

# **The Cremation Furnaces of Auschwitz**

A Technical and Historical Study

Part 1: History and Technology

**By Carlo Mattogno**

With Contributions by Dr.-Ing. Franco Deana



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*Part 1: History and Technology*

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## Preface

The problem of the cremations at Auschwitz – one of the most important and still unresolved questions in the orthodox historiography of that camp – started to come out of the general hysteria to which it had been relegated for decades and to take on some scientific qualities only in 1989, thanks to Jean-Claude Pressac (Pressac 1989). The merits of the French researcher, however, stopped there: while he did indeed try to approach the problem from a scientific standpoint, his argumentative procedure and his conclusions make a rigorous scientific treatment of the matter all the more pressing (cf. Mattogno 2010, esp. chapter 9); his severe lack of technical training shows through also in his second work on Auschwitz (Pressac 1993; cf. Mattogno 2011).

This deficiency has become even more serious, because now that Pressac is no longer with us, the problem of the Auschwitz cremations has relapsed into the propagandistic hysteria of the immediate post-war years, as is highlighted by a number of pseudo-scientific works on the issue:

- The first case in point is Robert Jan van Pelt's study on *Auschwitz* (van Pelt 2002), which I have dealt with thoroughly elsewhere (Mattogno 2010, esp. chapter 12).
- The collective work by Assmann *et al.* of the same year about the Topf company, which had supplied the cremation furnaces for Auschwitz, is absolutely devoid of any technical and scientific character and supplies no new information on the Topf furnaces at Auschwitz (Assmann/Hiddemann/Schwarzenberger 2002).
- The recent *Encyclopedia of Cremation* (Davies/Mates 2005), though claiming to be scientific, devotes to "Auschwitz" one purely propagandistic page (p. 66) which is based on the works of Danuta Czech, Franciszek Piper and Jean-Claude Pressac!
- Just as inconsistent are the pages which Norbert Fischer devoted to Auschwitz and the other German concentration camps in a text on cremations in Germany (Fischer 1996, ch. 5.3b, pp. 260-265).

The only really substantial source is the website on Topf, which provides various significant documents ([www.TopfundSoehne.de](http://www.TopfundSoehne.de)).

Personally, I started to become generally involved in the study of cremations in the summer of 1987. The following year brought the onset of the valuable cooperation with Franco Deana, doctor of engineering, which was essential for the technical foundation of this study. In the intensive correspondence that ensued, he has always been a rich source of explanations and of technical arguments for the many points of discussion. His name must therefore stand on the front page of this work, together with that of the author. Sadly, Franco Deana passed away in 2005. Just as precious has been the support of the German engineer H.N. who unfortunately passed away already in 1991. Thanks to him, as well as others, I

was able to visit, for the first time, the camps of Buchenwald, Dachau, Mau-thausen and Gusen.

Initially my studies centered upon such technical problems as the duration of the cremation process and the corresponding requirements for fuel. The publication of Pressac's first book in 1989 prompted me to widen the perspective of my approach and to include the historical context as well.

When the work had been completed in 1993, Pressac, in his second book, brought to light the enormous amount of documentary evidence concerning the Auschwitz crematoria that had been preserved in the Moscow archives of Vi-borgskaya. An update of my study on the basis of the new documents that Pressac had identified (some of which I had already seen as copies in the Auschwitz Museum's archive) appeared a year later (Gauss 1994, pp. 281-320).

In 1995, together with Jürgen Graf and the late Russell Granata, I was able to view, in the Moscow archives, the collection of some 88,200 pages of documents stemming from the Auschwitz Central Construction Office (*Zentralbauleitung*). The collection contains a massive correspondence between that office and the Topf & Söhne Company of Erfurt, which had built the Auschwitz cremation furnaces. In 1997 and 1998 I found further important documents in Poland and Holland. In the spring of 1999 I visited, among many other sites, the Museum and the crematorium at Terezín (Theresienstadt), which both turned out to be of considerable importance for the purposes of the problem dealt with here. During the summer of that year I examined the files kept in the municipal archives of the city of Erfurt which, since 5 August 1996, has been preserving a highly informative documentation on all the activities of the Topf Co., not limited to the mere question of crematoria. An overview of this documentation was published as an article in 2000 (Gauss 2000, pp. 373-412; Rudolf 2003, ditto) and a more extensive summary followed in 2009 (Mattoigno 2009, pp. 210-294; English 2010, 229-320).

With the passage of time, the initial scope of the study broadened considerably, both into the historical domain and into the field of technology, and a publication in separate volumes thus became necessary: one for the text as such (the present Part 1) and the two others for the corresponding voluminous documents (Part 2, in black & white) and the photographs (Part 3, in color).

Various difficulties and obstacles have delayed the publication of this study until today. In the meantime, though, I have continued to search for and collect more sources and documents.

The cremation furnaces of Auschwitz, fired by means of coke-fed gasifiers, constituted a development – or rather a simplification – of the civilian types; however (as I found out in the early stages of my work) it is difficult to locate detailed information on these furnaces even in the specialized literature. I therefore decided to place, at the head of the specific topic of the present study, a rigorous introductory treatment of those furnaces as Section I of Part 1 of this study.

Furthermore, in view of the fact that cremation furnaces are, fundamentally speaking, nothing but combustion devices, I felt that it would be helpful for the reader to become, on the one hand, acquainted with the general principles of combustion technology and the chemical processes which come into play during a cremation, and on the other hand with the theoretical and structural principles of

a cremation furnace with a coke-fed gasifier, supplemented by a detailed description of its structure and its operation. In this way the reader will come to a better understanding of cremation technology, and a better ability to evaluate the Holocaust accounts of cremations at Auschwitz.

Finally, as the Auschwitz cremation furnaces were products of the technology of their era, I felt that it would be useful to present an overview of the history of cremation in modern times with a particular emphasis on furnaces with coke-fed gasifiers such as those at Auschwitz, but without leaving aside systems based on other energy sources – gas, naphtha (oil) or electricity. In this way the reader can appreciate the technological development of these combustion devices from the latter decades of the 19th century through the Second World War, with all the technical problems which had to be solved. This historical presentation of cremation furnaces is complemented by a parallel study of devices for mass cremations for sanitary and hygienic reasons (in connection with wars or epidemics) and finds its conclusion in a brief analysis of the cremation furnaces of today.

The scientific cremation experiments carried out in Germany (and in Switzerland) at the end of the 1920s provide us with a solid experimental basis for tackling and resolving the essential questions of the duration and the corresponding fuel consumption for a cremation in a cremation furnace with a coke-fed gasifier; these aspects will be analyzed in detail in two specific chapters.

Aiming for a comprehensive presentation of the subject of this book, I have not neglected the legal and statistical aspects of cremation, especially for the case of Germany. The above topics are presented in Section I of the present volume; by their very nature, these topics extend into the present, therefore the treatment of the problems will often refer to our day and age, especially when it comes to the description of the various devices.

In Section II, I have primarily outlined the activities of the Topf company in the field of the design and construction of civilian cremation furnaces and other combustion devices, describing in detail the structure and the operation of the various types of Topf cremation furnaces, heated by means of coke, gas or electricity. I have also presented the numerous patents (and patent applications) granted, acquired or filed between the 1920s and the 1950s.

After this general introduction concerning the Topf line of cremation furnaces for civilian use, I have taken up the cremation devices which the company supplied or designed for the concentration camps, starting with those for Dachau and Gusen (furnaces with two muffles, *i.e.* cremation chambers, heated with oil (naphtha) and later converted to coke).

At this point we enter the core topic of the present work, which begins with a documented history of the construction of cremation furnaces at Auschwitz-Birkenau. It is followed by a detailed technical description of the structure and the operation of these devices – the furnaces with two, three and eight muffles – and a survey of the Topf projects for mass incineration in that camp.

The three fundamental questions – the duration of the cremation process, the capacity of the furnaces and the fuel consumption – will then be treated for the Topf cremation furnaces at Auschwitz-Birkenau in a scientifically rigorous fashion on the basis of a wide variety of documents.

For the determination of the duration of the cremation process, I have based myself primarily on experimental data, in particular those resulting from the cremation experiments with a coke-fired furnace undertaken by the engineer R. Kessler in Germany at the end of the 1920s and those stemming from the experiments with a gas-fired furnace done by Dr. E. Jones in England in the 1970s, as well as on the detailed description of 15 cremations carried out in a modern gas-fired furnace as part of a study in forensic medicine.

I have also taken into account a large portion of a list of cremations at Gusen and the nearly complete list of cremations at the Westerbork crematorium. The name lists of cremations in the Terezín (Theresienstadt) crematorium (a vast sampling of 717 cremations carried out between 3 October and 15 November 1943, over 41 days of operation) furnish us, moreover, with a very useful account inasmuch as the average duration resulting for these cases constitutes the lower documented limit that could be achieved in the cremation devices of that period.

The result of the study – that the average duration of the cremation process was one hour – is confirmed also by the statements given by the Topf engineer Kurt Prüfer, the designer of the furnaces with three and with eight muffles, and by Karl Schultze, who had designed and built the blower for the former.

The section dealing with the capacity of the crematoria at Auschwitz-Birkenau contains a preliminary evaluation of the limits to the continuous operation of the devices (imposed by the unavoidable formation and the necessary removal of slag from the hearth) and to the loading of the muffles, *i.e.* an evaluation of the possibility of burning simultaneously, in a useful manner, more than one corpse in one muffle. This possibility is ruled out on the basis of experimental data (tests run in the crematoria at Westerbork and Gusen, as well as in slaughterhouses).

The Topf furnaces at Auschwitz-Birkenau were designed for individual cremations, and attempts at extending their technical limits provided no advantage with respect to the economy of the cremation. The Polish and Soviet expert reports on the coke-fired cremation furnaces of the Lublin-Majdanek, Sachsenhausen and Stutthof concentration camps, which are presented here for the first time in English translation and with their propagandistic embellishments removed, supply us with an indirect confirmation of this view.

In the present treatise I have not limited myself to the mere verification of numerical data, but I have also examined the historical question of the purpose of the design and the construction of the crematoria furnaces at Auschwitz-Birkenau.

The heat balance – *i.e.* the calculation of the coke consumption of the furnaces – is based on a sound experimental footing: the consumption of the Topf double-muffle furnace in the crematorium at Gusen with its average consumption of 30.6 kg of coke for 677 individual cremations. Compared to my summary of 1994 (Gauss 1994 pp. 281-320), the heat balance presented today has a foundation which is methodically superior: whereas the former was based on a theoretical calculation corrected for the experimental data of the Gusen furnace, the balance offered here analyzes and explains those very data which constitute the departure point of the calculation; this has led to results diverging from those previously

published, but to an almost insignificant degree (the standard deviation is less than 8%).

The calculation takes into account the technical data concerning coke, the furnaces (with a detailed computation of the hourly heat loss by radiation and conduction of the Gusen furnace and of the double- and triple-muffle furnaces at Auschwitz-Birkenau) and the corpses, which are divided into three types: normal, average and lean. The fuel consumption (including total combustion air, theoretical air consumption and excess air) is derived for each type of furnace and for each type of corpse.

The analysis of the thermal balance of the Auschwitz-Birkenau furnaces, moreover, evidences a design error for the triple muffle furnace, on account of which the combustion gases fed to or forming in the central muffle did not have enough dwell time to burn completely but were sucked up by the chimney draft and finished burning in the flue ducts. This phenomenon caused serious damage to the refractory lining of the flue ducts and of the chimney of Crematorium II at Birkenau in March 1943.

But could this surge of flames also show on the outside and produce the phenomenon of flaming chimneys? On the basis of calculations, these flames should have exhausted themselves within the smoke ducts of the crematoria. However, in order to verify this experimentally, I have conducted two experiments with animal grease in a simple furnace I built for the purpose. The experimental results fully bore out the theoretical data.

For a better judgment regarding the Topf cremation furnaces at Auschwitz-Birkenau I have also made an extensive analysis of the oil- and coke-fired furnaces supplied to the concentration camps by Topf's major competitor, the Hans Kori Co. of Berlin, as well as those installed at the Terezín camp by Ignis-Hüttenbau Co., undoubtedly the most efficient devices built anywhere in Europe in the 1940s.

The final problem dealt with in Section II concerns the legal dispositions regarding the cremations in the concentration camps and the compatibility of the furnaces in use there with those requirements. In that context, I have quoted *in extenso* the important "Decree concerning the conduct of cremations in the crematorium of the Sachsenhausen concentration camp" issued by Himmler on 28 February 1940, showing that – initially at least – the customary use of coffins and urns for the ashes was the rule.

To make the text more easily readable, I have added an Appendix which contains the long lists of cremation statistics for Westerbork and Terezín (altogether 41 tables), a synopsis of the activities of the Topf Co. at Auschwitz-Birkenau, and a list of the patents as well as patent applications and patent descriptions of the Topf Co.

As the translation of German technical terms in the field of furnace technology sometimes presents difficulties even for persons fluent in the language, I have added a glossary, which also contains the essential explanations. As far as the administrative terms which appear in this work are concerned, I refer the reader to the glossary of my study on the Central Construction Office at Auschwitz (Mattoigno 2005, pp. 163-172).

The present work is strictly based on unimpeachable primary sources. Published sources are listed in the bibliography, whereas the documentary references are given in the footnotes.

I have, above all, brought together the German historical and technical literature which exists on this subject, supplementing it with the patents concerning civilian systems to the extent that such documents still exist (many have been lost on account of Allied air raids). At the same time I have been in touch with various manufacturers of cremation equipment and have personally visited several crematoria in Italy and France.

For a better understanding of the functioning of the Topf and the Kori systems, I have studied the available German documents, especially those of the Central Construction Office at Auschwitz as well as other documents preserved in various European archives. As a result, Part 2 of this study contains 300 documents, many of which heretofore unpublished or unknown even to specialists. The first 109 documents concern civilian cremation systems, nos. 110 through 162 refer to the civilian activities of the Topf Co., and under nos. 163 through 300, finally, we have a selection of the most important documents regarding the Topf cremation systems at Mauthausen, Gusen, Buchenwald and Auschwitz-Birkenau (plans, drawings, proposals, cost estimates, shipping documents, invoices, operating instructions, diagrams etc.), regarding the Kori systems in the camps mentioned (especially original drawings and very detailed drawings prepared by the Soviet experts), regarding technical and administrative questions, and on the bureaucratic formalities for cremations in the concentration camps.

In addition to my archival studies, I have also inspected and taken photos of devices still existing in German concentration camps at:

- Auschwitz: 2 double-muffle Topf furnaces poorly rebuilt by the Poles; the mobile oil-fired Kori furnace;
- Buchenwald: 2 coke-fired triple-muffle Topf furnaces (one adapted for optional use with oil) identical to those installed in Crematoria II and III at Birkenau;
- Dachau: 1 double-muffle coke-fired Topf furnace, originally a mobile furnace fired with oil; 4 coke-fired Kori furnaces;
- Gusen: 1 double-muffle coke-fired Topf furnace, originally a mobile furnace fired with oil;
- Mauthausen: 1 double-muffle coke-fired furnace identical to the 3 double-muffle furnaces installed at Crematorium 1 of the Auschwitz main camp: 1 coke-fired Kori furnace;
- Gross-Rosen: 1 mobile oil-fired Kori furnace;
- Lublin: 5 coke-fired Kori furnaces; 1 mobile naphtha-fired Kori furnace;
- Stutthof: 2 coke-fired Kori furnaces; 1 mobile oil-fired Kori furnace;
- Terezin: 4 stationary oil-fired Ignis-Hüttenbau furnaces.

In Part 3 of this work I have extensively illustrated the description of these devices with 370 photos – most of them in color – divided into twelve sections, each one corresponding to a specific device. This collection contains illustrations of devices heretofore unknown (the furnaces of the Terezin crematorium Photos 345-362) or unfamiliar even to specialists, such as the photos of the furnaces at

Gusen (Photos 1-35), Gross-Rosen (Photos 332-334), Stutthof (Photos 270-284 and 328f.), as well as Lublin-Majdanek (Photos 285-327). However, even the photos of the well-known devices constitute a relevant contribution inasmuch as they depict, for the first time, the essential components of these units, which is indispensable for an understanding of their structure and their way of operation.

Although intended mainly for the specialist, this three-volume study will also allow the interested layman to become acquainted with the problems treated here; even though he may not have the specific prerequisites in this field, he will thus be given all the tools needed for a verification of the soundness of the conclusions drawn.

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