DINAK

Chimney Systems

Innovative solutions for chimneys and ducts

Industrial Solutions and Projects

Self-Supporting Chimneys | Masts | Structures with Modular Ducts Preinstalled

Ventilation | Towers Silencers

dinak.com

For 40 years, **Dinak** has been designing and manufacturing **the best industrial solutions and projects on the market**. The history of our company together with constant innovation have positioned us as **the brand of reference** in Self-Supporting Chimneys, Structures with Modular Ducts Preinstalled, Masts, Ventilation Towers and an extensive range of related products.

The foundation of our success has been to prioritise quality and innovation, as well as continuous adaptation to all contexts and **needs of our customers.** Constant investment in R&D&I, together with the talent of our great professionals, has helped us to remain in a position that guarantees an unbeatable product and, above all, **to adapt to constant changes in the sector.**

In this catalogue you will find our entire range of up-to-date products and solutions, as well as our customised services. Do not hesitate to contact us for any questions you may have.

We hope this catalogue will be a great help to you.

Based in Spain and present in more than 40 countries,
Dinak is a leader in the technical and normative sector in Europe

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Dinak: Industrial Solutions and Projects

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Turnkey Projects

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Dinak. Success Guaranteed

Through our offer of turnkey projects and a service that takes the utmost care at every phase of the process, we will be with you from the initial study and assessment, to the delivery, installation and commissioning of the project.

Our advanced manufacturing and service process allows us to create **individualised, high quality solutions** required due to technical needs or particular project circumstances.

We offer a range of **customised finishes and structural options**. Do no hesitate to contact us for further information.

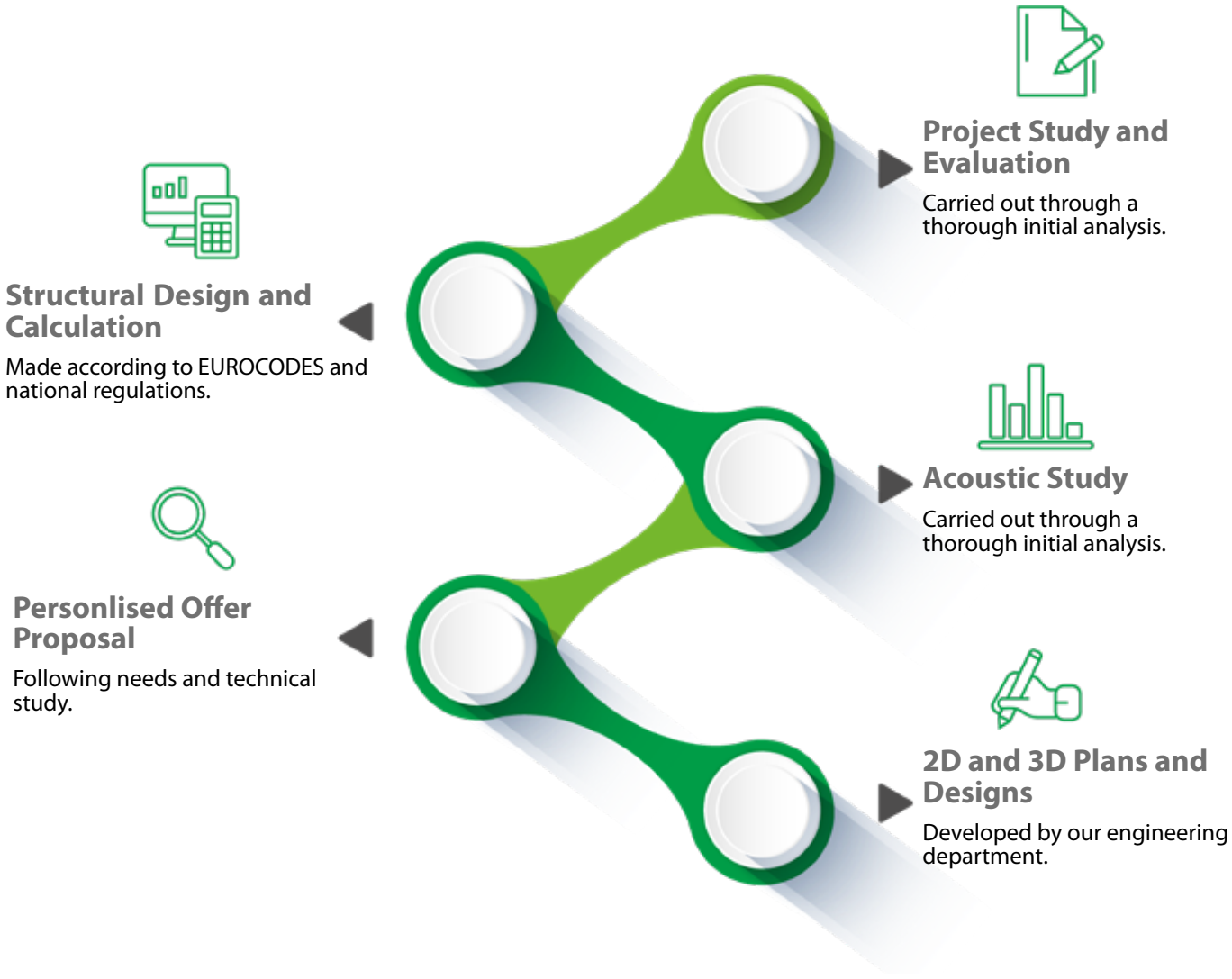
Our up-to-date **logistics and transport policy,** coupled with our Multi-local philosophy, enables us to deliver anywhere, guaranteeing the completion of your tailor-made project.

Throughout the entire life cycle of the project, you will have **permanent assistance** from our technical and commercial team, providing you with the necessary support to guarantee you full control of the project at all times.

Contact us today to get started on what will be a **successful project.**

Customised Service

At Dinak, personalised customer service is one of the main ingredients of our winning formula. To this end, we place all our knowledge and know-how at your service with the utmost rigour and professionalism. We offer you:



Excellent quality in both manufacturing processes and customer service, coupled with continuous improvement, enables us to keep a solid commitment to our customers, which allows us to offer a product that meets even the most demanding standards and requirements.

Certifications

At **Dinak** we constantly adapt and keep up to date with regulations, which is reflected in our certifications and voluntary quality marks. We are part of different **European and Spanish Regulatory Institutions,** even leading some of them, which means that our respect for regulations and quality requirements, as well as the compliance to them, is absolute.

The European Constructing Products Regulations No 305/2011 establish that all products manufactured and commercialised within **the European Union market** must have the corresponding CE marking, which guarantees the safety, quality and durability of these products, through controls carried out by Notified Certification Institutions.

All DINAK products have the CE and UKCA certification mark according to **EN 13084-7 and EN 1090** and, as a testament to our commitment, our manufacturing system is certified in accordance with **DIN EN ISO 3834-2** welding quality. This is proof of the high quality of the welds performed, as well as of our rigorous management of raw materials and quality controls.

CE Marking according to EN 13084-7 and EN 1090.

DIN **EN ISO 3834-2** Certification.

AENOR Certification.
Quality management.

UKCA Certification according to **EN 13084-7 y EN 1090.**

Assessment. Preliminary Data

In the development of your project, Dinak provides you with a specialised technical and commercial team that will carry out a detailed analysis of the specifications of your project, guaranteeing a precise and professional execution.

Location

Geographical environment data is used to determine wind action and calculate the cross-section for the flue.

Position

Exact position is needed to determine the basic wind speed.

STANDARDS
EN 1991-1-4 : 4.2
EN 1991-1-4 / AN

Relief

The relief category must be defined to calculate the pressure exerted by the wind.
There are five categories according to the type of relief:

Category 0: Open sea or coastal area exposed to the open sea.
Category 1: Lakes or flat horizontal areas with little vegetation and no obstacles.
Category 2: Areas with low vegetation (e.g., grass) and occasional obstacles (e.g., trees, buildings) separated by at least 20 times the height of the obstacles.
Category 3: Areas with uniform vegetation cover or buildings or with occasional obstacles not separated by more than 20 times the height of the obstacles (villages, suburban land, permanent woodland).
Category 4: Areas where at least 15% of the surface area is covered by buildings with an average height of more than 15m.

STANDARDS
EN 1991-1-4 : 4.3.2
EN 1991-1-4. Anex: A.1

Altitude (m)

The height above sea level is used to determine the ambient pressure when calculating the cross-section of the flue.

STANDARDS
EN 13384-1: 5.7.2
EN 13084-1: 4.2

Ambient Temperature. Max and Min (ºC)

This is an analysis of the annual average maximum and minimum ambient temperatures, used to calculate the cross-section of the flue and condensate formation respectively.

STANDARDS
EN 13384-1: 5.7.2
EN 13084-1: 4-2

Appliance

Appliance technical data is used to determine the material and cross-section of the flue, as well as to check the height by means of environmental criteria. The following technical data is needed in order to be able to carry out the initial study:

STANDARDS
EN 13384-1 (H ≤ 20m)
EN 13084-1

Number of appliances.

Appliance type (boiler, steam generator, power generator, etc.).

Fuel.

Power rating (kW, kcal/h).

Performance (%).

Combustion gas flow rate by mass (kg/h) or volume (m3/h, Nm3/h).

Nominal/minimum gas temperature (ºC).

Minimum draught or maximum over-pressure available (Pa, mmca).

Exhaust outlet or flange diameter (mm).

Design

Design preferences should be established before the study is carried out.

Preferred Configuration

A certain type of solution may be preferred for a project for architectural reasons:
CIR - CER - CERm - Structures.

Technical Requirements

There is a wide range of possibilities when integrating an installation into an architectural ensemble (design, materials, finishes, etc.), ensuring an aesthetic finish every time.

Optional Equipment

Depending on specific project requirements or local regulations, the following elements may need to be incorporated:

Ladders
To give access to the platform from the facility's reference level.

Platforms (180º, 270º, 360º...)
To give access to measuring and other equipment maintenance points.

Lightning Conductors
Provide protection for equipment or adjacent structures against electrical discharge.

Measuring Points
Holes created to enable measurements and maintenance to be carried out.

Beacons
Lights fitted to the chimney to warn air traffic.

Others

STANDARDS
EN 13084 -1: 8.1
EN ISO 14122
E 85-016

EN 13084 -1: 4.8.1
EN 13284 -1
NF x 44-052
EN IS0 14122
NF E 85-014

EN 13084 -1: 4.8.2
EN 62305

EN 13284 - 1
NF x 44-052

NF-EN 13084-1 4.8.3
A. en el decreto
19/10/2010

NF-EN 13084-1 4.8.4

Connecting Flue Pipes

The flue route for the linking sections between the generators and self-supporting structure or chimney must be defined in order to calculate the cross-section of the flue.

LENGTH (m).
HEIGHT (m).
DIVERSIONS (elbows, T-joints).

Site Details

Taking into account any specific conditioning factors at the site is essential in order for the project to be properly prepared.

Fixings Or Supports

The points available on site for fixing or supporting the self- supporting structure of the chimney are of vital importance when it comes to optimising the resistant sections and simplifying any civil works to be carried out.

Restrictions On Site

Any limitations in place on the site must be taken into account before the study is carried out:

Space available for access and maneuver.
Passage limitations for structures and/or buildings.

Assessment. Initial Study

After compiling the initial data for your tailored assessment, our experienced Engineering and Design team will conduct the initial study, consisting of the following points:

Height Calculation

Chimney heights are determined by compliance with the minimum requirements of EN 13084-1 and/or EN 13384-1.

Diameter Calculation

The criteria for the diameter calculation of self-supporting chimneys can be found in EN 13084-1. For heights of less than 20 metres, the calculation can also be made according to EN 13384-1.

Material Selection

Flue material is selected in accordance with the specifications of **EN13084-7,** which classifies materials according to their ability to withstand different degrees of chemical attack from the exhaust gases.

For information only, guideline criteria for determining the degree of chemical attack from exhaust gases with different standard fuel types (natural gas, gas oil, certain types of biomass, etc.) are included in various different standards. These degrees of chemical attack can be used as a criterion for the test results of less common fuels.

Structural Calculation

The structural calculation of each project should begin with a determination of the set of actions on the chimney or structure, and the combination or combinations of such actions with the most negative effects on the resistant sections and the maximum deformation. The most relevant points are detailed in the following sections.

Structural Calculation

Permanent Actions

These are values that are constant throughout the lifetime of the chimney and/or structure. These actions should include the estimated weight of all permanent structures and parts.

Variable Actions

These present significant variations from their average value over the life of the chimney and/or structure.

Benchmark Wind Speed

At this point, a nationally determined parameter according to the Eurocodes is constituted. Its value must be established by each country by means of national annexes. Wind actions and the calculation of the chimney cross-section.

Wind Actions

In most projects, wind action requires the highest tension of the resistant sections. As well as the maximum deformation of the assembly.

Operating Loads

It is defined with the characteristic value of 2 kN/m2 for the design of access platforms and landings, unless specific project conditions require a higher load to be considered.

Accidental Actions

These are events that occur in a punctual and unpredictable manner.

Seismic Action

According to section 5.2.4.1 of EN 13084-1, seismic actions are usually not significant for steel chimneys.

Explosions and Implosions

The depression caused by implosions, owing to a sudden interruption of the gas flow, must be determined in accordance with section A.7.7 of the NF-EN 13084-1 standard. Whenever there is a risk of explosion, because of a build-up of soot or combustible gases, a specific study should be carried out to determine the necessary strength for the flues, or an explosion-relief device should be enabled.

Impacts

Any significant risk of impact to the chimney or structure should be considered in the calculation.

Reaction Calculations

Once the actions have been determined, the calculation of the reactions generated at the fixing points of the studied self-supporting solution is carried out. This information, at an advanced stage of the project, will be used for the **calculation and/or check the foundations and corresponding anchorage points.**

Calculation of Resistant Elements

Once the actions have been determined, the **resistant parts and/or sections of the self-supporting solution are calculated.** In this calculation checks are made to verify the suitability of the resistant sections and that any deformation caused by combinations of the actions included in the calculation are reversible for both resistant and non-resistant parts.

Project Schedule

Once we have considered the initial data and the initial study, we schedule your project in order to carry out the final stages within the agreed timeframe, starting from the creation of the offer to the delivery and installation, if necessary.

1 Quotation

The best possible offer in accordance with the specifications of the project.

2 Purchase Order

Confirmation of the quotation by the client.

3 Manufacturing Drawings

Submission of detailed plans of the project to be manufactured, together with the stresses generated in the base for the correct dimensioning of the concrete footing.

4 Approval of Drawings

Validation of drawings by the client. This milestone marks the start of the manufacturing process of the project, and with it:

- Confirmation of project delivery time by Dinak.
- Collection of raw materials.
- Start of manufacturing.

Any changes to the project after this stage will be subject to an associated surcharge.

5 Manufacturing

Manufacturing of the project validated by the customer in accordance with the quality standards set out in EN 13084-7 and EN 1090.

Any additional quality control required by the project shall be communicated prior to the confirmation of drawings, in order to be analysed and validated.

6 Delivery and Installation

Dispatch and assembly according to the specific installation instructions supplied by Dinak for each project.

Turnkey Projects

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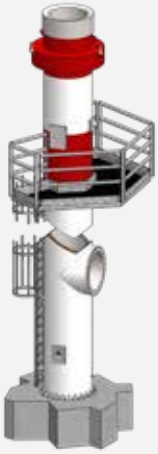
Get to Know Our Products

All our products are subject to strict quality control, guaranteed by the most prestigious Certifications and Associations in the sector.

CIR Chimneys

Double wall, insulated self-supporting chimney with resistant inner wall.

CER Chimneys

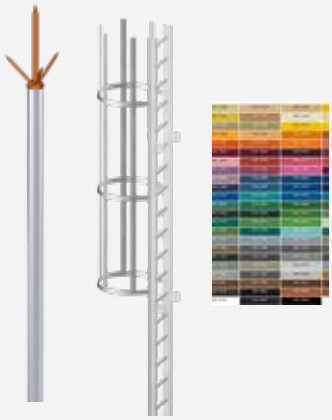


Double wall, insulated self-supporting chimney with supporting outer wall.

CERm Chimneys

Self-supporting chimney with multiple insulated inner walls and supporting outer wall.

Equipment



Optional equipment to enhance the performance of our self-supporting chimneys.

Structures

Self-supporting reticulated solution fixed to the ground supplied with the modular chimneys installed.

Connecting Flue Pipes

Multiple solutions for linking the generator set and the self supporting chimney.

Our manufacturing processes follow the quality standards set by **EN 13084-7 and EN 1090.**

Silencers
Modulars and
Industrials

Noise attenuators for combustion burners in boilers and generators.

Masts

Self-supporting solution fixed to the ground or to the wall for the modular ducts to be set-up on site.

Dinamast

Aesthetic self-supporting solution fixed to the wall and/or to the ground supplied with modular ducts preinstalled.

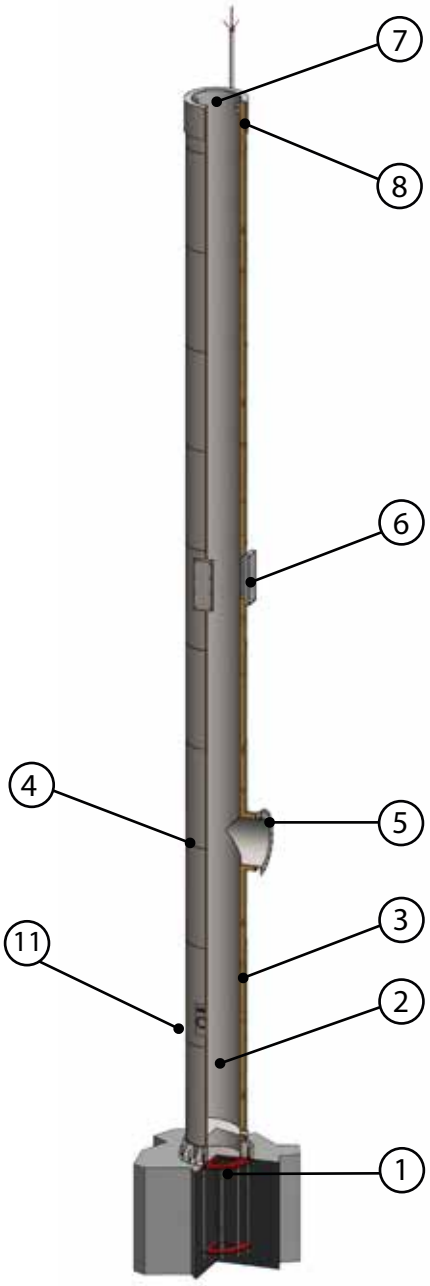
Ventilation Towers

Self-supporting tower for air renovating systems.

DISCOVER THE MOST
COMPLETE OFFER
ON THE MARKET

CIR Self-Supporting Chimneys

*Double wall, insulated self-supporting chimney with **resistant inner wall.***



1 Base Fixing

Option 1
By mechanical and/or chemical fixings as long as the characteristics of the existing concrete slab are compatible.

Option 2
By an anchorage set as long as it is installed sufficiently in advance for proper curing of the concrete.

2 Inner Wall
Thickness as calculated for each project.

3 Insulation
High-density rock wool of variable thickness between 30 and 100mm.

4 Outer Wall
Material:
Stainless Steel AISI 304 (1.4301) or AISI 316L (1.4404) BA "mirror gloss/shine" finish.
Copper (up to Ø675mm).

Finish:
Painted according to RAL colours (excluding metallic and fluorescent colours, please consult DINAK for alternatives).

5 Couplings
Circular and/or rectangular section designs with variable inclinations depending on the needs of the installation (90º, 135º...).

6 Inspection Chamber
Design according to EN 13284-1 and EN 15259.

7 Terminal
Designed to allow free expansion of the inner flue.

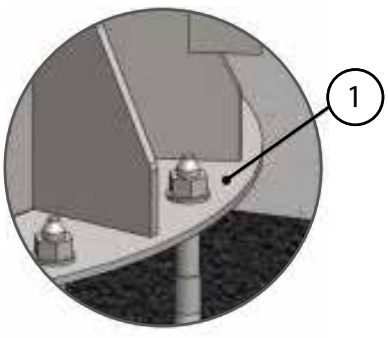
8 Lifting Lug

9 Plate for Connection to Earth

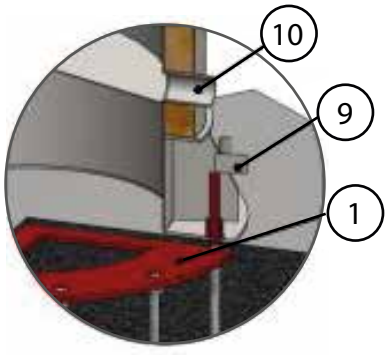
10 Drainage

11 CE-plate

Marking EN 13084-7, EN 1090 and EN ISO 3834-2.



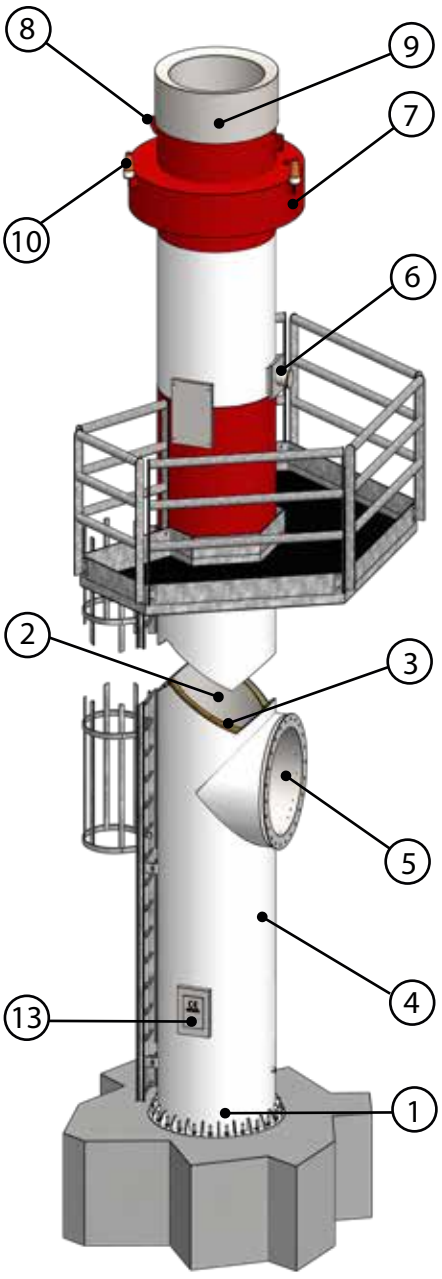
Option 1



Option 2

CER Self-Supporting Chimneys

*Double wall, insulated self-supporting chimney with **supporting outer wall.***

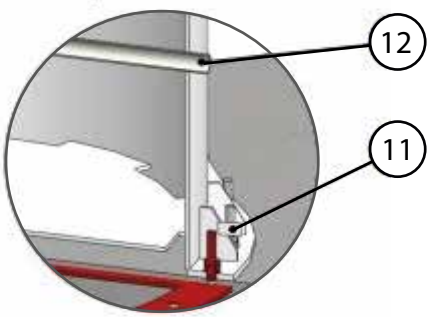


1. **Bas Fixing**
2. **Inner Wall**
   Thickness as calculated for each project.
3. **Insulation**
   High-density rock wool of variable thickness between 30 and 100mm.
4. **Outer Wall (finish)**
   Material:
   Carbon steel (minimum S235JR).
   Corten steel (minimum S235J0W).

   Thickness:
   As calculated for each project.

   Finishes:
   Naturally weathered steel.
   Painting according to EN ISO 12944, in RAL colours (excluding metallic, fluorescent and pearlescent colours. Please consult DINAK for alternatives).
5. **Couplings**
   Circular and/or rectangular section designs with variable inclinations depending on the needs of the installation (90º, 135º...).
6. **Inspection Chamber**
   Design according to EN 13284-1 and EN 15259.
7. **Damper**
   Dynamic load damping system (installation according to project specifications).
8. **Lifting Lug**
9. **Terminal**
   Designed to allow free expansion of the inner flue, and internal ventilation of the chimney.
10. **Night Beacons**
11. **Plate for Connection to Earth**
12. **Drainage**
13. **CE-plate**

Marking EN 13084-7, EN 1090 and EN ISO 3834-2.

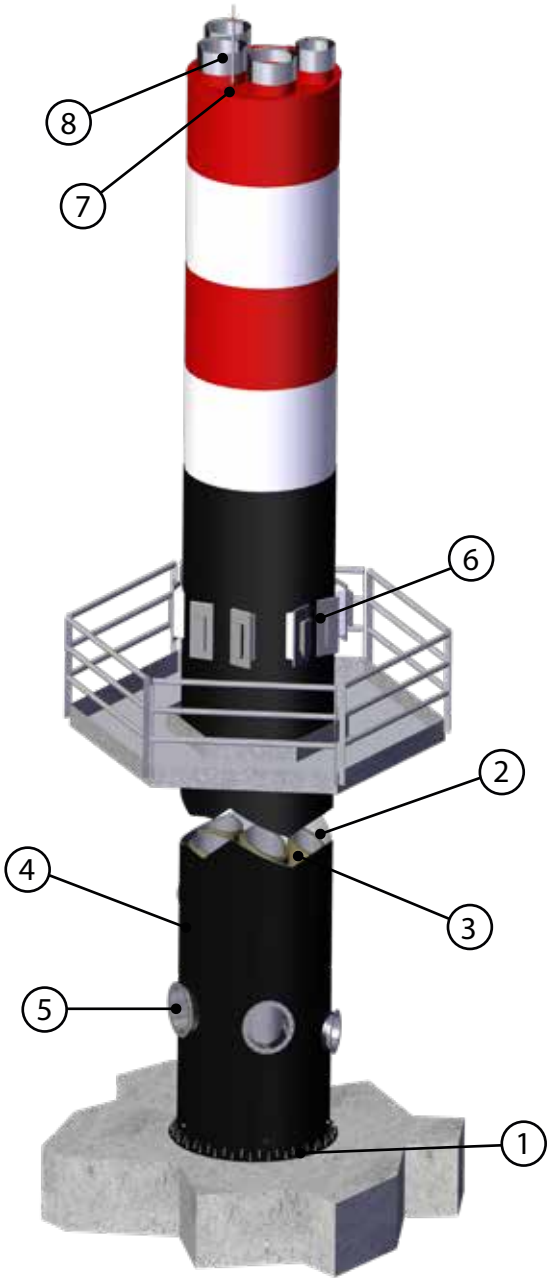


Drainage

Plate for connection to earth

CERm Self-Supporting Chimneys

*Self-supporting chimney with **multiple insulated inner walls and supporting outer wall**.*



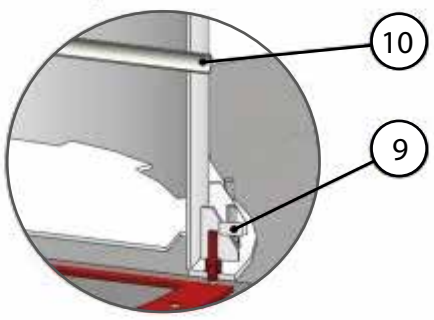
1. **Base Fixing**
2. **Inner Wall**
   Thickness as calculated for each project.
3. **Insulation**
   High-density rock wool of variable thickness between 30 and 100mm.
4. **Outer wall (finish)**

   Material:
   Carbon steel (minimum S235JR).
   Corten steel (minimum S235J0W).

   Thickness:
   As calculated for each project.

   Finish:
   Naturally weathered steel.
   Painting according to EN ISO 12944, in RAL colours (excluding metallic, fluorescent and pearlescent colours. Please consult DINAK for alternatives).
5. **Couplings**
   Circular and/or rectangular section designs with variable inclinations depending on the needs of the installation (90º, 135º...).
6. **Inspection Chamber**
   Design according to EN 13284-1 and EN 15259.
7. **Lifting Lug**
8. **Terminal**
   Designed to allow free expansion of the inner flue, and internal ventilation of the chimney.
9. **Plate for Connection to Earth**
10. **Drainage**

Marking EN 13084-7, EN 1090 and EN ISO 3834-2.



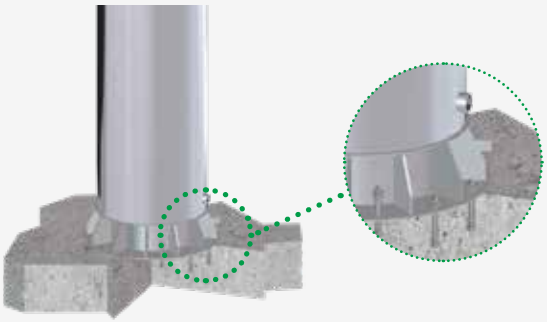
Drainage

Plate for Connection to Earth

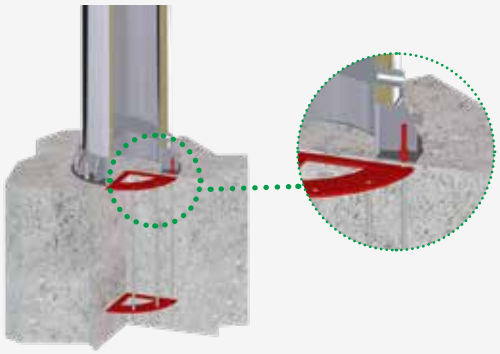
Optional Equipment for Self-Supporting Chimneys

We offer optional equipment to enhance the performance of our self-supporting chimneys composed of a wide variety of products and solutions of the highest quality. Our professionals will advise you on the possibilities for your project.

Base Fixing



Fixing to an existing slab by mechanical and/or chemical fixings.

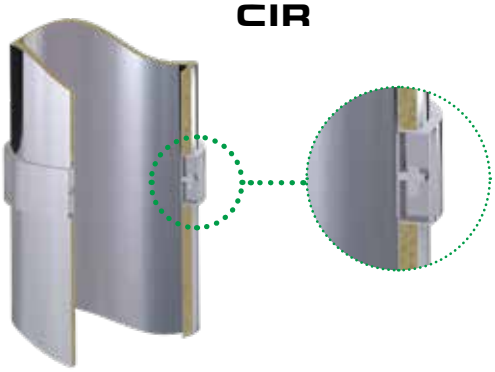


Fixing via pre-installed anchorage set.

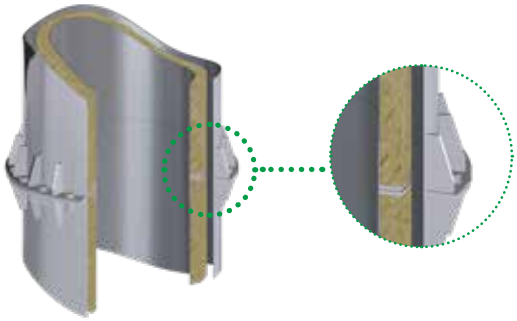
Connections Between Sections

When the design of the chimney requires it to be manufactured in several sections (due to its height or the requirements of the project), the connection between them is made by bolted flanges with intermediate seals. This guarantees the stability and tightness of the joint.

CIR



CER/CERm



Platform (180º, 270º, 360º)

Platforms (180º, 270º, 360º...) are used to allow access to the different levels of measurement points and/or to facilitate the maintenance of elements such as lightning conductors and/or beacons.

The platforms are designed according to the requirements of **EN 13084-1, EN 1384-1, EN ISO 14122-2, NF X44-052 and NF E85-014.**

All platform components are made of carbon steel with a hot dip galvanization or painted finish (stainless steel is also available).

Ladders

Ladders provide access for personnel to the platforms from the site's reference level.

Ladders are designed according to **EN 13084-1, EN ISO 14122-4** and **NF 85-016** standards**.**

If the length of the ladder is 10m or less (or 8m if we apply the standard NF E85-01), it can be made in a single section. If the length is longer, it can be made in several sections (maximum 6m length/stretch).

In the latter case, intermediate safety and resting landings must be provided between sections.

Intermediate Supports

The installation of intermediate supports in self standing solutions optimizes the design of the chimney and reduces forces at its base.

Ceiling-mounted Supports

Wall-Mounted Supports

Lightning-Protection Systems

In accordance with European Standard **EN 13084-1,** self-supporting chimneys can be considered as metal structures with continuous electrical conductivity and, as such, they require no specific protection against lightning or electrical discharge.

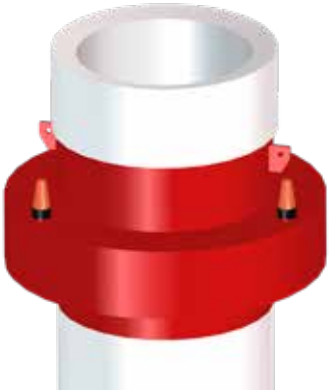
However, chimneys may feature an external lightning-protection system. These external systems are designed in accordance with the **EN 62305-3** standard. Sometimes a strike counter for lightning conductor can be included.

Beacons

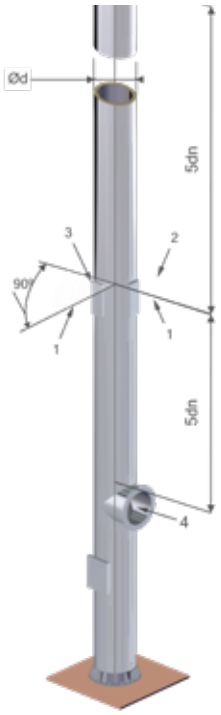
Daytime Beacons

Alternative stripes of 1/7 of the total height of the chimney, set following the ICAO (International Civil Aviation Organization) regulations.

Night Beacons



Inspection and Measurement Points



The **NFx44-052, EN 13281-1 and EN 15259** standards establish the following criteria for locations, dimensions and access to measurements points:

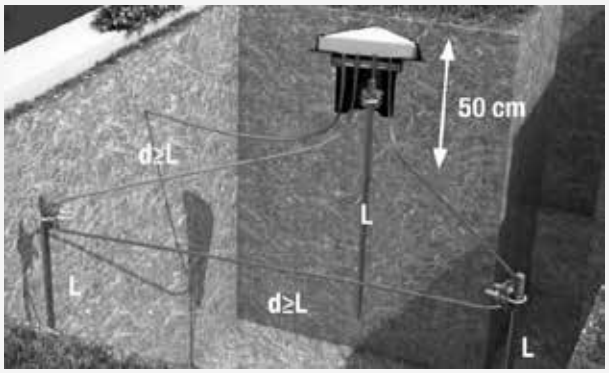
Positions of Measuring Points
Measuring points must be installed on a straight section (preferably vertical) with a constant shape and cross-section, at such a distance that is at least five times the hydraulic diameter of any disturbance.

Number of Measuring Points
The minimum number of sampling points will depend on the diameter of the circular flue: 1 if the diameter is less than 350mm, and 2 if the diameter of the flue is equal to or greater than 350mm.

Dimensions of Measuring Points
The dimensions of sampling holes must provide enough space to allow the use of examination equipment.

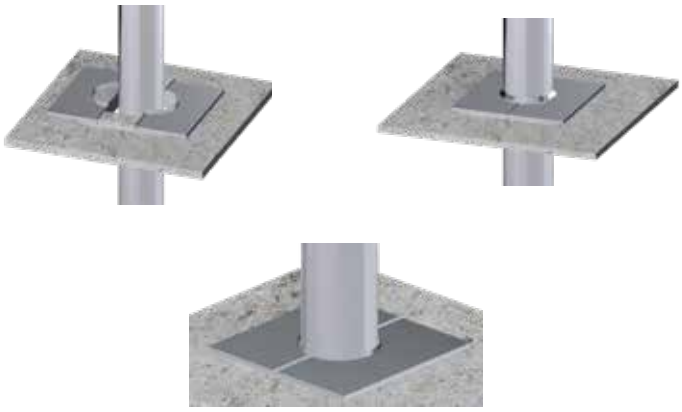
Connection to Earth

A lightning rod complement that conducts and disperses the lightning current and disperses the lightning current to the ground. This element prevents physical damage to structures.



Elements of the Seal

Design and manufacturing of accessories for sealing the chimney openings as it passes through the interior of the building (sealing plates, water covers…).



Logos and Printing

All of our chimneys allow the integration of logos and printing on their external finish. Please ask us about the possibilities.

Other Elements

Lighting.
Anti-fall ladders söll (with harness) (Germany).
RAL paint chart for the personalization of your project.

Structures with Modular Ducts Preinstalled

Self-supporting reticulated solution fixed to the ground supplied with the modular chimneys installed.

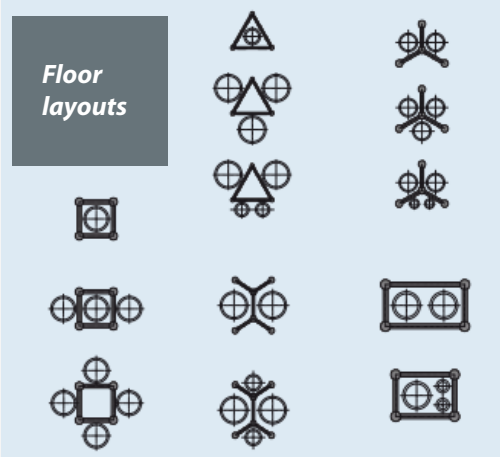
Alternative solution to a self-supporting chimney. The design incorporates lifting lugs for hoisting.

Delivery of the solution with the modular chimneys already pre-installed, which significantly reduces the installation time of the project.

Specific design for every project to ensure architectural integration.

Base fixations via anchorage set, mechanical or chemical fixing in accordance with the constructive characteristics of the fixing point.

Multiple floor layouts available:



Material

Carbon steel profile minimum quality **S235JR.**

Finish

Painting according to **EN ISO 12944** in RAL colours (excluding metallic and fluorescent colours, please consult Dinak for alternatives).

Finish C3: moderate resistance.
Finish C4: high resistance.
Finish C5: very high resistance.

Hot dip galvanized steel.

Optional Equipment:
Lightning-protection systems.
Platforms.
Ladders.
Beacons.
Sealing plate.
Other equipment available on request.

Marking EN1856, EN 1090 and EN ISO 3834-2.

Connecting Flue Pipes

Dinak offers multiple solutions to create **the link between the appliances/equipment and the self-supporting chimney**, always adapting it to the operating characteristics of each one of them and integrating all the equipment and supports necessary for the correct execution of each project. Please see below for all possibilities:

Modular Chimneys

More than 50 CE marked product ranges available that can be used for all types of installations, the most common ranges are the following:

Dinak DW
TWIN WALL FLUE

Dinak DWhp2
MICRO-COGENERATION (MICRO-CHP) AND COGENERATION (CHP)

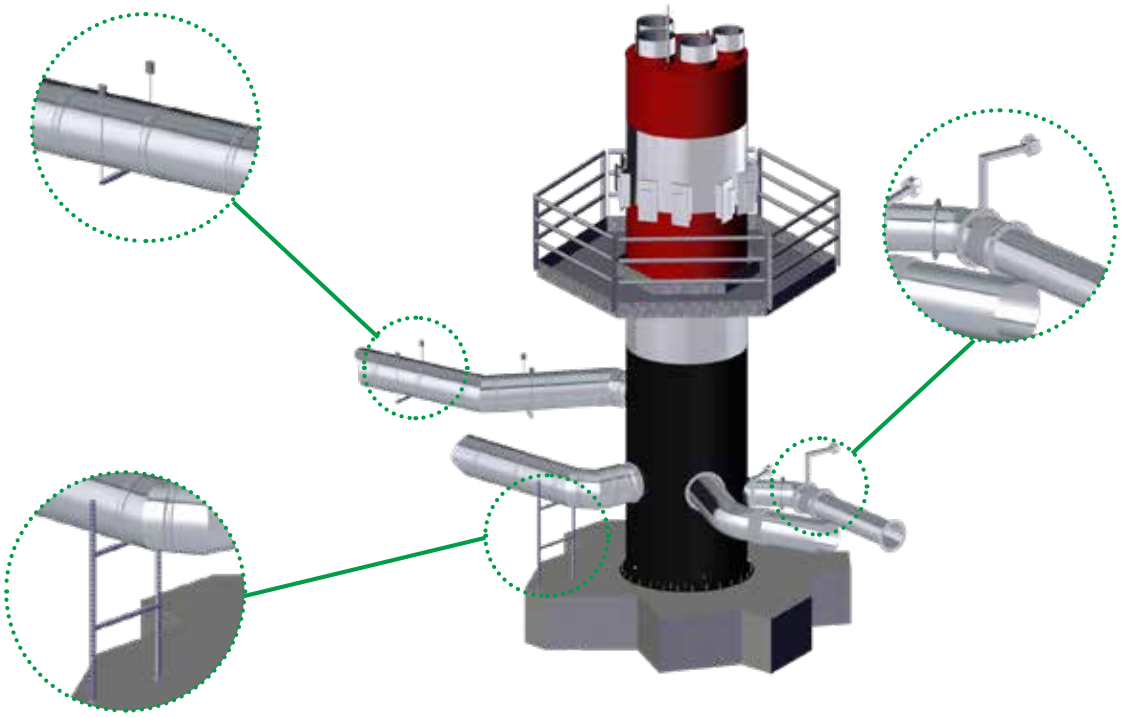
DW Flange
MODULAR CHIMNEY FOR CHP, WITH OR WITHOUT BY-PASS, GENERATOR

Dinak GE+
MODULAR FLUE SYSTEM FOR POWER GENERATORS

REQUEST OUR SPECIFIC CATALOGUE

Custom Flue Pipes

Tailor-made solution designed according the needs of each project, including all the accessories and supports necessary for its correct installation on site.



Custom Flue Pipes

Dinak offers its customers two different options for custom flue pipes, available in single-wall or double-wall:

Weld

Solution supplied in welded sections for on-site assembly by welding.

Flanged

Solution supplied in modular sections flanged on both sides, for bolted flanges with intermediate sealing seals.

Material

Corten steel (minimum S235JRW).
Stainless steel AISI 304 (1.4301).
Stainless steel AISI 316L (1.4404).

Insulation

High density rock wool.
Thickness 50 or 100mm.

Finish

Naturally weathered steel.
Matt stainless steel.
Bright stainless steel.

Available Diameters

Ø≤ 1.800mm.
Ø> 1.800mm, check availability.
Other geometries, check availability.

Accessories

Expansion joints.

Inspections and measurement points.

Protection panels: Anti-explosion and anti-implossion.

Silencers.

Valves.

Fixings.

Acoustic solutions

Dinak provides a number of solutions to address the challenges arising from the noise generated during the evacuation of combustion products. Our product range includes **Modular Silencers** and **Customized Industrial Silencers**. In addition, we have the necessary resources to **carry out acoustic studies** that guarantee the development of a customized solution that aligns perfectly with your project's needs.

Noise Sources

In the acoustic study of a Combustion Products Evacuation System, three main sources of noise have to be considered:

Source of noise: noise generated by the appliance(s) linked to the industrial process to which the exhaust chimney is connected, through which the combustion products are channelled to the atmosphere.

Regenerated noise: caused by the friction of the gases as they move through the chimney, its magnitude being directly proportional to the velocity of the gases.

Ambient noise: their impact on the acoustic study will depend on the magnitude of the source of noise.

When **designing the layout of the exhaust chimney, the radiated noise**, i.e. the noise that propagates from the inside of the chimney to the outside through the insulation, must be considered. For this purpose, it is very important to have completely characterised the **nature of the source of noise** (low, medium or high frequency noise) in order to correctly select the insulation to be used in each case.

GET TO KNOW OUR SILENCER RANGES

Modular Silencers

Dissipative

The simplest model of attenuation, characterised by:

Laboratory tested, which guarantees its attenuation and pressure drop characteristics.

Available with insulation **thicknesses from 30 to 100 mm**.

Perfect integration into modular chimney layouts, as they have the same external aesthetics and length as a straight length.

Possibility to install **multiple in series** to improve attenuation.

Uniform insulation throughout the entire unit, which guarantees the absence of hot spots, and consequently greater safety and stability in the use of the silencer.

Suitable for dry applications. In layouts where this type of solution is integrated, drains must be provided to prevent rainwater or condensation from reaching these components.

Silenk

Standard modular silencer, **designed and laboratory tested**. It provides a very balanced acoustic attenuation over the entire frequency spectrum of the audible range.

Mainly **dissipative**, with an attenuation spectrum over a wide frequency range. To maximise its effect, it is **recommended to install it as close as possible to the source of noise.**

Silenk silencers i**ncorporate an internal core for Ø>300 mm in all ranges except the GE+ range**, to improve acoustic performance.

Minimal load losses due to their design with aerodynamic elements and geometries with smooth transitions.

Easy integration into the installation due to its modular nature. **Easy to assemble**. Available **for dry and condensing applications.**

Available from **Ø100 to 800 mm** in stainless steel **AISI 304 or 316L** (inner and outer wall made of the same material). **Effective length of 1,860 mm**, with an external diameter **200 mm larger than the nominal diameter of the chimney.**

Uniform insulation over the entire length of the unit, which guarantees the **absence of hot spots** and consequently greater safety and stability in the use of the silencer.

Optional **painting of the outer wall** in RAL colours is available.

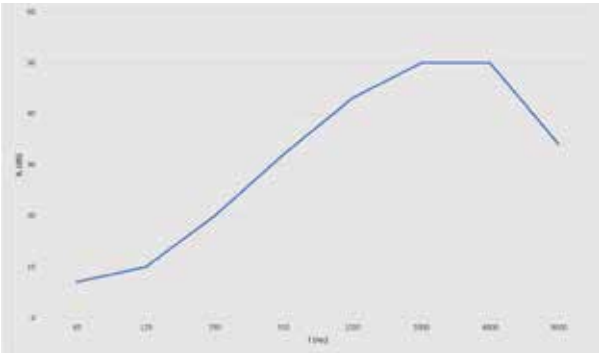
Marking EN 1856.

Silenk

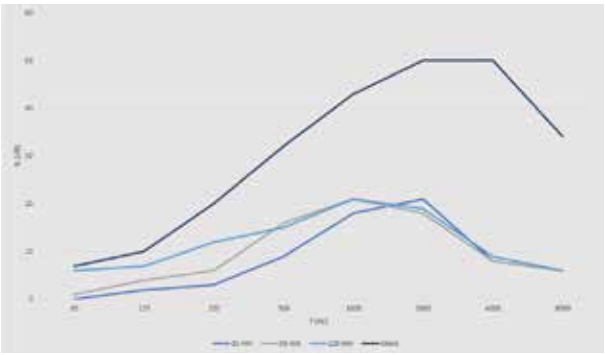
Variants

It is possible to vary the standard length of Silenk to adapt the acoustic performance to the needs of each project. **Minimum effective length of 920 mm. Maximum useful length of 5,180 mm.**

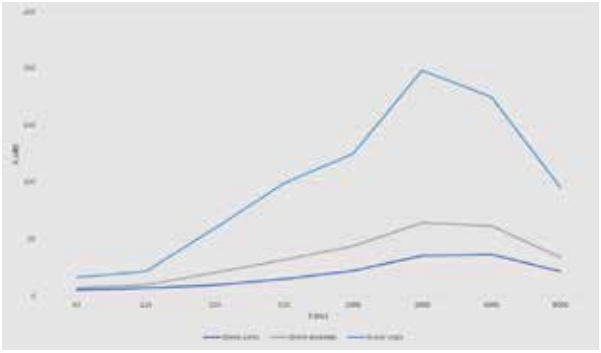
Acoustic Attenuation Graphs for Modular Silencers



Typical acoustic attenuation graph for Silenk silencers.

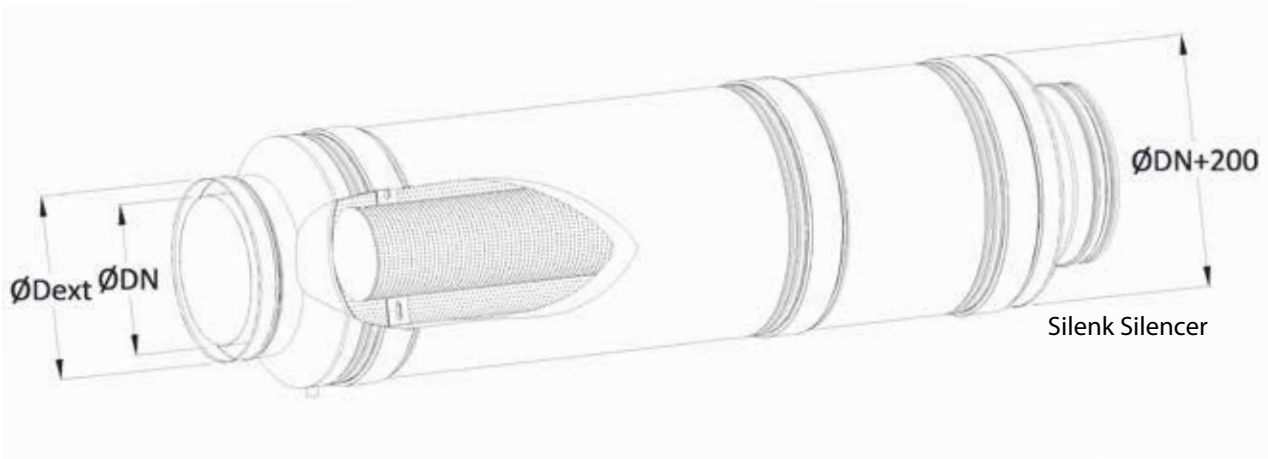


Acoustic attenuation graph for dissipative silencers, with different insulation thicknesses compared to Silenk silencers.



Evolution of the attenuation curve when reducing or increasing the length of the Silenk with respect to the standard length.

To know the attenuation curve and pressure drop for a specific diameter, **please consult Dinak.**



Silenk Silencer

Industrial Silencers

This range of industrial silencers is tailor-made, optimally adapted to the requirements of each installation, in order to offer **the best balance between attenuation, pressure drop and size.**

Combined Silencer
Dissipative + Reactive

Silencer with rings
Dissipative

Rectangular baffle silencer
Dissipative

Resonator silencer
Reactive

Optional Equipment:

Removable inspection doors and baffles for the use of the silencer in applications with fuels that require specific maintenance and cleaning, such as biomass.

Incorporated drains for working in condensation conditions.

Totally insulated silencer, ensuring the absence of hot spots on the outer wall.

Incorporated **spark-suppression systems** and supply of the **exterior wall painted** in RAL colours.

Pioneering designs optimised by **ANSYS** finite element simulation: this calculation system leaves behind the traditional theory, still used by many manufacturers, which does not consider the global influence of all the fluid dynamic variables involved (temperature, flow, gas type, geometry, pressure drops, friction) on noise attenuation, which can be modelled by specific finite element software.

This model makes it possible to offer **very precise acoustic and fluid dynamic behaviour guarantees** adapted to each particular project.

Ansys

These silencers come with a complete engineering, manufacturing and after-sales service:

Dynamic-fluid model of each silencer, simulating the acoustic and mechanical behaviour prior to manufacture, with the possibility of real insertion loss and load testing.

Manufactured using excellent technologies and approved welding procedures and welders.

Surface coatings according to technical specifications.

Made to Measure Industrial Silencers

Systems: Compact and Two-Piece

Compact

Combines **dissipative and reactive performance** in a single component.

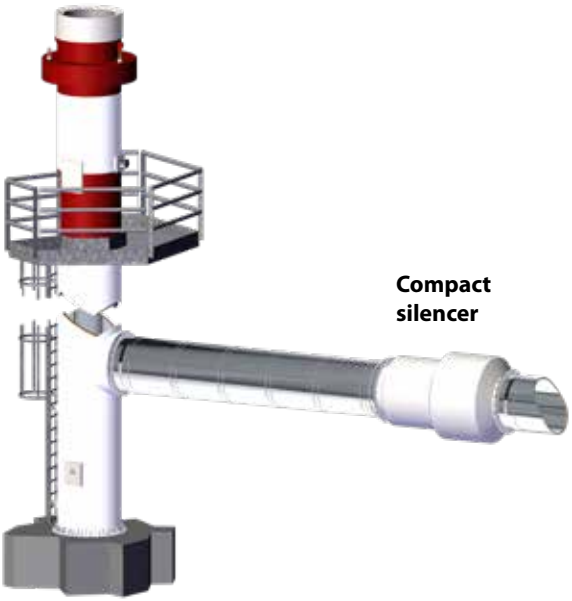
It is usually installed in the section connecting the generator to the vertical of the chimney, but has the **flexibility to be installed in other positions** if required by the installation (for example, the shape of a cartridge in the vertical conduct).

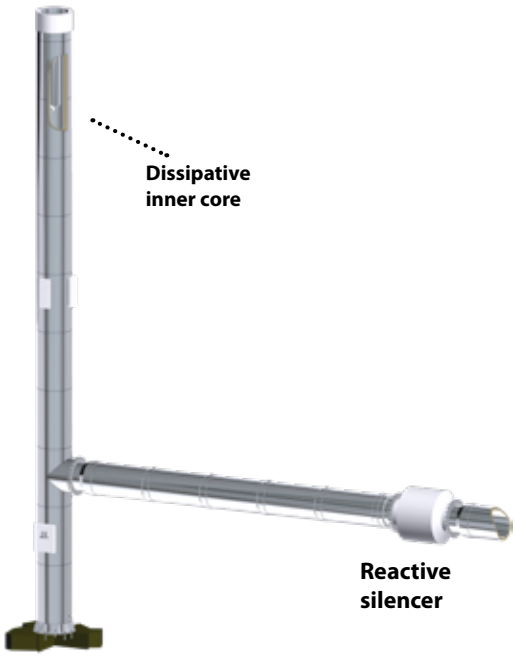
Two-Piece

A system in which one part is **predominantly reactive technology** and the other **dissipative** in the form of an **inner core.**

This solution is designed for situations where **limited space** makes it difficult to install a single combined silencer. The absorption phase is separated as a core to be installed inside the chimney.

They meet the **most demanding attenuations** requirements in industrial equipment such as boilers or engines, being effective at low frequencies (bass sounds) as well as at medium and high frequencies (treble sounds).





Masts

Self-supporting solution fixed to the ground or to the wall for the modular ducts to be set-up on site.

A specific design for each project to guarantee the correct support of the forces transmitted by the mast to the fixing point, depending on the construction characteristics of the fixing point.

The design incorporates lifting lugs for hoisting.

Installation is carried out by mechanical and/or chemical fixing, depending on the construction characteristics of the fixing point.

Materials

Carbon steel profile minimum quality of S235JR.

Finishes

Painting according to **EN ISO 12944** in RAL colours (excluding metallic and fluorescent colours, please consult Dinak for alternatives).

Finish C3: moderate resistance.
Finish C4: high resistance.
Finish C5: very high resistance.

Hot dip galvanized steel.

Others

Screws for fixing the mast are not included in the Dinak scope of supply.

There are two types of fixing depending on the needs of each installation: **wall** and **floor mounted.**

Wall-mounted
In-line

Wall-mounted
Transversal

Floor-mounted

Marking EN 1856, EN 1090 and EN ISO 3834-2.

DINAMAST

Aesthetic self-supporting solution fixed to the wall or to the ground supplied with modular ducts preinstalled.

Delivery of the solution with the modular chimneys already pre-installed, which significantly reduces the installation time of the project.

Aesthetic finish to the solution by using circular section profiles.

The design incorporates lifting lugs for hoisting.

Base fixations via anchorage set, mechanical or chemical fixing in accordance with the constructive characteristics of the fixing point.

Material

Carbon steel profile minimum quality **S235JR.**

Finish

Painting according to **EN ISO 12944** in RAL colours (excluding metallic and fluorescent colours, please consult Dinak for alternatives).

Finish C3: moderate resistance.
Finish C4: high resistance.
Finish C5: very high resistance.

Others

Screws for fixing the mast are not included in the Dinak scope of supply.

Marking EN 1856, EN 1090 and EN ISO 3834-2.

Ventilation Towers

Self-supporting tower for air renovating systems.

Self-supporting solutions for **base fixations via bolted flange.**

Specific design for every project to ensure architectural integration.

A variety of terminal solutions available.

Materials

Corten steel (minimum S235JRW).
Stainless steel AISI 304 (1.4301).
Stainless steel AISI 316L (1.4404).

Finishes

Galvanised (according to diameter).
Naturally weathered steel.
Matt stainless steel (2B).
Mirror polished stainless steel (BA).
Satin-finished stainless steel.
Painted in RAL colours (excluding metallic, fluorescent and pearlescent colours).

Optional equipment

Anchorage set.
Drainage.
Inspection chamber.
Bird-proof grille.
Pre-filter.
Other equipment available on request.

Terminals

Open **Plain** **Volcano** **Canyon** **Island** **Cliff**

Marking EN 1090 and EN ISO 3834-2.

References

Over 200 projects per year

CIR

Height 10m (1 section).
Ø350/450mm.
Inner Wall 13CrMo/
Outer Wall AISI 304.
France.
Airport Generator.

CIR

Height 14.9m (1 section).
1x Ø500/600mm.
3x Ø1,000/1,100mm.
Inner Wall AISI 316L /Outer Wall AISI 304.
Spain.
University.

Our Projects

CER

Height 23m (2 sections).
Ø1,700/1,900mm.
Inner Wall AISI 316L /
Outer Wall S235JR.
Singapore.
Power Plant.

CER

Height 44m (4 sections).
Ø1,000mm.
AISI 304.
Spain.
University.

CER

Height 50m (3 sections).
Ø2,700/2,900mm.
Inner Wall AISI 316L /
Outer Wall S235JR.
Spain.
Biomass Plant.

CER

Height 21.3m (2 sections).
Ø1,400/1,600mm.
Inner Wall AISI 304/
Outer Wall S235JR. Painted finish.
Galvanizing plant.

Height 36m (3 sections).
Ø600/800mm.
Inner Wall AISI 304/
Outer Wall S235JR. Painted finish.
Galvanizing plant.

Our Projects

CERm

Height 60m (3 sections).
Ø1,800/3,100mm.
Inner Wall CORTEN/
Outer Wall S235JR.
Spain.
Paper Industry.

CERm

Height 42m (3 sections).
2x Ø950/2,300mm.
Inner Wall AISI 316L/
Outer Wall S235JR.
France.
Biomass Plant.

CERm

Height 18.2m (1 section).
3x Ø400/1,300mm.
Inner Wall AISI 304/
Outer Wall S235JR.
France.
Power Plant.

CERm

Height 25m (3 sections).
Ø1,100/1,200mm.
Inner Wall AISI 316L/
Outer Wall 304.
Italy.
Cogeneration Plant.

Our Projects

Structure

Height 40m (4 sections).
2x Ø900/960.
United Kingdom.
Hospital.

Structure

Height 15m.
2x Ø650/750.
Israel.
Cogeneration Plant.

Structure

Height 9m.
2x D Ø800/900.
2x DW Ø400/500.
Italy.
Power Plant.

Structure

Height 13.2m.
1x Ø400/500 GE50+.
France.
Generator.

Our Projects

Structure

Height 12.8m.
2x Ø500/560.
Spain.
Power Plant.

Mast

Height 8.2m.
1x DW Ø450/510.
France.

Mast

Height 7.1m.
1x DW Ø350/410.
1x DW Ø500/560.
France.

DINAMAST

Height 10m.
1x Ø350/410mm.
Spain.
Power Plant.

Our Projects

Ventilation Towers

Height 5.5m.
12x Ø1,200.
Spain.
Shopping Centre.

Ventilation Towers

Height 3m.
16x Ø1,500.
Spain.
Industrial complex.

Innovative solutions for chimneys and ducts

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For 40 years, Dinak has been **designing and manufacturing the highest calibre industrial solutions on the market**. Always ahead of the curve, we have a proven track record for innovation, pioneering the development of countless new products. **Our multi-local philosophy**, combined with a customer oriented approach, ensures we go above and beyond in not only our service, but in the quality of products that we offer.

Innovative solutions for chimneys and ducts