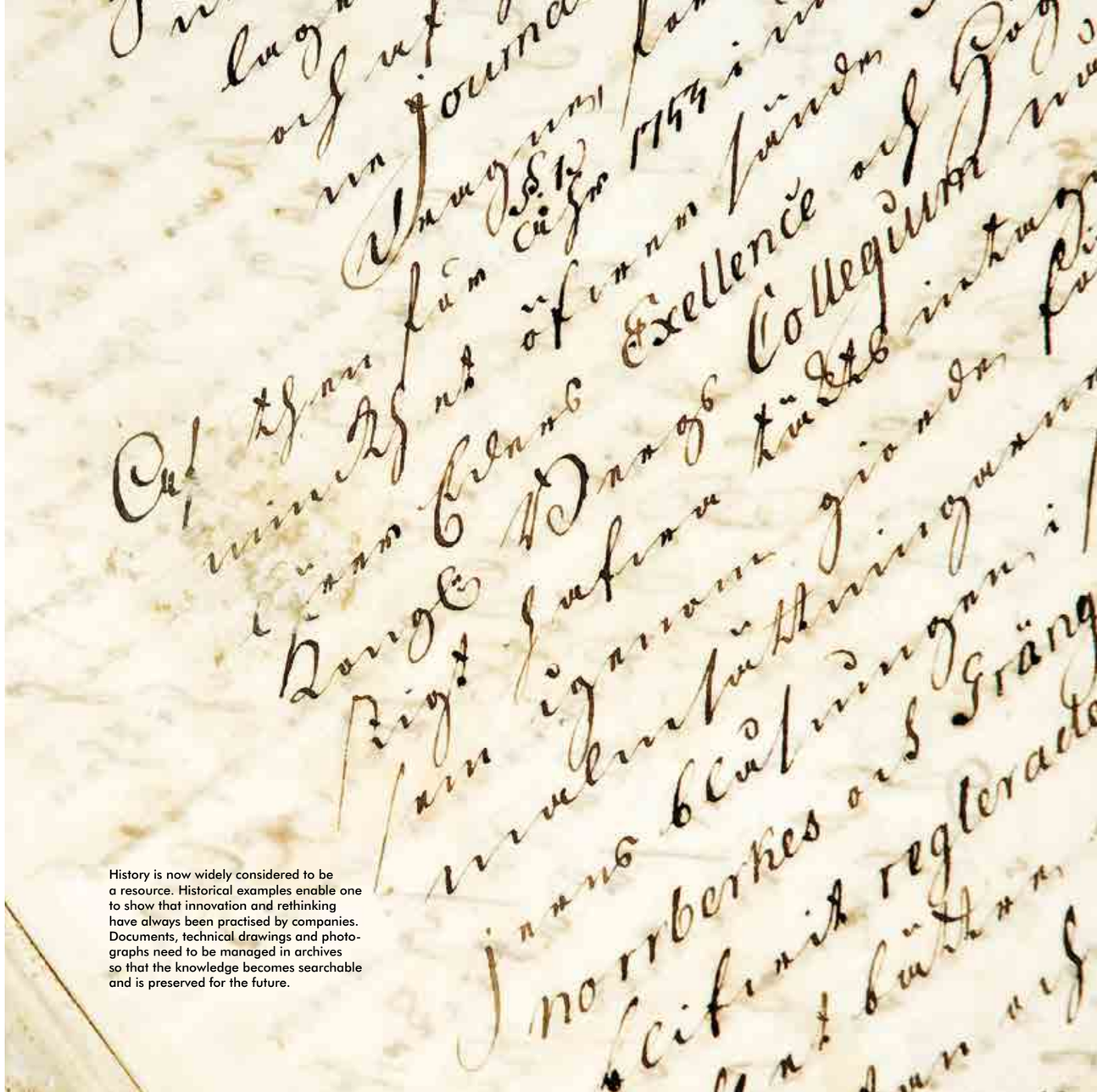
Not only written documents are kept in archives. Photographic, audio and moving image resources may occur in many archives and there should be facilities and procedures for preserving this type of material also. Formerly photos, audio collections and film were typically kept in analogue form on paper, filmstrip, magnetic tape and similar. The technical steps from storage media to end user were few and relatively simple. Today, however, nearly all sound recording, filming and photography is carried out digitally. The technical steps between the content and the user are greater in number, more technically advanced and also more sensitive.

The digital files have a file format and must be stored in some form of data memory and interpreted and played by software based on an operating system which, in its turn, is run on hardware in the form of a computer. This places special demands on the preservation of digital files. What is there to suggest that the file format, software programs, operating systems and the hardware we use today are compatible with what will be used in 150 years? The migration of electronic files by copying them from one storage media to another may solve one part of this problem but by no means all.

What explanations are put forward by the archive where the documentation material is to be kept? Which file format is recommended by them and how do they work to ensure that the digital material is able to survive over time? Different file formats are suited in different ways for documentation, digital archiving and utilisation in publishing activities.

One ambition should be to use digital formats which ensure as much flexibility as possible in use but which also permit digital archiving. For example, photographs have many potential areas of application; from being used in low resolution on the Internet to being splashed up in large scale on a gigantic banner or poster. Consequently, the original file must permit as much flexibility as possible. The higher the resolution and the more information the image holds, the greater the flexibility.

Most digital image formats, however, imply changes in the digital information contained in an image. Not all image formats are equally suitable for digital archiving. Consult a professional photographer and the cultural institution you are collaborating with concerning how you should work with digital material. Questions on digital format have a tendency to change with time and with technical developments.



History is now widely considered to be a resource. Historical examples enable one to show that innovation and rethinking have always been practised by companies. Documents, technical drawings and photographs need to be managed in archives so that the knowledge becomes searchable and is preserved for the future.

3 INDUSTRY IS CULTURE TOO

The questions we ask and the methods we use when we record and document are all conditioned by time. This book has especially advocated documentation in collaboration; with an attitude of openness towards a multiplicity of sources, the different aids available and working methods. We have underlined the importance of allowing many voices to be heard, even those that express opposition and dissonance. These standpoints are based on our own time, on our own experiences. We can only speculate on the form that the documentation of tomorrow will take. Moreover, the social transformations which, one hundred years ago, fanned the embers of the first interest in industry as culture differed in many ways from today's global challenges. What we do today forms part of a historical context; to be alert to this then helps us to perceive our own time and to make choices that are conscious and well founded.

Interest in industrial heritage awakens

When the first industrialisation wave reached Sweden, during the second half of the 19th century, the idea that industry could incorporate other values than purely economic ones seemed, to many people, somewhat incongruous. For better or worse, industry was the very transformative force that would break down the old and lay the foundation for the new. Industry, it was widely thought, stood in opposition to culture and history. Instead, what really needed to be documented and preserved was the rapidly disappearing culture of the country people.

Around the turn of the 20th century, early industrialisation in Sweden, as it became established, was followed by a new modernisation wave. It was now that steam power was replaced by electric power, small ironworks and foundries gave way to larger plants and a mass production, mechanical engineering industry was developed. But it was also at this time that the idea of industry as an aspect of culture started to emerge.

As the second wave of industrialisation swept across the country, it was possible to look back on the first wave as history. The initiative to undertake documentation was limited however; it was largely undertaken on behalf of the captains of industry and trade associations within the prestigious metal and forest based industries.

A collection of the historical remnants of the iron industry was made by the industrialist Carl Sahlin, who established archives, libraries and museums during his time at Stora Kopparbergs Bergslags AB and at Laxå Bruk in the province of Närke. In a similar way, the industrialist Elis Bosaeus collected and wrote the history of the Swedish pulp and paper industry in the 1920's.

From 1917, when the Prytziska Foundation fund was instituted, the Swedish Steel Producers' Association, Jernkontoret started to support research and the production of inventories relating to the history of mining and metallurgy. That an industry association – such as Jernkontoret – should engage itself thus in the field of history and culture was something new which would lead to imitators within other sectors. In 1967 these history-focused activities acquired a more permanent organisation with the establishment of Jernkontoret's Historical Metallurgy Group as it is today.

In view of the upcoming Gothenburg Jubilee Exhibition, held in 1923 (to mark the city's tercentenary), cultural history studies were carried out into the older iron and steel industries of Bergslagen and West Sweden. These projects took place over several seasons and were organised together with Sweden's Nordic Museum (Nordiska museet), where the ethnologist Sigurd Erixon had developed pioneering methods for systematic studies into the popular culture of country districts. Photographic records were made as well as drawings while interviews were conducted and facts and objects collected; the legacy of this work into these key industrial districts aimed far beyond the temporary exhibition in 1923 that gave rise to these studies.

One major novelty here was the documentary film recordings carried out in collaboration with Svensk Filmindustri, SF. Moreover, this major collection project also assisted the foundation of the Swedish National Museum of Science and Technology. This was established in Stockholm the following year, 1924.

At the same time, a far-reaching documentation project was carried out as a private initiative of the well-known Swedish architect, Ferdinand Boberg. Moved as he was by the rapid changes he experienced in the mining and metalworking districts of Bergslagen where he had grown up, he travelled widely in Sweden, together with his wife Anna Boberg, making sketches and charcoal drawings of historical milieus – iron foundries and forges, blast furnaces and mining installations. The project was subsequently expanded to encompass the so-called 'Svenska bilder' – a collection of

around 3,000 sketches and 1,200 charcoal drawings from across Sweden.

What these early efforts have in common was, on the one hand, their clear focus on monuments and technical milestones and, on the other hand, their focus on earlier, historical eras. The perspective adopted for this work was one that looked downwards from above. It was the viewpoint of the company director and the academic expert that came to expression here.

Company monographs and books of photography

In Sweden's 20th century history, the expansive and forward-looking decades after the Second World War were record years in terms of economic prosperity. This led to interest in industry's own past being largely overshadowed by enthusiasm over its rapid development and dazzling forecasts for its future.

The National Museum of Science and Technology, under the direction of Torsten Althin, continued, it is true, with the surveys and preservation work of the inter-war period particularly within mining and metallurgy's traditional regions. But the times were still not ripe to properly draw attention to the large scale and more complex buildings and industrial environments typical of the 19th century and the early years of the 20th centuries.

Instead, these years were somewhat of a golden age for those compiling company histories. Representatives of new academic disciplines such as economics and economic history were engaged to write the history of Sweden's industrial companies

in extensive tomes. The national economist Torsten Gårdlund published a history of Bolinders 1945 (manufacturing industry), also one on Mo och Domsjö (forest industry) 1951 and on Atlas Copco (engineering industry) 1973. The historian of ideas Sten Lindroth, during a ten-year period, was an employee of Stora Kopparberg Bergslags AB and wrote an exhaustive history of the company (1955). The economic historian Karl-Gustaf Hildebrand wrote the history of Fagerstabruk (steel industry) 1957 and a further book on Stora Kopparberg 1970.

Another perspective was highlighted in the collection and publication of the memoirs of workers, undertaken by Sweden's Nordic Museum, which was commenced after the 2nd World War. It was also manifested in the twelve volume work "Den Svenska arbetarklassens historia" (1941-1957) which was funded by LO (Swedish Trade Union Confederation). This major work involved collaboration by researchers at the Nordic Museum with economic historians and political scientists; its aim was to present an alternative written history of the great industrial breakthrough in Sweden.

As a more popular counterpart to these rather academic company monographs, a series of books of photography and photo reportages with Swedish industry as their subject were also published in these decades. The undisputed master of this genre in Sweden was the photographer K.W. Gullers. Like the most productive authors of company monographs, Gullers could rely on a staff of employees as he briskly produced photo reports on behalf of Swedish industry. His photographs of work and factory environments radiate optimism about progress and a belief in engineering and technology typical of the era. They depict industry as society's rational and progressive engine-room of the welfare state.

The industrial workaday in focus

The radical political climate of the late 1960's combined with the economic crises of the early 1970's, labour market conflicts and major restructuring within several industrial sectors - all this gave rise to a new impetus for industry documentation. Art historians, architects and historians maintained that the qualities of industrial buildings should be evaluated together with the more established categories of cultural heritage such as churches and upper class environments.

The new viewpoint was clearly expressed in the book *"Industriminnen"* (Industrial monuments) of 1974, with the art historian Marie Nisser as editor-in-chief. The inspiration partly came from Great Britain where the field of Industrial Archaeology some decades earlier had become established as a field of activities.

It was now that academic research increasingly paid attention to working life and the working environment within industry. One role model within the so-called new ethnology was the work of Åke Daun *"Upp till kamp i Båtskärsnäs"* (1969) which dealt with labour movement protests arising from the closure of a sawmill in Norrbotten – the most northerly county of Sweden.

Alongside the newly awaken interest of professional researchers in workaday life in industry, a lively activity in the

During the middle years of the 20th century, company monographs and books of photographs were published on behalf of Sweden's major industries. What kind of cultural heritage will today's industry leave for following generations?

Abandoned industrial premises often comprise exciting environments. The National Museum of Science and Technology documented Lövsta's waste incineration facility in 2004. The plant had then ceased operating for eighteen years. It has now been demolished.

form of study circles was also developed. Here people documented their own workplaces, in the present day and the past. *"Grävrörelsen"* was the name of a movement in Sweden based on the idea that those who worked in industry were best equipped to investigate and build up knowledge about it, rather than academics or museums. The movement was mainly active during the second half of the 1970's and the early 1980's. Two publications provided inspiration and hands-on tips: Gunnar Sillén's "Stiga vi mot ljuset" (1977) and Sven Lindquist's *"Gräv där du står"* (1978). This book (the title means "Dig where you stand") was to give its name to the whole movement.

All this activity was clearly anchored in popular engagement in the fate of local industrial communities and their survival in times of far-reaching restructuring. Other manifestations of this involvement were the blue-colour theatre movement with historical themes as well as working life museums organised in the very same environments where industrial activities had taken place. There was a clear political message too in the reportages, sometimes textual but often enough photographic, which depicted working life from the viewpoint of the shop floor.

Sara Lidman (text) and Odd Uhrbom (photo) published the book 'Gruva' (Mine) about the Swedish iron ore producer LKAB in 1968 while Jens S. Jensen published Bilfabriken about Volvo Torslanda in 1976. Photographers such as Jean Hermansson portrayed industrial work in a more pallid light than is seen in the work of K.W. Gullers, a few decades earlier. These contributors often had a further ambition – to portray industrial operations that were under threat, sectors where there loomed the spectre of plant closures and relocation to countries where labour was cheaper.

Well-established museums in Sweden also made serious attempts, at this time, to develop their documenting and interpreting activities. The Nordic Museum was a driving force behind Samdok, the network for contemporary documentation and collection run by the Swedish museums. From its start in 1977 it worked to expand and also co-ordinate the documentation of contemporary life and work.

Within Samdok, activities were initially focused on industrial operations within different sectors. These sectors were then classified into working groups or so-called pools: the Metals pool, the Timber and Paper pool, the Textiles pool and so on. These 'working life pools' were then supplemented by a so-called Home pool which was devoted to family life or what happened outside industrial working life. During the 1980's and 1990's, Samdok helped to give high priority to documentation within many regional and central museums that focused on cultural history. Several methodological books were published such as Eva Fägerborg's "Arbetsliv: En handledning i dokumentation av arbetsplatser" (1981) on the documentation of workplaces, and also "Verbalt, visuellt, materiellt: Om museernas dokumentation och insamling" 1991, by Eva Silvén and others about documentation and collecting at museums.

The emphasis on workplace documentation which, to begin with, was so firmly upheld has lost ground in recent years. This is reflected in Samdok's own organisation where the former working groups were combined into one and the same pool: Manufacture and Services. On the other hand, new pool areas have been created for the subject areas of Culture as well as Society and Politics.

National initiatives and inputs

The 1990's was a period when those initiatives that had been taken some twenty years earlier started to bear fruit. Whereas the former activity largely rested on the initiative and work of individuals, a phase of institutionalisation, central initiatives and co-ordination efforts now occurred. In the year 1991 the Museum of Work (Arbetets museum) was opened in Norrköping and rapidly became an important actor in this field.

Academic research now took on institutional form also; this was symbolically marked through the establishment in 1992 of a professorship in industrial heritage research at KTH Royal Institute of Technology, with Marie Nisser as professor. Together with the economic historian Maths Isacson, Nisser initiated teaching and research in respect of Sweden's important industrial heritage. This then acquired international ramifications and was followed by similar activities within several other disciplines.

The same year, 1992, the Industrial History Forum came into being, a meeting place for cultural heritage conservation, research and documentation within different sectors which included representatives from industry and the trade unions. Strengthened by funding from the Swedish National Heritage Board and central government, the different stakeholders in cultural heritage protection in the regions took a responsibility for inventories, studies and, in many cases, the

preservation of industrial environments. These tasks were incorporated alongside others where professional cultural heritage activities were concerned.

The Industrial History Forum took the initiative to carry out documentation projects with methodological development ambitions. The National Heritage Board supported documentation at a number of locations and offered, for example, expert help in the history of technology. The local documentation projects were supplemented by national overviews and inventories.

It became clear that the documentation and investigative processes were, for a long period, primarily focused on the traditional and important metallurgical and forest-based sectors. On the other hand, the food production industry, small-scale industry and female-dominated workplaces and sectors were under-represented. As a result of this insight projects were carried out within the canning industry, the porcelain industry and small workshops in more rural districts.

With an official commission of enquiry under the leadership of Erik Hofrén, the instigator and first director of the Museum of Work, followed by a special delegation to highlight the cultural importance of Sweden's industrial heritage, the government during the late 1990's finally acknowledged the state's ultimate responsibility for the documentation and preservation of industrial environments. The enquiry placed special emphasis on the anchoring of industrial heritage in civic life and its democratic significance as well as on factors such as user experience, diversity and collaboration.

The delegation operated during the period 1999-2001 and funded projects at different sites in Sweden. It also stimulated the development of methodology within both documentation and conservation. Its long-term proposal for an overall survey of the entire cultural heritage sector, for setting up a special heritage council and funding to administer the large-scale industrial environments were, however, never implemented.

The rusted paradigm

The years around the turn of the millennium represent the very peak of research into the industrial society. Soon, however, there were signs that the forces that had been set in motion – and set the tone – previously were now losing strength. The "grävrörelse" movement had long melted away; the Industrial History Forum was reduced in size; the documentation activity of the museums diminished and the secretariat at the Nordic Museum which co-ordinated Samdok activities was abolished in 2011. Meanwhile, academic research started to look for new approaches and the central government inputs were not followed up.

At the same time, there emerged new ways of approaching Sweden's industrial heritage which had nothing to do with the self-perceived workaday of employees or industry's monumental milestones or landmarks. Historic industrial environments, and for that matter fully operational companies had long been a visitor destination within the tourist industry, but there now occurred an experience-based re-evaluation of the country's industrial heritage whose scope is still too early to grasp. Perhaps the clearest expression of this is the sub-culture "Urban Exploration", whose followers explore abandoned factory areas, wastewater systems and shunting yards, viewing these not usually seen installations as exotic and also aesthetically interesting. Their interest is based on the fascination for the unfamiliar and derelict, for traces of work that has now ceased.

The visual impression is central for these urban explorers who communicate their discoveries intensively, often through film and photos, on the Internet.

A related fascination for the post-industrial finds expression in the project of the economic historian Jan Jörnmark; this depicts abandoned built environments as an illustration of globalisation and de-industrialisation. With the book Övergivna platser (Abandoned Places) (2007), he presented post-industrial environments for a broader public. Questions concerning the way that places and environments are affected by the transformation from industrial production to post-industrial experience were also central to the works of two authors; namely the ethnologist Robert Willim's Industrial cool (2008), and Hope and rust (2008) by the industrial heritage researcher Anna Storm. These two studies used field research to analyse the post-industrial approach to the industrial heritage.

Industry documentation and social change

It is an obvious step to tie periods of intensified interest in industry documentation and knowledge acquisition in this field to phases of far-reaching social transformation and industrial change. The earliest industrial history initiatives largely drew attention to monuments from the first industrial revolution; they reflected the epoch of steam power and the Lancashire forge but these initiatives were prompted by the second industrial revolution, the breakthrough period of electrification and mass production at the beginning of the 20th century.

In similar fashion, the renewed interest during the latter three decades of the 20th century can be seen to be tied to what economic historians describe as the third industrial revolution featuring the Internet as well as automated and globalised production and distribution patterns.

However, following this line of reasoning to then see the most recent tendencies as a sign of having entered a post-industrial society would be a gross over-interpretation. Modern process industry contributes no less than 20 per cent of the value added by Sweden's industry that is counted in the country's GNP. Production industry, not least the steel industry, continues to play a central economic role as producer and employer as well as keeping many localities alive. Production industry, nevertheless, is in a state of continuous change and constantly seeking new paths to follow. These investigators must do likewise!

4 EXTRA MATERIAL

How can the work of documentation best be set up? What must be taken into account before and during the process? How can everything, from an entire industrial plant to the individual machines, be documented? Here we offer a few examples and tips regarding methods as well as illustrations. The examples are recreated from: Lindgren, Anna & Sjunnesson, Helene (editors-in-chief), *Nedslag i verket. Dokumentation av modern stålindustri – exemplet Ovako Hofors.* (Documentation of the modern steel industry – the Ovako Hofors example). Gävle: County Museum of Gävleborg, 2011.

Examples

Documentation methods

It is a good idea to start the preparations by making a simple description of the documentation work you plan to carry out. From: Lindgren & Sjunnesson, p. 176.

Documentation methods

This first proposal for the arrangement of the pilot study at Ovako Hofors was drawn up by the County Museum of Gävleborg and the National Museum of Science and Technology, 13 May 2008.

Ideas concerning suitable documentation methods for the modern steel industry

Preconditions

• Applicable for documentation of a production site that is fully operational
• Estimated time for the work: 2-3 days for 15-20 participants from museums, company, municipality and local history society divided into working groups of 3-4 persons.

Preparatory material

• It is important that information material on the company, the steel plant and on the current production is available before and during the documentation. The publication on industrial heritage documentation from the 1970's "Industriminnesdokumentation – handbok" was produced by the industrial history committee of Svenska Cellulosa- och Pappersbruksföreningen (now Swedish Forest Industries Federation) and works well as a guide and handbook. There is also a useful guide to the documentation of workplaces by Eva Fägerborg, Samdok. What is now available that is more up-to-date?
• We refer you also to Jernkontoret's publications.

Setup and boundaries

1. An easy-to-grasp inventory of the entire steel plant area (e.g. by a working group)
• Summary of the physical environment, production lines, operations and the organisation.

2. A production line is documented (three working groups)
• Documentation covers the production itself and a product's entire life cycle during production. From the customer making the order to final delivery to the customer.
• Description of the production, use of raw materials, fuels, energy, personnel resources etc, environmental measures, investments. At least during the period immediately preceding the documentation.
• All technical equipment utilised in production of this product to be documented, from production machines to control equipment, service machinery, tools etc including handbooks, manuals and possibly brochures etc.
• The buildings that exist for production purposes are documented, including rebuilding and adaptation of buildings.
• Material storage yards.
• Transportation.
• Decommissioned production equipment.
• All employees required for this production are documented; from management to those who clean the personnel areas. Who are they?
• Silent knowledge of the production and the machines for the employees is documented.

3. The product (possibly by a special working group)
• Areas of application.
• Innovations that led to (development of) the product.

4. Archival state of affairs (by a working group)
• Present archival situation at the company.
• Research and development that relates to the product and production line.
• Decisions e.g. by a supervisor, company management, company board etc that relate to this product during the documentation period.

5. The surrounding community (a working group)
• A momentary picture at the time of documentation. How does the community affect/shape production and the employees?

Methods

• Participant observation
• Conversations (Walking Talking)
• Interviews (Manual available from the National Museum of Science and Technology IT history project)
• Witness seminar
• Archival and information searching
• Photography
• Filming
• Sound recording

Reporting

• Written report
• Films
• Flow chart
• Computer graphics and animation
• Homepages
• Lectures

Viewpoints to take into account

• Gender perspective
• Sustainability perspective
• Diversity perspective

Documentation checklist

Before documentation is carried out it is necessary to determine the boundaries for such work. Where there are several groups documenting an industry, it is easier if the groups have a checklist to keep to. From: Lindgren & Sjunnesson, 2011, p. 177.

Checklist for the documentation

Prior to the documentation carried out in 2008 this checklist was sent out to participants:

Ovako Hofors – New forms for documentation for the modern steel industry.

For each product stage:
1 = carried out on site
2 = best prepared beforehand

Production

- Capacity, 1
- Working procedure, 1
- Transportation – flow chart in > within the process > to next production stage, 1
- End product, including size range area, 1

Added input materials/substances

- Raw materials/energy, substances (consumption, which, for what, suppliers etc), 1

Work/process

- Manning, 1
- Work operation - suboperation (verbal description)
- Arrangement of the work, working together in the work group/team, hours of work, shift work hours, organisational model
- Control and regulation of the production
- Possible manual elements
- Quality assurance
- The professional knowledge/education and training background of employees, gender, age, ethnic background, recruitment, year of recruitment, places of residence
- Operational breakdowns/interruptions (what is done?)
- Maintenance (preventive? cleaning?)
- Planned changes/investments

Industrial plant/technology - Principal equipment/specifically

- Designation
- "Pet names/nicknames"
- Make of machinery
- Year of manufacture
- Major rebuilding/refurbishment, year, why?
- Capacity
- Operation
- Annual production

Premises

- Buildings and "rooms", 1
- Designation, 1
- Present utilisation, 1
- Year of construction, 1 and 2
- Building materials, 1 and 2
- Original use, 2
- Rebuilding/year, 2
- Work environment, 1

To take into account

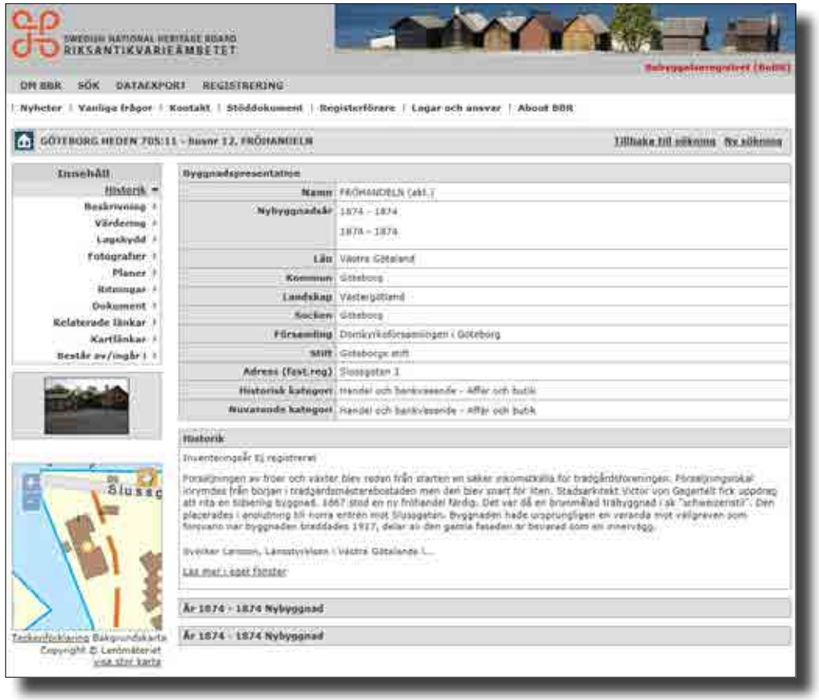
- What is specific/unique to the Hofors plant
- The 1960's to the present, future, planned changes/investments
- Collecting objects
- Taking photos and filming: when, what, how and by whom?

Note in the groups what should be recorded in photo and film

- Changes in shifts

Inventory of buildings

The Swedish National Heritage Board (Riksantikvarieämbetet) has drawn up a model for inventories that is based on the so-called Building Register. The Register is a national information system with information on Sweden's built cultural heritage. It is available via the Internet on the Swedish National Heritage Board's web page. Where resources are available the building inventory can be carried out according to this model. An alternative is to produce one's own form where the building type, material, architect, year of construction and history can all be noted down.
From www.raa.se

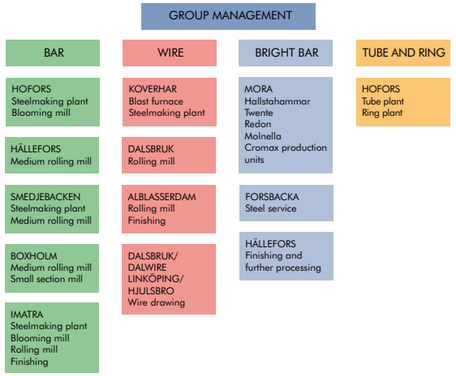


Organisational Chart

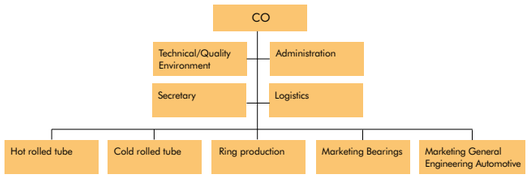
Below, there is an example of how the organisation of a Group can be illustrated. On the right there is an example of how a shift team can be recorded in tabular form. From: Lindgren & Sjunnesson, 2011, pages 41 and 69.

OVAKO GROUP 2008

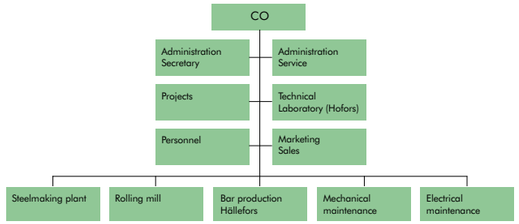
Organisation of Ovako and operations in Hofors 2008. Ovako Hofors.



Ovako Tube and Ring 2008



Ovako Hofors AB 2008



Blooming mill and forge shop organisation

The following positions comprise a shift team:

Heat treatment pit furnaces
- Operational supervisor
- Stoker
- Gripper crane operator (2)
- Furnace service (daytime)

Forge
- Manipulator operator
- Press operator
- Forge operator
- Assistant (relief)

Rolling
- Scarfing machine operator (2)
- Assistant (relief)
- Setter (2)
- Process and machine operator (3)
- Cutter (2)
- Service man
- Assistant operator (2)
- Rolling mill stand and guide fitter (2) [daytime]

Finishing of billets and tube rounds
- Operations supervisor
- Assistant operator
- Grinder (2)
- Overhead crane operator (2)
- Unloader (round)
- Unloader (square)
- Service man (2)

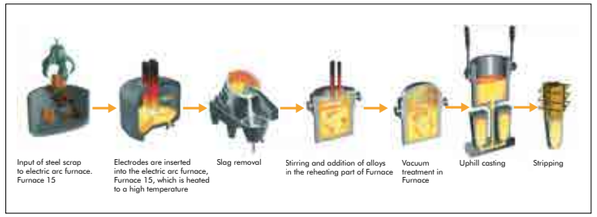
Bird's eye view

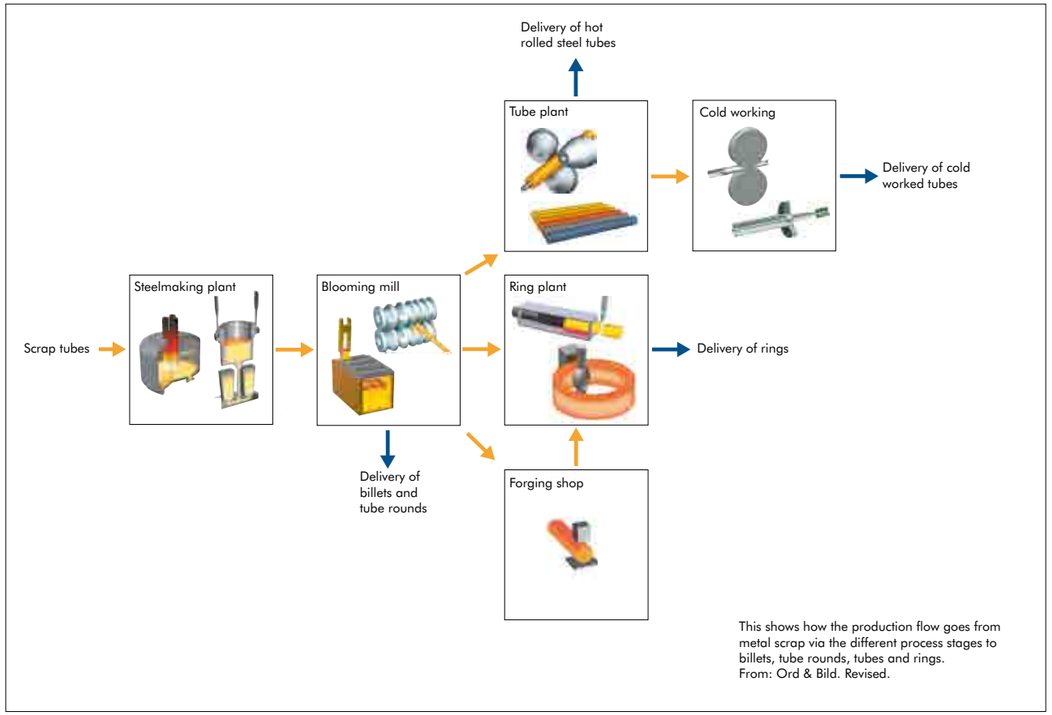
An industrial site often contains many different facilities. Through digital reworking of an aerial view the different documented sections of the plant can be shown. From: Lindgren & Sjunnesson, 2011, page 50.

Ovako Hofors from the south. Highway 80, which runs between Gävle in the east and Falun in the west, borders the steel plant in the lower part of the photo. Photo: Johan Lundqvist 2010. On the photo is superimposed a sketch of the site of Ovako Hofors with the documented installations marked in orange. Ord & Bild 2010.

Flow chart

By means of the flow chart, product flows and processes can be explained in terms of images and symbols. From: Lindgren & Sjunnesson, 2011, pages 46 and 55.





This shows how the production flow goes from metal scrap via the different process stages to billets, tube rounds, tubes and rings. From: Ord & Bild. Revised.

Site plan

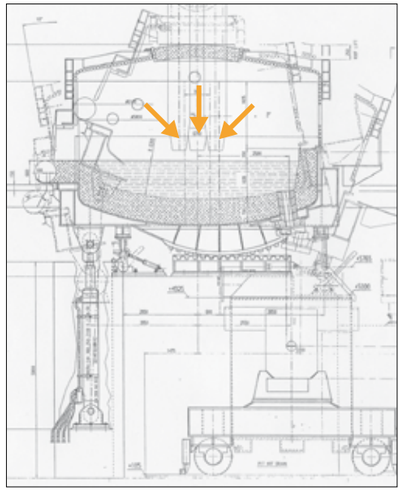
Through coloured fields and the numbering of different areas and machines on a site plan the production can be explained. From: Lindgren & Sjunnesson, 2011, pages 54 and 55.

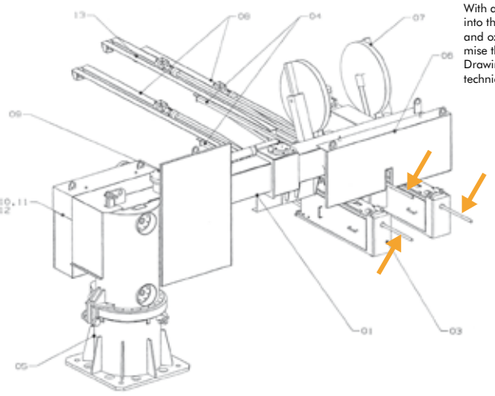
A plan of the facility shows the steel plant's different areas and stations. Drawing no. 25819. Year 1991. Ovako Hofors drawing archive. Revised.

1. Scrap baskets.
2. Alloy addition station with silos for alloying materials.
3. Control room with operations lab.
4. Furnace 15, electric arc furnace.
5. Slag removal station
6. Furnace 16, ladle furnace with reheating station and vacuum station.
7. Control room for Furnace 16.
8. Casting shop.
9. The Norberg Transporter
10. Stripping bay.
11. Mould cooling with cooling tunnels.
12. Mould preparation hall.

Documentation of production equipment

The documentation of production equipment can be shown through descriptions of drawings and through special info-boxes. From: Lindgren & Sjunnesson, 2011, pages 57, 58 and 73.





With a lance manipulator three lances are injected into the electric arc furnace. These blow in carbon and oxygen to the electric arc furnace to optimise the process and to spare the furnace lining. Drawing no. 189701, year 1996. Ovako Hofors technical drawing archive. Exposed and adapted.

Furnace 15
Type: Electric arc furnace – OBT Oval Bottom Tapping, with water-cooled panels and vault.
Manufactured by: Fuchs Systemtechnik, Germany.
Start of operations: 1990 (furnace replacement)
Diameter: 5 800 mm x 6 500 mm.
Tapping weight: 100 tonnes.
Furnace shell: 150 tonnes
Electrode circle diameter: 1 120 mm.
Electrodes: 610 mm.
Transformer rating: 80 MVA.
Tap to tap: approx. 64 min.
Energy consumption: 47.5 mWh/charge
Capacity: 500 000 tonnes of steel per year, or 110 tonnes steel per charge.

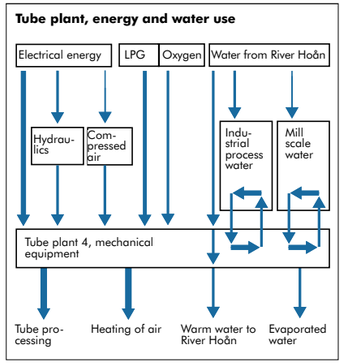
Changes in heating of pit furnaces
1977 Conversion to oil/air.
1991 Furnace 3. Conversion to gas.
1995 Trial with oxy-fuel technology.
1996 Furnace 12. Converted into a furnace with individual cells and the burners were moved up and centred on the end wall about 1 m. from the upper edge, which is the present model.
1997 Furnace 5 and 6. Conversion to oxy-fuel technology.
1998 Furnace 9 and 10. Conversion to oxy-fuel technology.
1999 Furnace 11. Conversion to oxy-fuel technology.
2003 Furnace 7 and 8. Conversion to oxy-fuel technology.
2004 Furnace 1 and 2. Conversion to oxy-fuel technology with separate exhaust gas channels.
2006 Furnace 3 and 4. Conversion to REBOX® oxy-fuel technology.

History

The history of a plant can be summarised in a summary of facts (to right) or in tabular form (at bottom of page). From: Lindgren & Sjunnesson, 2011, pages 88, 89 and 141.

Environmental aspects

How energy and water are used in a plant can be summarised in diagrammatic form, see below. From: Lindgren & Sjunnesson, 2011, page 92.



Plant no.	Start of opera-tion	End of opera-tion	Billet weight kg	External diameter mm	Width mm	Production tonnes/year	Heating	Upsetting (tonne)	Piercing (tonne)	Final process (tonne)
1	1930	1970	3–25	160–600	40–200		Chamber furnace	500	250	250
2	1943	1977	3–25	160–600	40–150		Chamber furnace	500	250	250
3	1947	1950					Salt bath furnace	500	250	250
4	1956		15–90	280–720	40–250	8 000	2 rotary hearth furnace	1 000	500	2-stage
5	1966	1979	5–18	150–350	40–130	3 500	Induction furnace	800	2-stage	
6	1966	1992	40–1000	375–2 000	40–400	2 000	Rotary hearth furnace + cham-ber furnace	500	2-stage	630
7	1969 1975 omb	2005	3–12 2–7	150–230 135–300	100 92	2 500 4 000	Induction fur-nace for bar	630	3-stage	
8	1976		5–25	180–380	160	8 000	Induction fur-nace for bar	1600	3-stage	
9	1992		max 2500	400–3 000	30–560	14 000	Rotary hearth furnace + cham-berfurnace	500	2-stage	630

Tube production plants at Hofors 1918-2008

Tube plant 1. 1918-2008
- Taken into operation 1918.
- Piercing through pressing as per the Erhardt method. In the first period its capacity is 2 400 tonnes per year tube working with dimensions 90-275 mm.
- Taken out of operation in 1972 and demolished the same year to create space for ring production.

Tube plant 2. 1931-1965
- Taken into operation 1931
- Piercing as per the Erhardt method. Equipment from the German firm Adolf Kreuser and electrical equipment from Asea.
Capacity at start: 20 000 tonnes per year with max external dimensions of 90-140 mm in lengths up to 2.9 metres.
- Taken out of operation and demolished in 1965 to be replaced by a large rolled-ring pre-forge facility.

Tube plant 3. 1950-1974
- Built 1944, but only started operating in 1950.
- Piercing as per the Erhardt method to start with. Equipment designed at the works and constructed at a Swedish engineering plant. To enable production of larger dimensions, an Assel rolling mill was procured from Mannesmann-Meer. This was taken into operation in 1956 and was the largest in the world of this type at the time. Piercing of seamless tubes through rolling was thereby introduced to Hofors.
- 1974 Tube plant 3 was demolished in order to create space, in time, for a ring roll mill.

Tube plant 4. 1962-
- Built in 1960 but not in operation until 1962.
- Mannesmann piercing process
- Assel rolling process.

Tube plant 5. 1965-
- Installed in 1965 for the dimensions 50-90 mm in same building as Tube plant 4.

- Both tube plants are of the same type but Tube plant 5 is a step smaller size-wise. Piercing mill and Assel rolling mill delivered by Mannesmann-Meer. The original oil-fired walking beam furnace was replaced in 1973 by a rotary hearth furnace of the same type as in Tube plant 4. Heated with LPG. At same time, a first reduction mill was installed with 12 pairs of roll stands.
- The furnace was not used in 2008.

Tube plant 6. 1998 – 2008
Mannesmann piercing process – Assel rolling process. External diameters 30 – 100 mm. The plant was not operating in 2008.

Further reading

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List of illustrations

Cover photo: Anna Gerdén, National Museum of Science and Technology, 2008, Slag removal in Steel plant 4, Ovako Hofors.

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Page 8: Anna Gerdén, National Museum of Science and Technology, 2008. Rotating scrap collector in the Blooming mill, Ovako Hofors.

Page 10: Nisse Cronestrand, National Museum of Science and Technology, 1998. Kalles caviar "Jumbo Tube" is packed into boxes at Abba Seafood.

Page 13: Rolf Bergström, Eskilstuna. Swedish Railway Museum collection. Production of railbuses at Hilding Carlsson in Umeå 1958; a photo for the employee newspaper Konduktörsposten. Quotation is from page 11.

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Page 19: Anna Gerdén, National Museum of Science and Technology, 2013. Children's activities at the National Museum of Science and Technology.

Page 22: Anna Gerdén, National Museum of Science and Technology, 2011. Documentation of activities at Ovako Hofors was concluded with a seminar and a guided tour of the plant.

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Page 29: K.W. Gullers, National Museum of Science and Technology archives. Sampling from the open-hearth furnace at Hofors Bruk in 1947. Quotation is from page 17.

Page 30: Anna Gerdén, National Museum of Science and Technology, 2008. The operator Mariama Ceesay stands in front of an inspection facility in the blooming mill, Ovako Hofors.

Page 33: Ellinor Algin, National Museum of Science and Technology, 2007. Witness Seminar at the National Museum of Science and Technology in Stockholm.

Page 34: Hofors Bruk archives. Turning tubes with a Calow lathe at the manufacturing plant in 1947, SKF in Hofors. Quotation is from page 17.

Page 37: Lena Knutson Udd, Industrial archaeologist, 2009. Cementa, Slite on island of Gotland. The plant was documented by Lena Knutson Udd and Sven Olof Ahlberg in 2009.

Page 38: Ellinor Algin, National Museum of Science and Technology, 2011. Ball bearing.

Page 41: Anna Gerdén, National Museum of Science and Technology, 2005. Archival material.

Page 42: Cecilia Ahlsén, Bohusläns Museum, 2013. Bohusläns Museum, with Christine Fredriksen as project manager, documented production processes and premises at the Pininfarina auto manufacturing plant in Uddevalla during 2012-2013.

Page 45: Studio Gullers, © Nordic Museum. K.W. Gullers on a photographic assignment to an industrial site in 1953.

Page 46: Nisse Cronestrand, National Museum of Science and Technology, 2004. Lövsta waste incineration plant, Stockholm.

Page 49: National Museum of Science and Technology archives. ASEA in Västerås. Employees at Emausverkstaden in 1915, at the stator (stationary part of rotary system) for a 1300 kVA generator intended for alternating current. The quotation is from page 11. Cropped.

Page 50: Cecilia Ahlsén, Bohusläns Museum, 2013. Bohusläns Museum, with Christine Fredriksen as project manager, made a collection of a number of objects in connection with the documentation of Pininfarina in Uddevalla 2012-2013. Among other things, a shrinkage rule used by the auto manufacturers to measure and adjust distances and spacing.

Back cover page: Ellinor Algin, National Museum of Science and Technology, 2013. Photo montage.

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Anders Houltz is docent and researcher in industrial heritage research. He lectures at KTH Royal Institute of Technology and BTH Blekinge Institute of Technology in Karlskrona.

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Anna Lindgren
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Jernkontoret

The Swedish Steel Producers' Association was founded back in 1747. Since then it has been owned by the Swedish steel companies. Jernkontoret represents the steel industry on issues that relate to trade policy, research and education, standardisation, energy and the environment as well as taxation and levies. Jernkontoret also leads the joint Nordic steel research. In addition, Jernkontoret produces statistics relating to the steel industry and carries on research into the history of mining and metallurgy. At Jernkontoret the project committee "Handbook for Documentation of the Process Industries" has operated as a steering group, advisory council and reference group for the book you have in your hand. The following persons participated in the project committee:

Björn Björck, expert in the History of Technology, Jernkontoret's Historical Metallurgy Group.

David Damell, PhD, former Museum Director of Örebro County Museum, Jernkontoret's Historical Metallurgy Group.

Peter Du Rietz, Curator, National Museum of Science and Technology.

Kerstin Fernheden, former Research Manager, Jernkontoret.

Anders Houltz, Docent and researcher in industrial heritage research, active at KTH (Royal Institute of Technology) and BTH (Blekinge Institute of Technology).

Anders Johnsson, Museum Director, the County Museum of Gävleborg.

Elisabeth Källgren, Research Assistant, Jernkontoret.

Anna Lindgren, Chair of the Project Committee, Head of Department for the Swedish Transport Administration's museums.

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Helene Sjunnesson, Ph. Lic. in industrial heritage research and former Head of Department, the National Museum of Science and Technology; member of Jernkontoret's Historical Metallurgy Group and the Swedish Forest Industries (Skogsindustrierna) Federation's historical committee.

Do you wish to document and record an industry or an industrial activity, yet remain uncertain of the positive effects that it can deliver? Do you represent an industrial company and now need to make a decision concerning a possible documentation project with other interested parties? You may, on the other hand, be working in the heritage sector or be actively engaged in some society or association such as a local history group. The pace of change and development in industry is unceasing – this means that the task of industrial documentation is always a pressing matter. In view of this challenge, we are keen to offer you inspiration and to provide you with sound advice in this area. With this in mind, we very much hope that this book can be of some help in your work.

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LÄNSMUSEET GÄVLEBORG

OVAKO

SVERIGES JÄRNVÄGSMUSEUM
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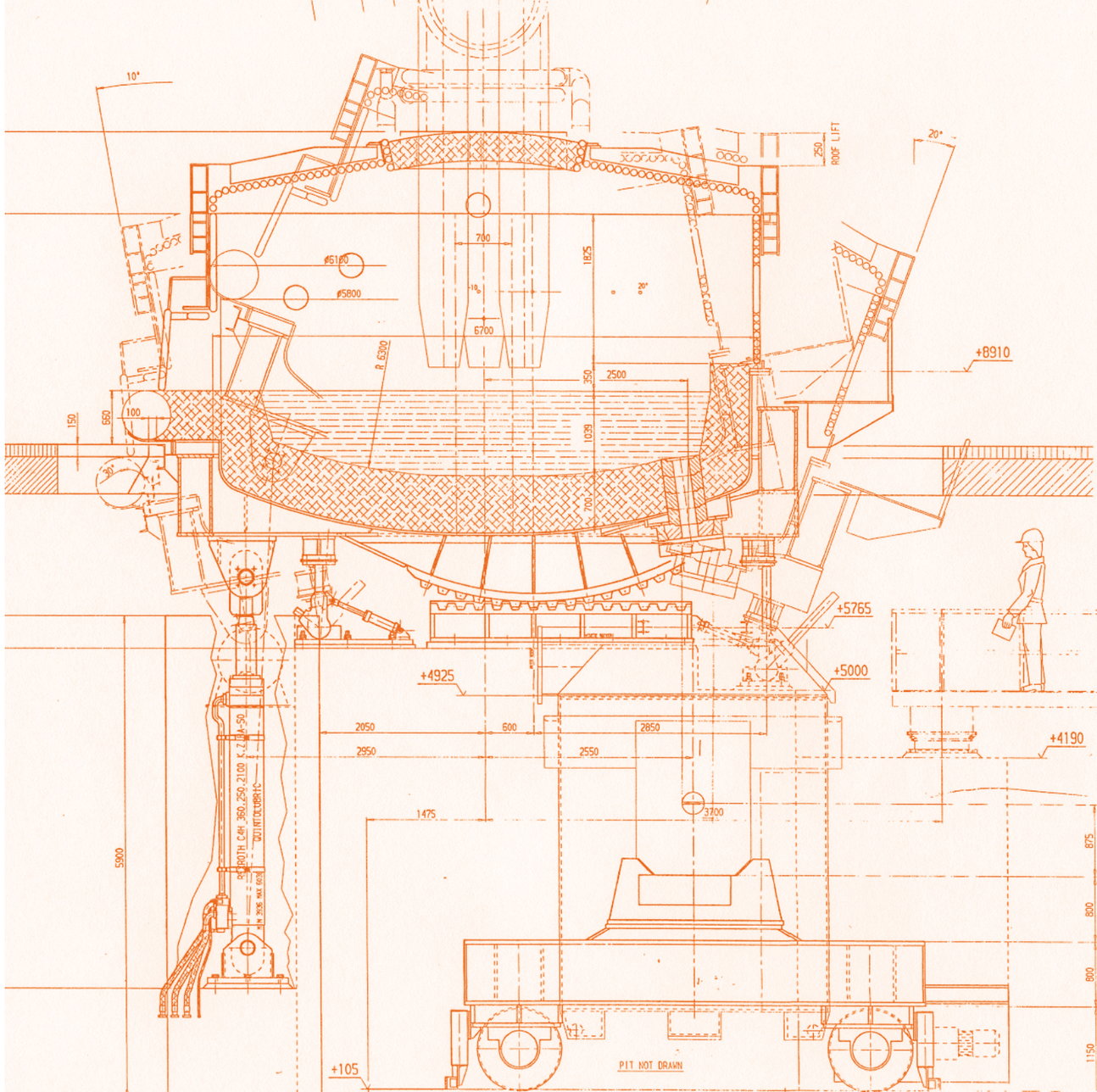
RIKSANTIKVARIEÄMBETET

CENTRUM FÖR NÄRINGSLIVSHISTORIA

Skogs Industrierna

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