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Paper Title:

**EXTRUSION, ASSEMBLAGE,
JOINT AND CONNECTION
IN THE WORKSHOP FOR GAS PRODUCTION
BY GIUSEPPE TERRAGNI**

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Abstract:

Turning over the catalogues' pages of the first show of rational architecture, the strongly contrasting pictures of the model presented by Terragni remain impressive. The project for a <<Workshop for Gas Production>>, designed by the 23 year old architect from Como, reveals the presence of an early talent and the originality of his research. Although inspired by the contemporary European architecture, the work of Terragni does not attempt to academically repeat former precedents. Although Terragni's project and many among the other exhibited works share an analogy of forms, the syntax of the Como architect appears more mature and complex. This essay and the accompanying original drawings are dedicated to the de-constructivist nature of the design operations as well as to the clarification of the messages embodied in the specific program.

The Thematic Choice

The room of <<Gruppo 7>> at the first show of rational architecture, held in the Palace of Exhibition of Rome in the spring of 1928, exhibited a number of proposals similar to those presented the previous year at the III Biennale of Arti Figurative of Monza [1]. The staging of the exhibition displayed the projects by the pioneers of Italian modern architecture in a compact and unified setting. Although the design proposals differed in depth, the architects seemed to have unanimously described the potential of substituting the traditional architecture with objects inspired by the new spirit. The building masses were articulated in contrasting volumes, the treatments of the exterior surfaces answered to the interior functions, the materials - iron, glass, reinforced concrete - were proudly exposed and not buried under layers of stucco.

Functional programs replaced the experiential ones and describe, at the moment only through the strength of the objects, a different and modern city: the exposition of low income housing studies, public services, and industrial buildings. [2]

Terragni focuses on the last of these programs, deciding to give public importance to two of his industrial building designs: the Workshop for Gas Production and the design for a Pipe Foundry [3].

Terragni's insistence on the industrial theme, which creates his presence in the exhibition, is not accidental. The functional destination of the architecture is the tool for creating a direct connection with the short history of artistic vanguard on the one hand, and with the affirmations of the European architectural culture with its late national echoes on the other.

Terragni is evidently familiar with the thesis that Minnucci supported in 1926 in one of the most important specialized architectural magazine [4].

The first examples of rationalistic European architecture were circulated in Italy through the writings in *L'architettura e l'estetica degli edifici industriali* ('Architecture and Aesthetics of Industrial Buildings').

The author attempted to penetrate a cultural environment which was only advanced to the point of the *pastiche* of the <<Novocento>> movement. His thesis proposed that the industrial building provided an evident advantage over the plastic articulation of modern architecture and the consequent functionalism of its formal and academic solutions.

"Construction is not always architecture, but decoration is never architecture. Construction is one of the best tools to achieve particular effects.

These ideas have suggested the possibility of comprehending, and therefore the possibility of creating, a new aesthetic that for this specific character which we may call an *industrial* one. Perhaps the most sincere expression of our times is the architecture of the new buildings for industry which exemplify the departure of every romanticism and anecdotic sentimentalism which created completely useless details and ornaments" [5].

In the proposal of an architecture based on an industrial brief, Terragni *de facto* tends to associate his work with the connotations of 'credibility and realism' within the emerging framework of the new architecture. The realism of the project is also confirmed by the existence of a real client and its specific location on the periphery of Como [6]

At the same time, it is evident that this project for a workshop - designed a little more than a decade later than the projects of Sant'Elia - creates a connection with the other Como architect and with the drawings by Chiattoni. Terragni wants to disassociate himself from the "disruptive fury" of the artistic vanguard "that came before us [7]", although there is a recollection of Sant'Elia in the choice of the object and the design interpretations.

The major difference that Terragni wants to make evident in the design as well as in the writings, is the capability of the modern architecture to give a concrete answer to the themes present in the Italian society at the end of twenties.

This attitude is confirmed by the architecture of Gropius for the Fagus and by the two chapters full of images of frame-bridges, elevators, silos and factories of his bible [8] and above all, by the most important work shown at the 1928 exhibit. The Fiat Lingotto symbolized the possibilities of the new architecture and gave evident proof of the capability of this architecture to face and solve the new functional themes [9].

The industrial option of this work builds vital connections between the activity of Terragni and the prevalent theme of the moment in Italy. Although this is a secondary aspect to the primary importance of the project, it is evident that Terragni reveals, since this first public show, an operative intelligence and an intuition of the specific aspect of the historical moment which repeatedly occurs in the following 15 years of activity.

De-Construction

The Workshop for Gas Production is not an imaginary project, a formal exercise on the industrial theme. As it has been said, the project is located on a specific area and commissioned by a real client. Although the design materials that have been preserved (perspectives, pictures of the model and plans) do not reach working drawing completion, it is evident that the study is based on a realistic functional and distribution program.

The project is articulated in four different bodies that through their separation reveal the different functions they are serving.

The first - with a clog shape - contains the coal deposit, the second - composed by several volumes among which the most characteristics is a tower with a tank on top - contains the ovens, the third - with a semi-cylinder section - contains the machines and the fourth - two-stories high - the offices [10].

The different bodies appear, upon first observation, autonomously conceived.

The ideation of the first body is related to the research of expressive emphasis on the volume. The affirmations of Le Corbusier about the strength of simple forms are echoed here. The rhomboid section chosen as the matrix of this object is close to the contemporaneous constructivist themes [11]. This shape has a continuity in the vocabulary of modern architecture, for example, the University of Leicester by Stirling.

The design action which creates the object is the <<extrusion>>: the volume's individuality is affirmed through the separation from the ground floor. The pilaster grid which supports the volume is not an element of semantic weight comparable to the volume: this grid is, on the contrary, the *mean* through which the emphasis of the volume is realized.

The definition of the second body follows an operation of <<assemblage>>: the pieces, volumetrically distinct, are combined together creating three parts: two parallelepiped, for the ovens and one composite for the tower. The treatments of the surfaces of the parallelepiped contained in the void corners of the tower, seem to suggest a continuous glass wall - which recalls the Fagus, delimited by horizontal bands similar to solutions adopted by Fahrenkamp [12].

The second parallelepiped element, lower than the other, reveals a formal theme which will be typical of the mature Terragni by the characterization of the facade through the frame structure. In this project the separation between frame and building does not exist, as it will be typical of his following works in Milan and later developed in its last instances by Cattaneo. Nonetheless, Terragni presents the same independence between the grid of the frame and the volumetric mass that will later be adopted in the facade on the piazza of the Casa del Fascio.

The composition of the tower - the third element which constitutes the second body, is the result of the 90 degree angle created by the two vertical walls which support a cylinder. Here, the theme of <<assemblage>> (the cylinder on the intersecting walls) is complexified through the joints of a few elements created by the circular ring atop the two walls forming the cross support.

The development of the theme of the <<joint>>, which is present in a minor way in the tower, has a complete application in the definition of the third body. Six walls, which recall the serial composition of Balla and are often used by Sant'Elia, are joined with the central barrel shaped nucleus. The resulting volume is closed by a 'C' structure showing the two heads of the vaulted volume and revealing the joint operation that has been performed.

The fourth body of the office appears to be the most simple one. The volume is carved in order to create the slots for the horizontal window expanse. The volumes of the two levels are treated as independent entities through their reciprocal sliding.

The strongest aspect defining this building is the shape of the floors in its final stage. These floors describe a quarter of the circumference linking the building to the machine room.

This gesture reveals that the generating force of this building is not internal - as it happens in the other cases - but it is generated by a will of <<connection>>. In trying to assemble the pieces created, beside the *pensiline* put in place for that purpose, Terragni felt the need to deform the object dimensionally less important at the light of the overall composition. Through its longitudinal shape, this building dynamically ties the machine room and the coal deposit. The horizontality of the tie is figurally interrupted - at the half of its longitudinal development- by the vertical axis of the tower located in the second body.

Conclusion

In this project Terragni uses four design devices for the four objects: <<extrusion>>, <<assemblage>>, <<joint>> and <<connection>>. In the composition of the volumes we find an original system, all 'a la Terragni'. This is not a constructivist syntax, as the objects maintain a separation which is foreign to the 'unity in the diversity' of the constructivism. This is not an approach of Gropius because the buildings, although they invade the dimension of the perception in time, are too strong in themselves to avert the story of their autonomous existence. This is not a Corbusian approach because the existence of the volumes is subject to the two previous inspirations which result indissolubly merged with it.

In this case, the syntax that guides the composition is the subtle relation between the autonomy of the pieces (the coal deposit, the tower and the room of machines) and their assemblage or joint. The capability proven by Terragni is that of solving the implicit contradiction in the combination of the two approaches through a disposition of the shapes in the space in a calibrated asymmetrical way.

Already in this first work, it has been possible to verify a consistent characteristic of the architect by the combination and successive contamination of the compositional systems at the light of a vision which overcomes the rules of origins transformed and re-interpreted.

Note concerning the use of the computer

This unbuilt but significant project has been re-created as a three-dimensional model on a Macintosh Plus computer using a three-dimensional modeling package (Pro3d Enabling Technologies) and a two-dimensional vector-based package (Mac Draw for the Apple Macintosh).

The re-creation of the project enabled the author to conceptualize the design rules used by Terragni. The result of the operation is three fold: first of all, it provides views of this project previously unknown by scholars; secondly, it facilitates the preparation of analytical drawings which emphasize the design process, and thirdly provides input for the de-construction narrative aspect of the article.

No mention of the technical aspect of the work was included in the published article in order to avoid overlapping the 'results' with the 'process'.

An interactive computer story is available focussing on this Terragni project. The story combines four basic materials: 1. The text of the article, 2. Explanatory animations, 3. Database with sources 4. Tri-dimensional files. As the analysis develops, the different materials are activated within an HyperCard stack.

[1] *Catalogo della I esposizione Italiana di Architettura razionale*, De Alberti, Roma 1928. Republished with a large anthology of the debate during those years in: Michele Cennamo, *Materiali per l'analisi dell'architettura moderna*, Fiorentino, Napoli, 1973.

For the Exhibition of Monza, moved to Milan in 1933, see Giacomo Polin, *La Triennale di Milano 1923-1947*, <<Rassegna>> n.10, 1982. In 1976 the <<Workshop for Gas Production>> has been exhibited, as further proof of its relevance, at the <<Biennale>> of Venice in the section coordinated by Silvia Danesi e Luciano Patetta. Pictures of the model rebuilt for the occasion are published in the catalogue edited by the coordinators of the *exhibit Il razionalismo e l'architettura in Italia durante il fascismo*, Edizioni La Biennale di Venezia, Venezia 1976.

[2] Luigi Figini and Gino Polfini exhibited a garage for 500 cars, a communal building for workers and a temporary reclame pavilion; Guido Frette exhibited a temporary pavilion and a standard small house; Silvio Larco and Carlo Rava a project for an hotel, a newspaper building, an office building and a series of house types changing for dimensions and social destination. The same project was exhibited by Adalberto Libera who also exhibited a small hotel, several pavilions, a system of terraces, a movie theater and an entry structure, which was the only <<representative>> theme as an exception to the generally utilitarian themes of the show.

[3] The third work, exhibited by Terragni only through drawings, is the Novocomun. (on this work see my recent article *Un vero transatlantico, Il Novocomun di Giuseppe Terragni* <<L'Architettura cronache e storia>> XXXIV, #12, December 1988). On the project for a Tube foundry we will not stop: the location of the functions in different volumes allows a free articulation of the volumes, at the same time, in this project design elements do not exist which differentiate it from the other similar projects presented at the exhibition, with the exception of the aspect mentioned by Bruno Zevi, (*Giuseppe Terragni*, Zanichelli, Bologna, 1980) concerning the futuristic inspiration of the presentation drawings.

[4] See Gaetano Minnucci, *L'architettura e l'estetica degli edifici industriali*, <<Architettura e Arti decorative>>, July-August 1926 #.11-12.

[5] G.Minnucci, cit. n.4., page 492. One can clearly notice the intellectual equilibrium of Minucci who must write in the magazine directed by di Giovannoni e Piacentini containing the adjective <<decorative>> even in the title.

[6] << Commissioned by Giovanni Verga, an engineer son of the director of the gas firm of Como and close friend of Terragni, the design for the new workshop is born on a realistic level very different from the didactic demonstrative of other projects and of the <<Foundry of Tubes>>. The characteristic of constructibility was favored by the young Terragni>> (Giacomo Polin, *Il superomismo di Terragni giovane*, <<Rassegna>>, special issue edited by Daniele Vitale, #.11-12,1982.

[7] The articles of <<Gruppo 7>>, originally published in 1926 and 1927 in <<Rassegna Italiana>> are integrally re-published in Cennamo cit. n.l.

[8] Le Corbusier, *Vers une Architecture*, Paris, 1923.

[9] In this effort, not only linguistically but also thematically, Terragni is not alone. In the same section of the <<Gruppo 7>> Luigi Figini and Gino Pollini exhibited a garage for 500 cars which appeared similar to the formal research of the German rationalism and common service building for workers. The attention to the industrial theme is repeated in a minor key in other project exhibited in the show, but Terragni seem the only among the young architects to understand the real actuality of the theme.

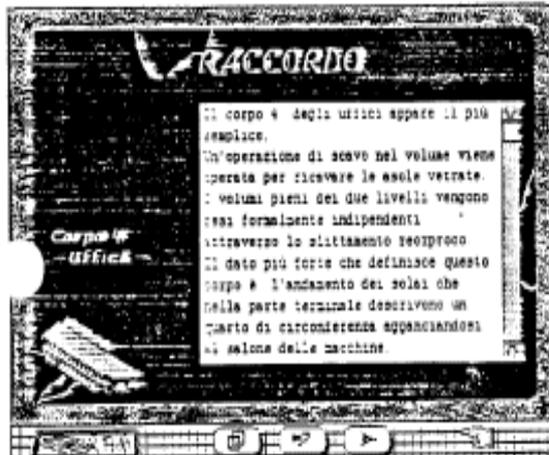
[10] The functional description is derived from a synthesis - plausible from my standpoint - between the indication given by Terragni in the drawings and those not coinciding given by Polin - cit. n.6 - e Enrico Mantero, *Il razionalismo italiano*, Zanichelli, Bologna, 1984.

[11] More or less contemporary is the building by K.C. Melnikov, for the Rusakov worker center in Moscow.

[12] See Minnucci cit. n.4., page 501.

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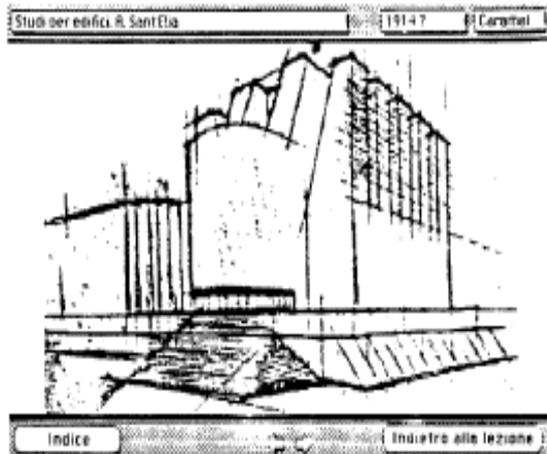
Originally published in Italian: <<L'Architettura cronache e storia>> XXXIV #5, May 1988, pp.374-378. Distributed in 100 copies as <<Work in progress, a report of the ECAADE>> 89/3



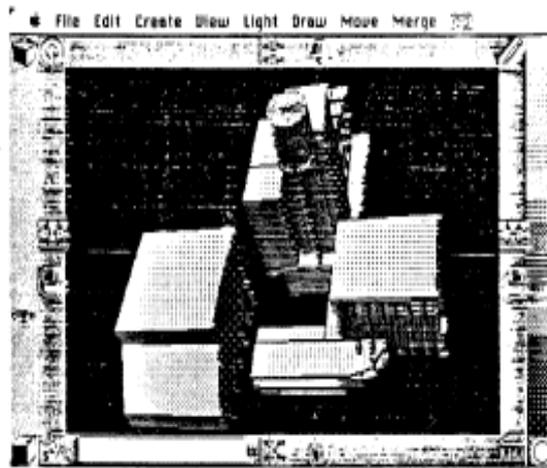
HyperCard screen. The screen above: 1 direct 3D exploration, 2 explanatory animation, 3 perspective image, 4 database screen.



HyperCard screen. The screen above: 1 direct 3D exploration, 2 explanatory animation, 3 perspective image, 4 database screen.



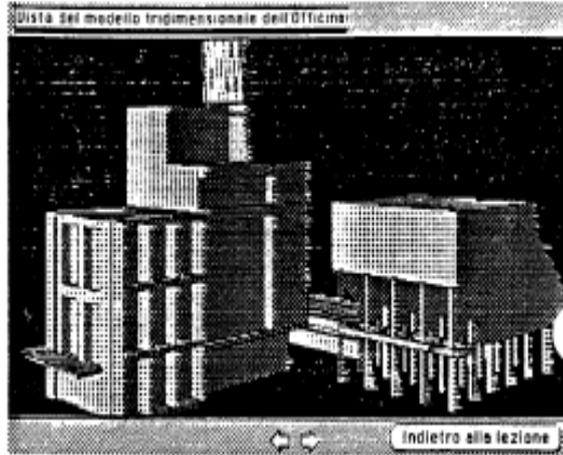
HyperCard screen. Database view.



Clip3D Direct 3D exploration/animation.



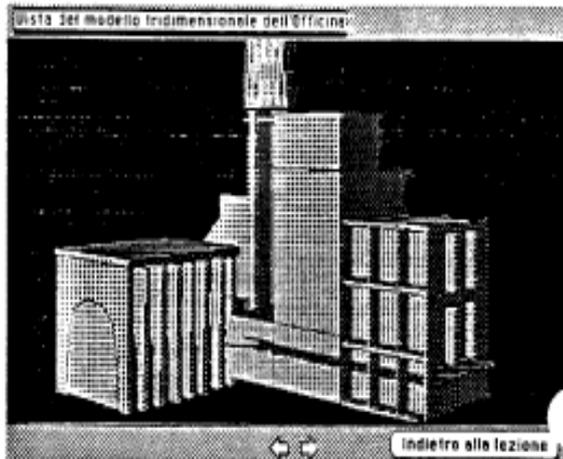
Hypercard screen. Each button brings to a desired analysis



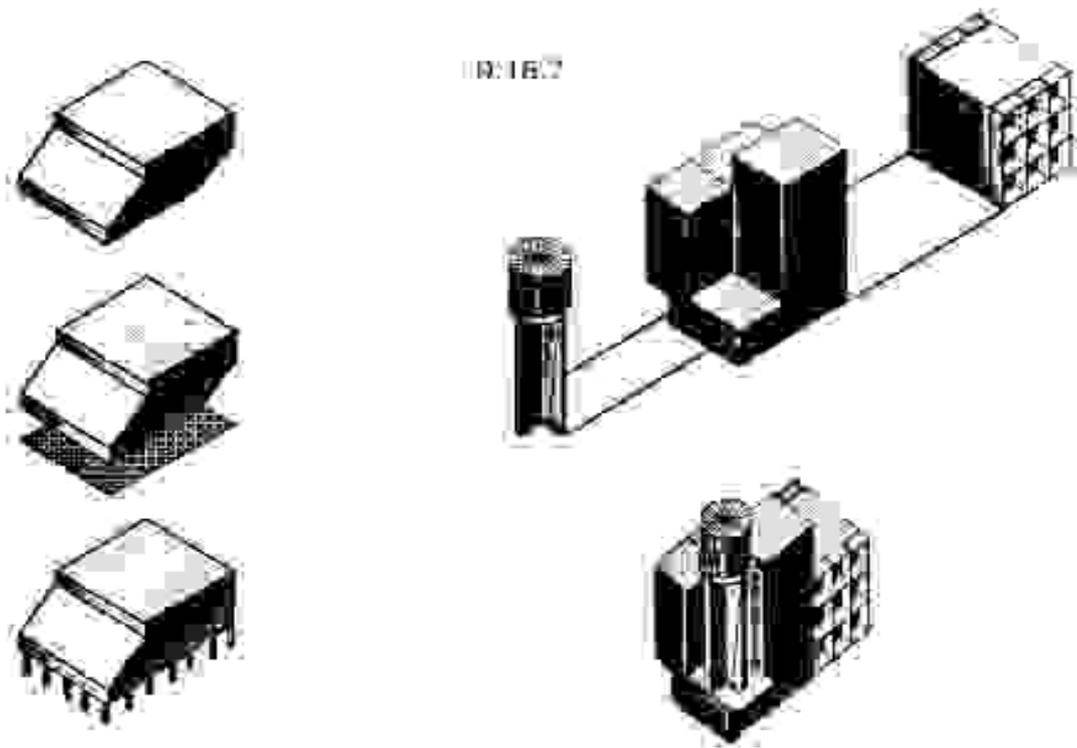
Hypercard screen. Perspective



Hypercard screen. The buttons allow: 1 direct 3D exploration, 2 exploratory animation, 3 perspective image, 4 detailed access.

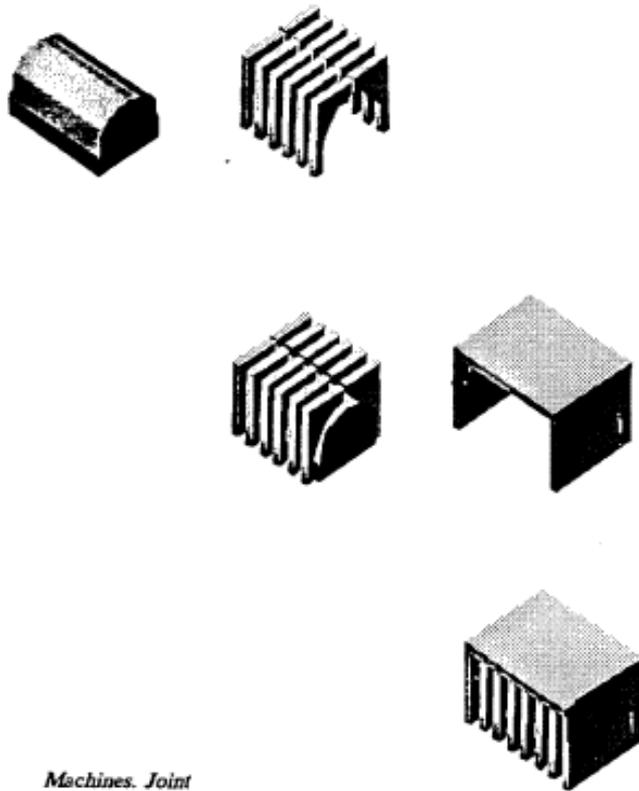


Hypercard screen. Perspective

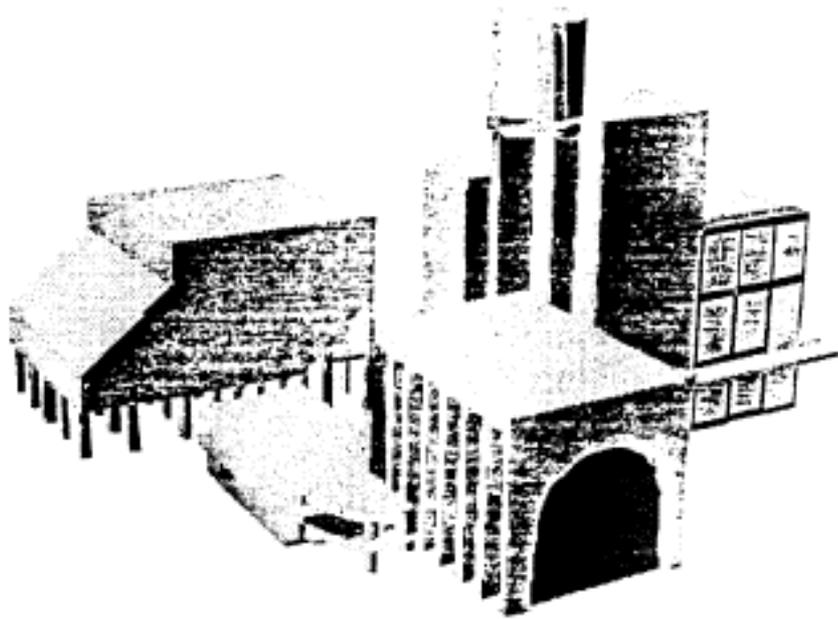


Coal deposit. Extrusion

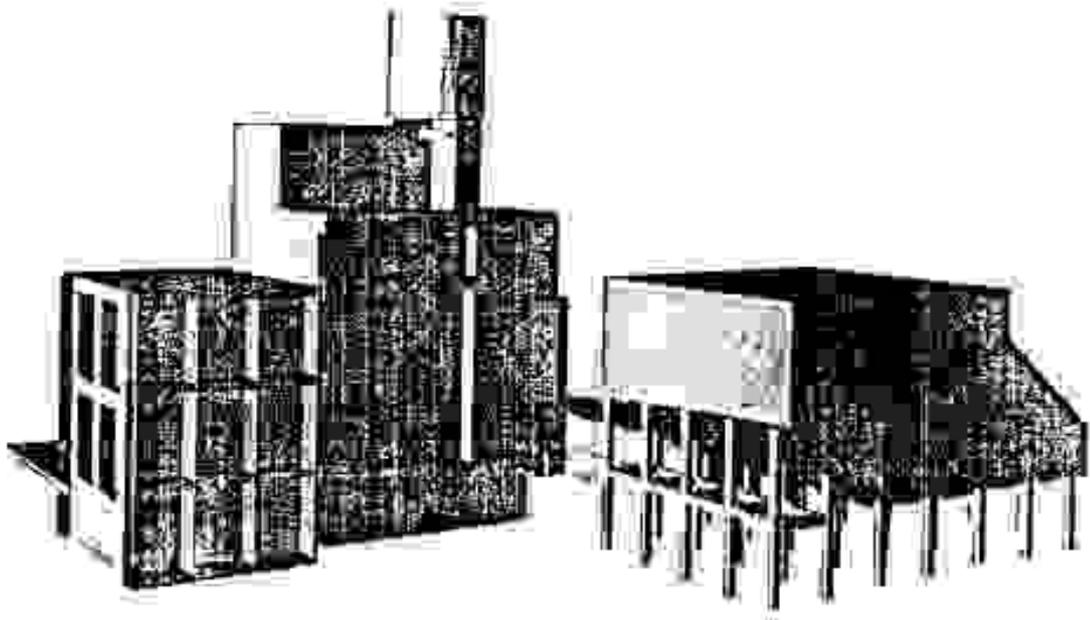
Ovens. Assemblage



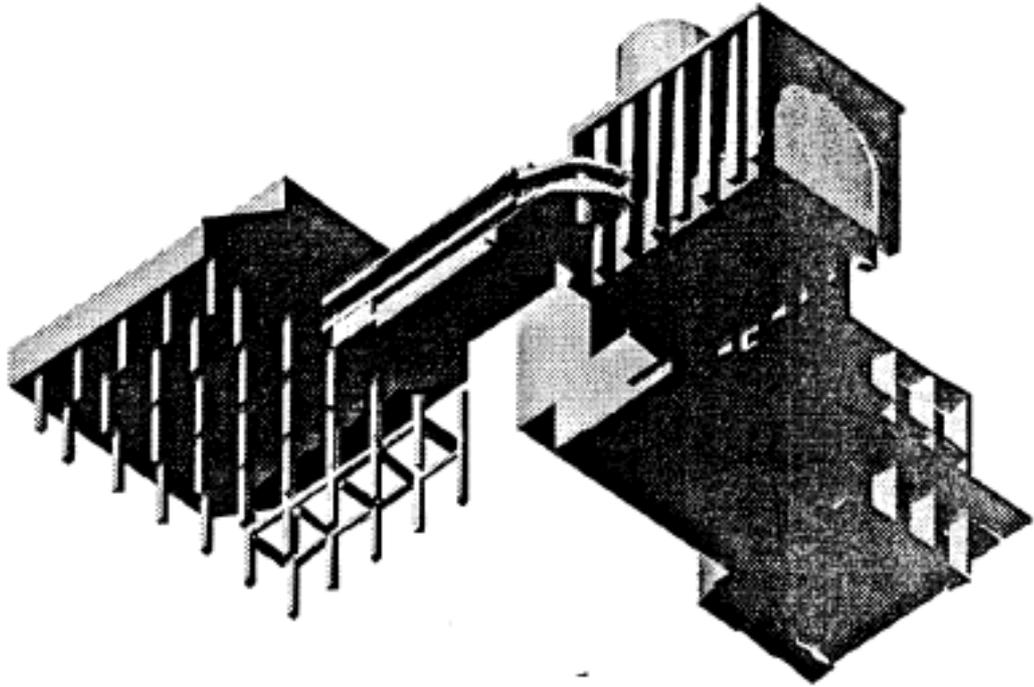
Machines. Joint



Overall perspective



Overall perspective



Officine del gas. Assonometria. Antonino Saggio

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