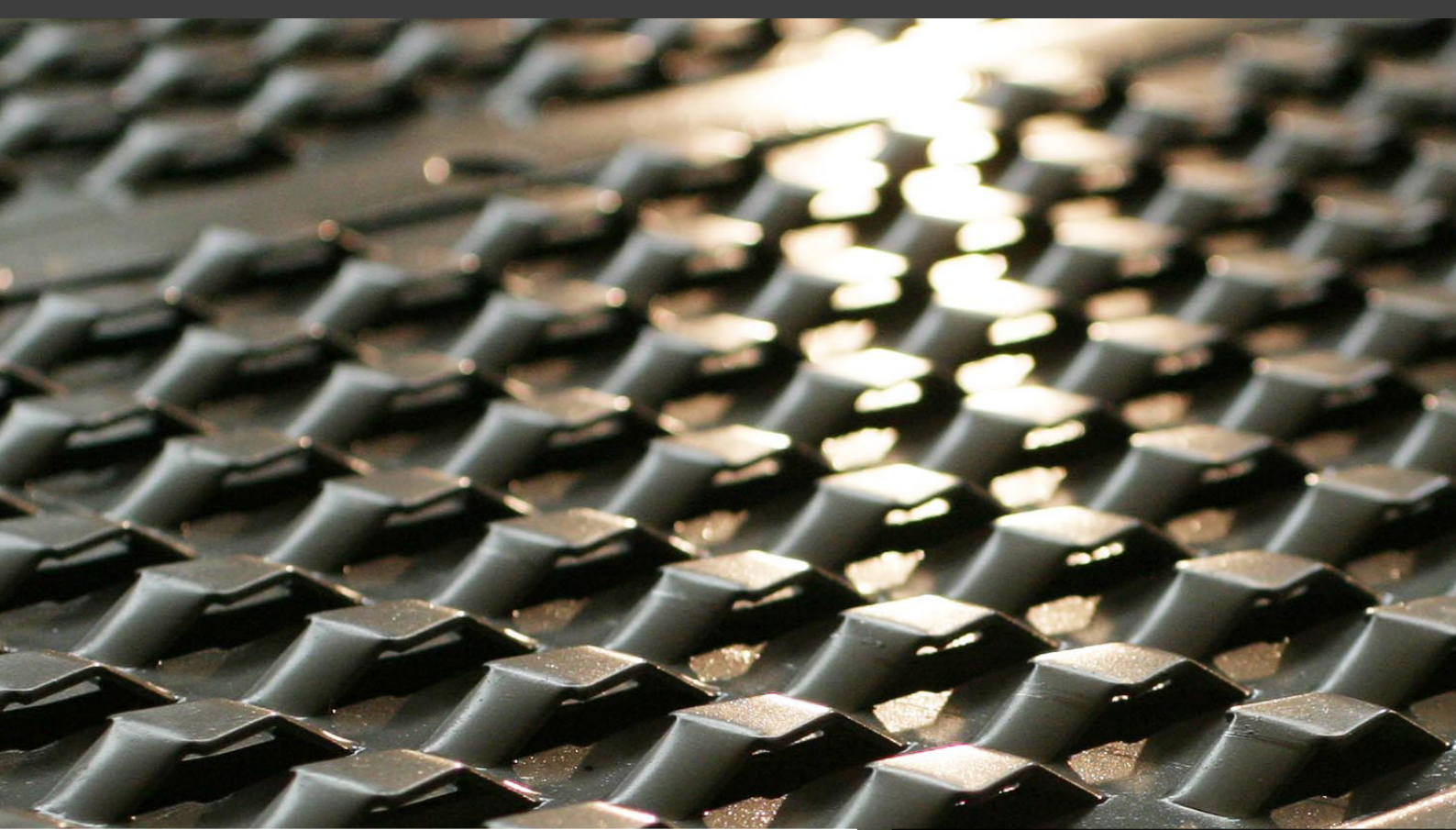




Fractionation Trays

Innovation | Reliability | Dynamism



www.baretti.it



125 Years of History



Fabio Baretta Paleari

CEO

Baretta was founded in 1890 by my grandfather Giovanni Baretta. Since then, Baretta has seen several transformations and gone through evolutions to meet the required market needs and the socio-economic changes. Among all, I would like to mention the most vital and successful ones.

During the fifties, inspired by Mr. Enrico Mattei, the President of ENI, we entered into the business of the equipment for the newly world-wide and growing hydrocarbon industry. Then, we added the construction and installation of Marine Loading Arms and special facilities for the berthing of oil super tankers.

In eighties, we started to design and to construct special high-precision mechanical manufacturing machines. Even, we manufactured components for nuclear plants, as per that period, the most advanced certified quality management system.

Today, our business is focused upon technologies for the hydrocarbon processing industry and separation components. But what we have learned and experienced in the course of the past 125 years still permeates the company. We learned the importance of our Customers and earned their respect. We value the importance of passionate Employees.

We still have the same enthusiastic entrepreneurial spirit, which took me

to USA, almost 50 years back, to acquire license for tray' technologies creating new opportunities. We still strive for innovative technologies, products and applications. Nowadays, our products are present in almost every country having hydrocarbon processing industries but we still follow few basic but very important principles:

- Be humble and be curious: every day we can learn something new
- Act in good faith: leave up to our conscience with honest words and actions
- Struggle for Quality: Neither mistakes nor delays are allowed
- Meet Customer Satisfaction: Give the best product at the best price
- Practice Safety: life is the most important gift that God has given us

In the course of all these years, I am very proud of the results we have achieved and I personally present my gratitude to all our Customers and Employees.

However, every day we are working for a better future where we see Baretta growing into a more profitable company and expand its reach in every corner of the world with the wish of adding value to Customers and Civil-Society while keeping in harmony with the global environment.

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65 YEARS OF TRAYS EXPERIENCE

BARETTI:

An established name in the fractionation column business.

Our trays have been installed in every type of columns and applications.

Tray Types

- Valve Trays
 - Rectangular Floating Valves
 - Round Floating Valves
 - Fixed Valves
- Sieve Trays
- Bubble Cap Trays
- Baffle Trays
- Cartridge Trays
- Liquid/Liquid Extraction Trays
- High Performance Trays - HPT
- Special Features
 - Lip Joint Connection
 - Quick Opening Manway
- Anti- clogging Technologies
- Hardware
 - Clamps
 - Bolting
 - Valves

Applications

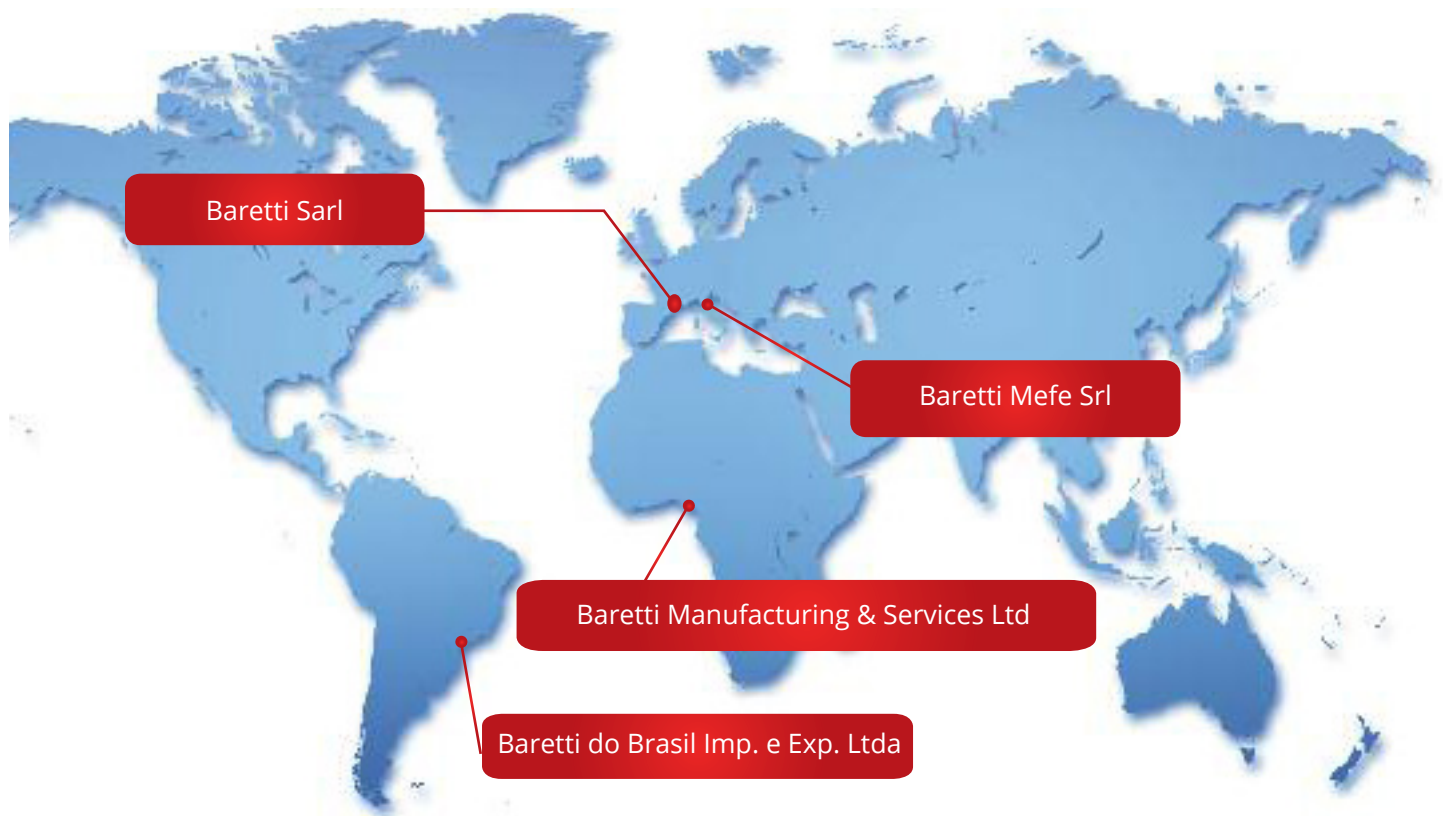
- Atmospheric Crude Towers
- Fuel Vacuum Towers
- Lube Vacuum Towers
- FCC Main Fractionators
- Coker Fractionators
- Stabilizers
- Amine Absorption Towers
- Regenerators
- Light-ends Distillation Towers
- Super Fractionators
- Quench Towers



TRAYS AROUND THE WORLD

Thousands applications around the world

The map shows Barett's global presence .



We have representatives all over the World



THE NEW FRONTIERES FOR TRAYS

High Performance Trays

FEATURES

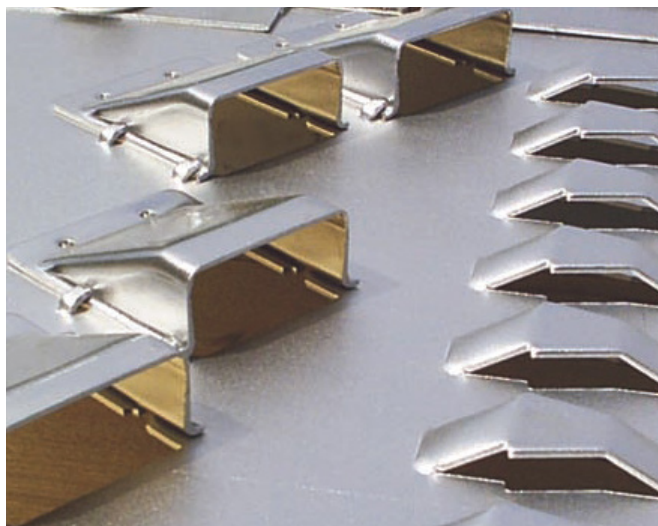
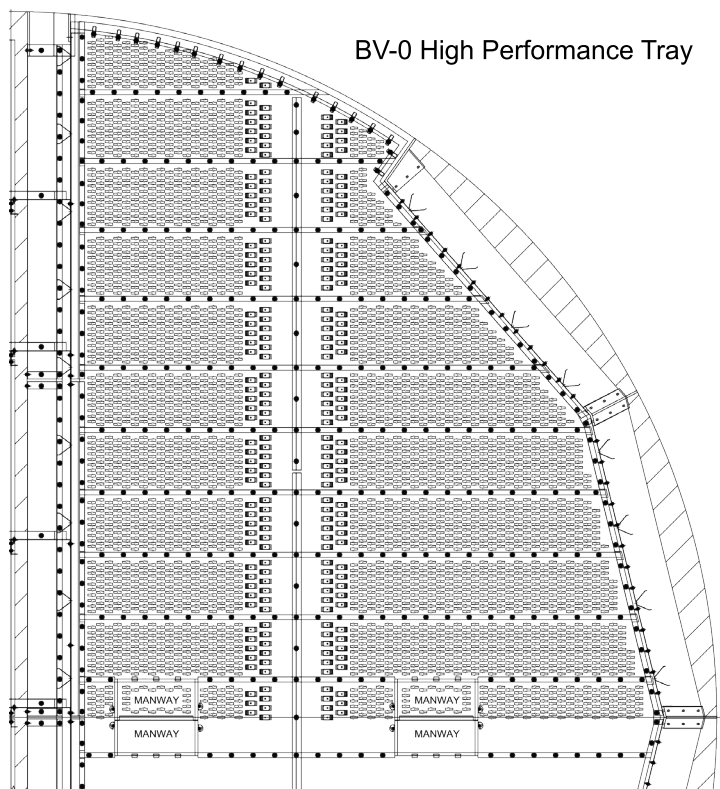
- Maximised active area
- Swept-back Downcomers
- Sloped Downcomers
- Micro Valves
- Bubble Promotors
- Push Valves
- Clear Liquid Separators

RESULTS

- Increased Efficiency
- Increased Capacity

ADVANTAGES

- More trays in the same space
- Lower reflux ratio
- Lower pressure drop



BUBBLE PROMOTORS

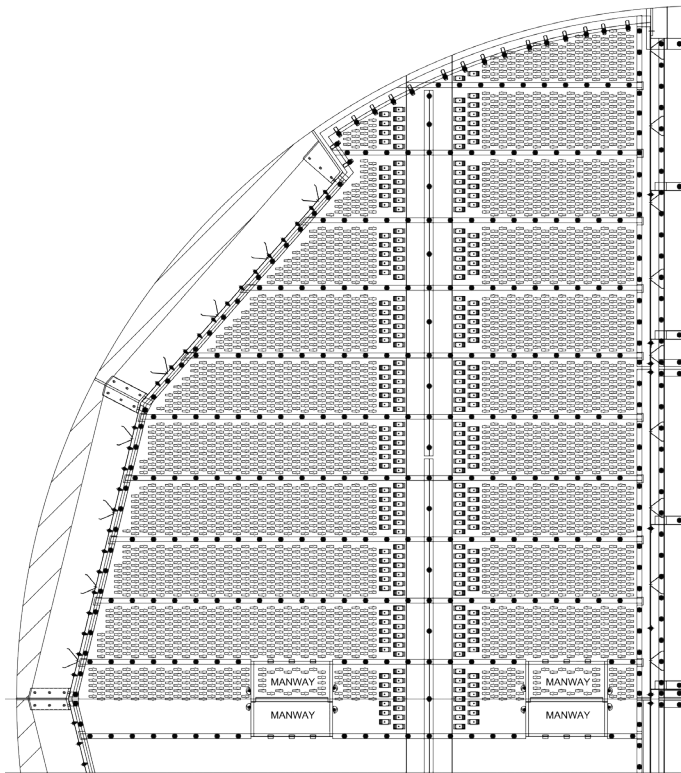
Bubble promoters installed at downcomer outlet enhance tray activity across the trays and reduce pressure drops.



PUSH VALVES

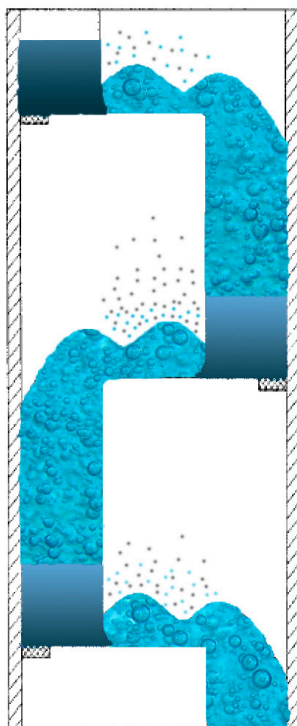
Placing push valves around the tray periphery prevents liquid stagnation zones.

THE NEW FRONTIERES FOR TRAYS

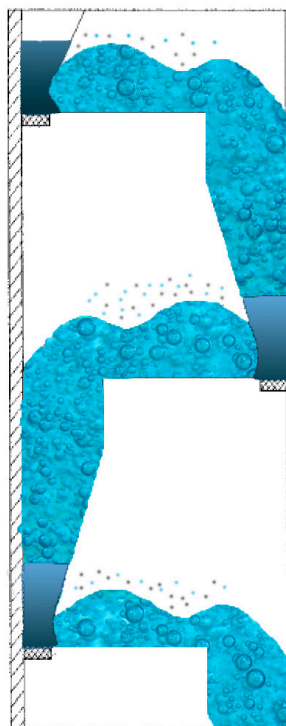


SWEPT-BACK outlet weirs offers the following advantages:

- Reduction of side dead areas with relevant improvement in overall tray activity
- Longer outlet weirs provide pressure drop reduction and more uniform liquid flow across the trays
- Longer outlet clearances reduce the under downcomer velocities and back-up
- Equal side and center weir length



Standard Tray



HPT Tray

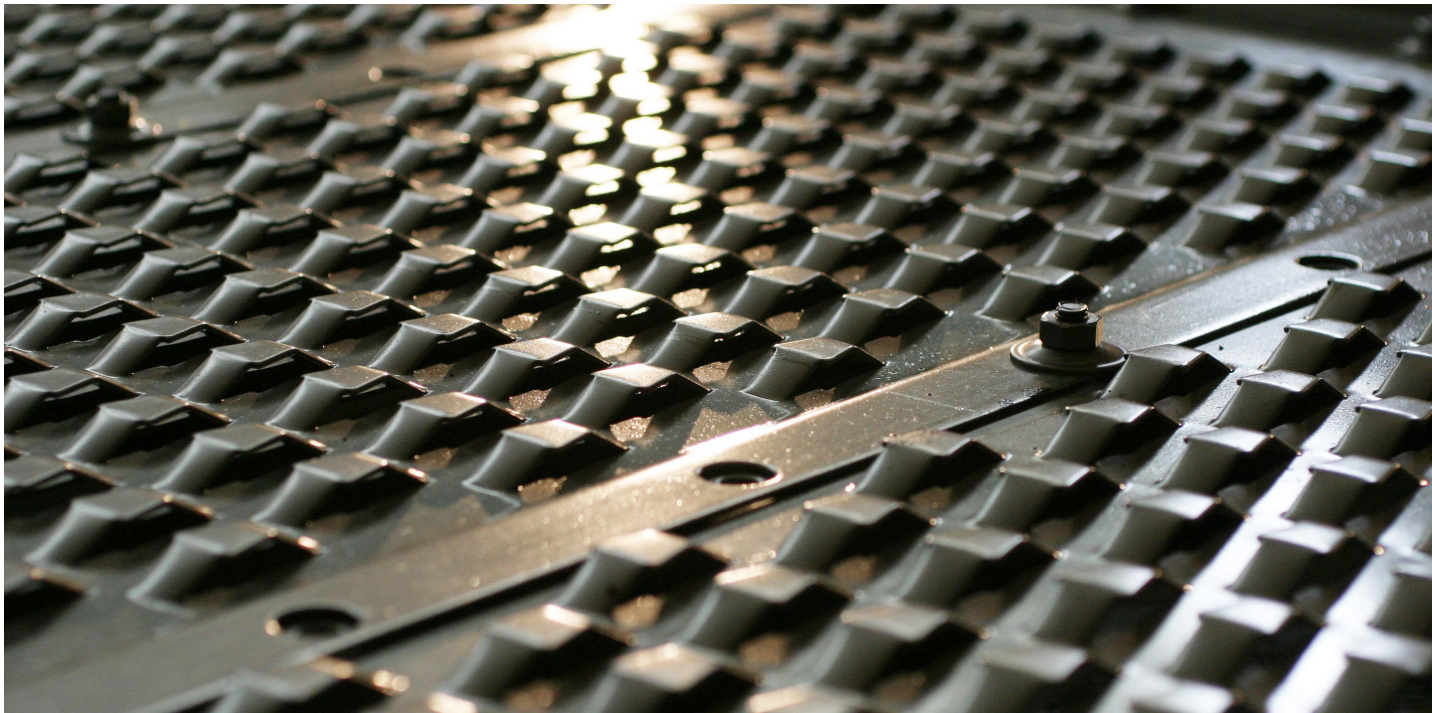
BARETTI HIGH PERFORMANCE TRAYS

are designed including all the following features:

- The tray's area is uniformly active.
- There are non dead zones created by too short weir length.
- The active area and the downcomer area are well balanced to maximize the use of column area
- The downcome bottom outlet area is reduced only to a peripheral zone of the tray and no active area is blocked by the seal area of the tray above
- Clear liquid bypass helps to reduce downcome size in services with high liquid loading.

THE NEW FRONTIERES FOR TRAY

High Performance Baretti Micro Valve BV-0

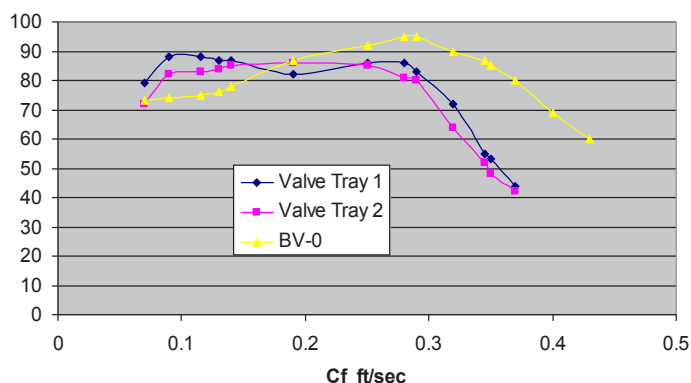


Our BV-0 tests have demonstrated its superiority over traditional valves in four areas:

- Greater capacity by an average of 10% as compared to any other type of floating and fix valves
- Lower pressure drop.
- Lower leakage. Infact BV-0 valve has tapered shape with legs of different width. The larger one is facing the liquid flow so to deflect the liquid, preventing the liquid to flow into the valve aperture
- High mechanical strength mainly based on two large legs

ADVANTAGES: Directional, low leakage, higher capacity, lower entrainment, suitable for fouling services

BARETTI BV-0



Other additional points to consider are:

- BV-0 extra capacity can be used to reduce the tray spacing in existing tray columns and allowing to increase the actual number of installed trays
- BV-0 units are available only as fix valves, since a floating unit of this size would be so light to get blocked in a random position.

CONVENTIONAL VALVES TRAYS

Baretti can design trays with proprietary and conventional valves for any type of service

BARETTI FLOATING VALVES

**Baretti BDH
Standard Valves**



**Baretti BV-1
Round valves**



**Baretti BV-2
Round low pressure drop**



**Baretti BA-2
Caged**

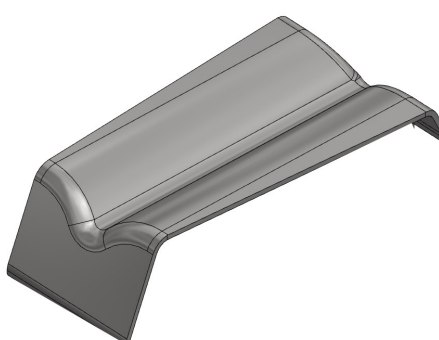


BARETTI V-GRID FIX VALVES

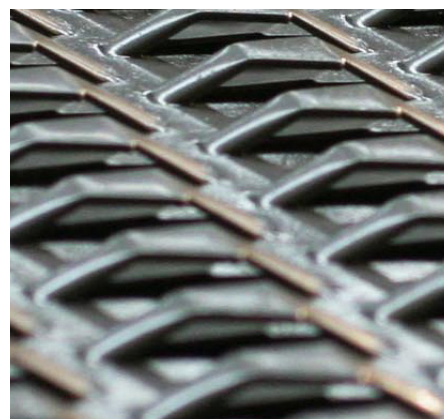
**Baretti SVG
Fouling Services**



**Baretti ACVG
Anti-clogging Valves**



**Baretti BV-0
High Capacity**



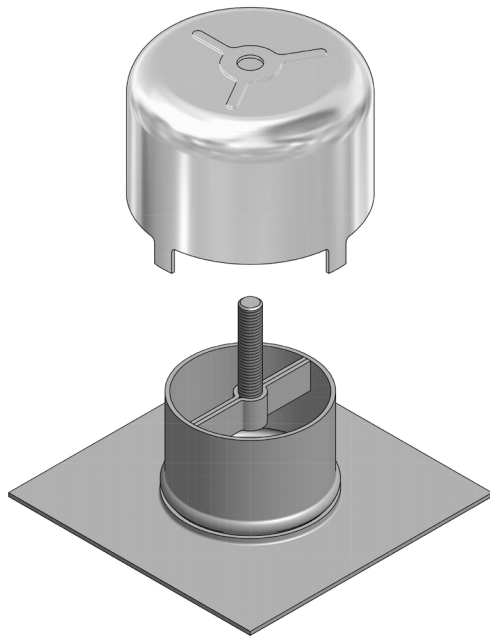
CONVENTIONAL BUBBLE CAPS & SIEVE TRAYS

Bubble Caps Trays

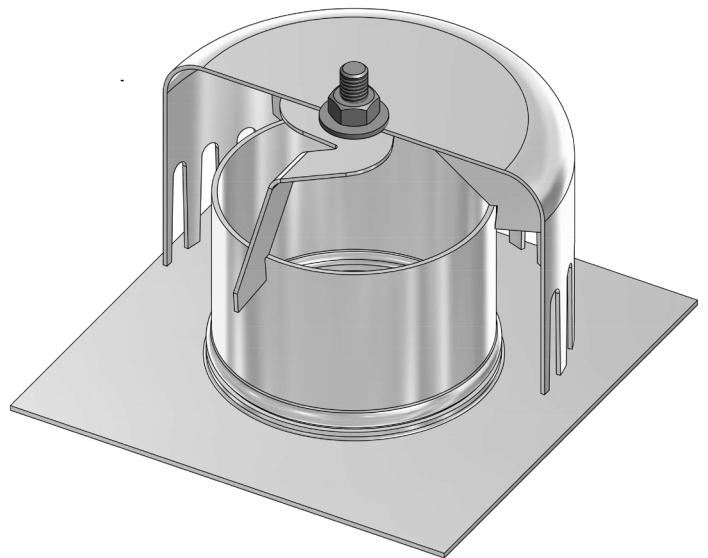
Bubble Caps are one of the oldest contacting devices used in distillation columns. For very low liquid rates services and special applications, Bubble caps are still used today.

There are basically two types:

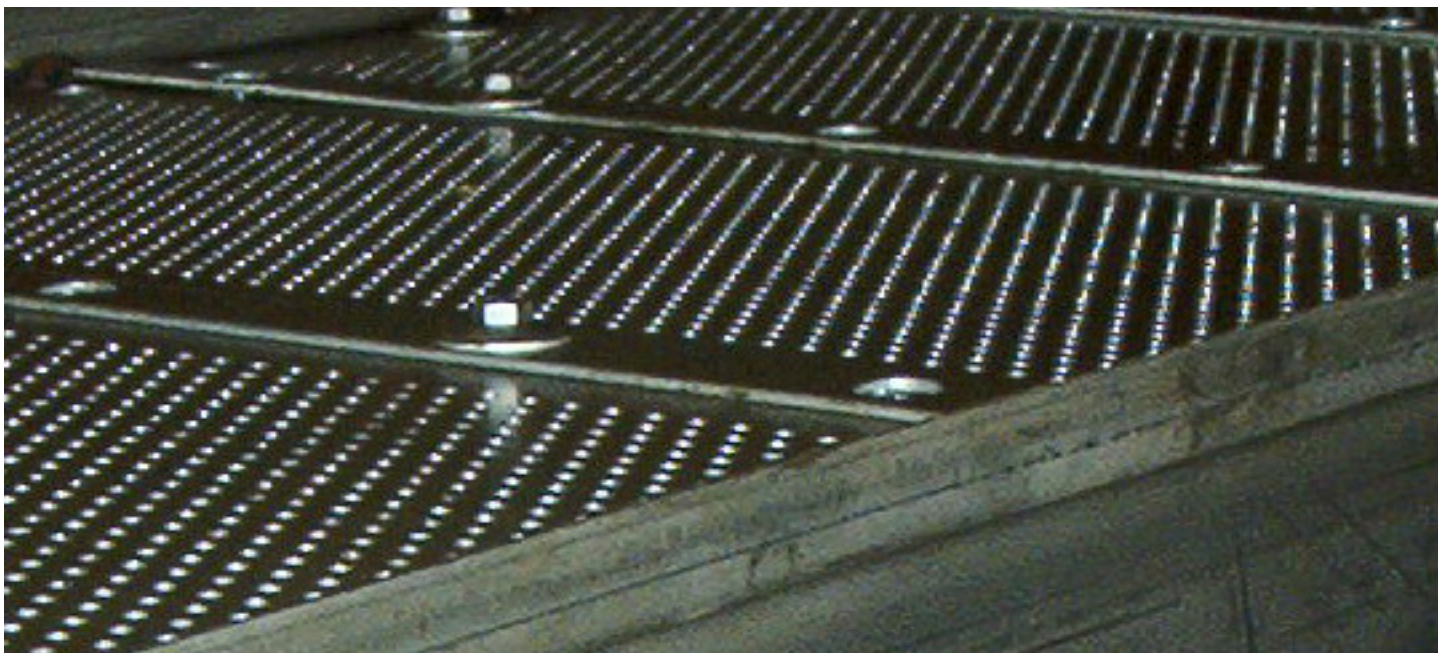
Unslotted type Bubble Caps



Slotted type Bubble Caps



Sieve Trays

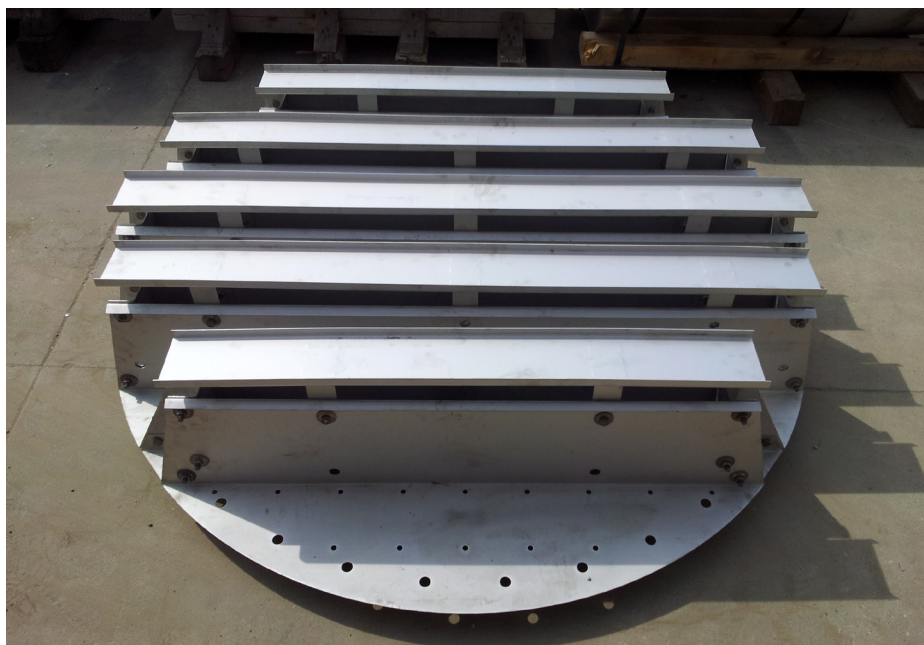


ASSOCIATED INTERNALS

A number of complementary Internals are designed and manufactured by Baretti in order to provide a complete set of internals

The most common are:

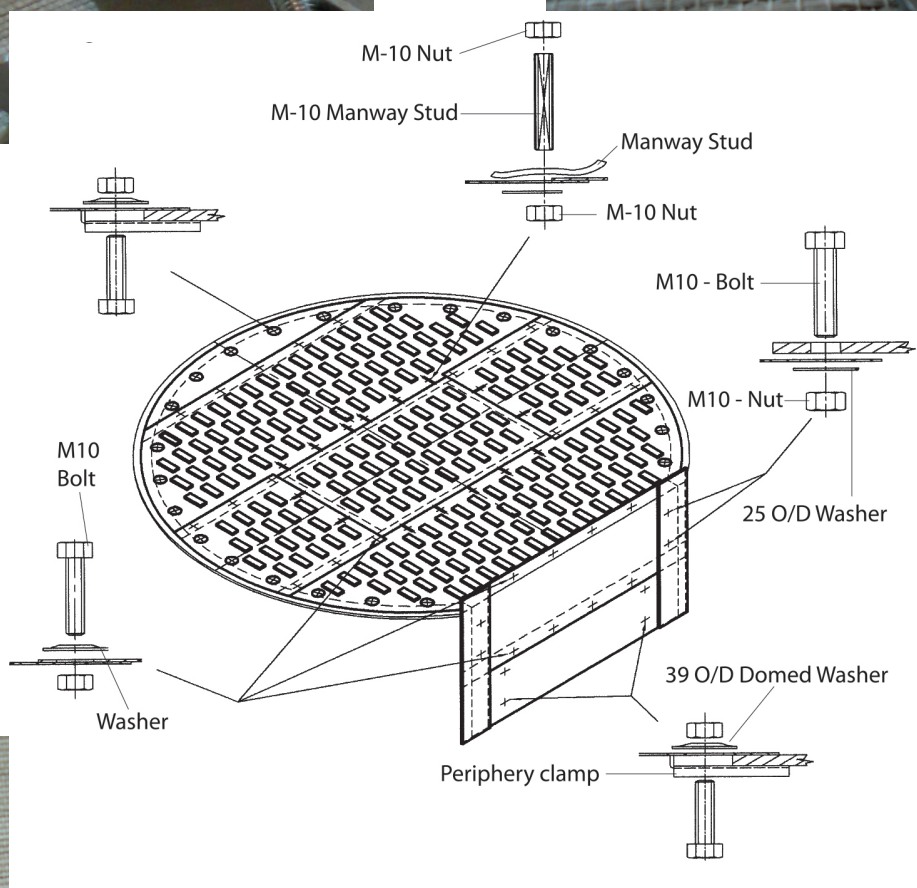
- Transition Trays
- Collector Tray
- Draw-Off Pans
- Feed Pipes
- Flashing Feed Devices
- Reinforced Trays
- Surge Relief Manways
- Quick Opening Manways
- Blanking Plates
- Liquid/Liquid Extraction Trays
- Cartridge Trays



Liquid Distributors Test Ring



INSTALLATION HARDWARE



BARETTI TRAY DESIGN FEATURES

Baretti trays are designed for maximum operability and reduced operating costs (OPEX). Special features are incorporated for an easy and quick installation reducing maintenance costs. Baretti standard design includes Quick Opening Manway and Lip Joints Connections. Cartridge trays with features for quick and smooth installation are designed for columns diameters below 900 mm.

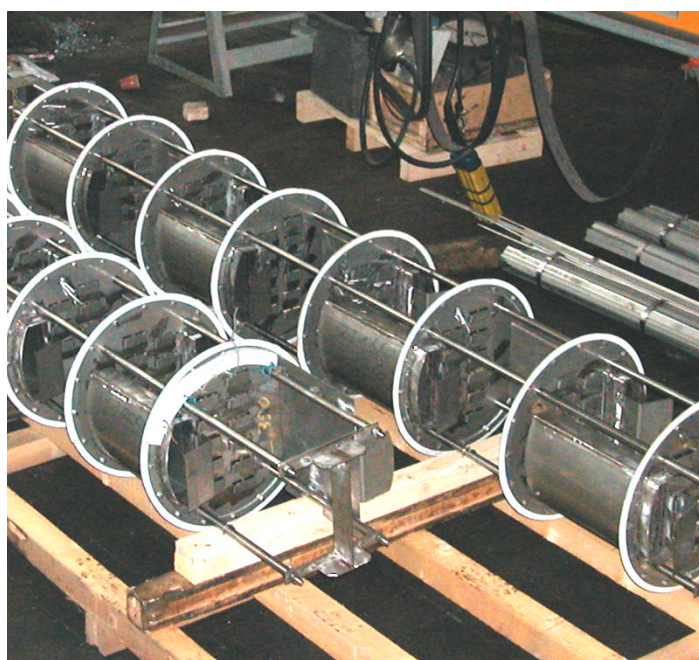
Quick Opening Manway



Lip Joint Connection



Cartridge Trays



INLET VANE DISTRIBUTOR



Vacuum Tower - Feed Inlet Vane Distributor
Column diameter 16.000 mm - Nozzles diameter 3.600 mm

BARETTI ADVANTAGES

Design, Engineering and Manufacturing



Baretti is committed to providing our customers with the latest technical services.

Baretti design procedures, based on the performance of thousands of successful installations, are the heart of our design philosophy.

Baretti computerized hydraulic and drafting procedures are maintained at the highest standards in order to keep improving our services quality



Baretti's technical office and fabrication facilities are located in northern Italy, close to the heart of Europe.

We can deliver vital materials and spare parts in matter of hours to most of our clients.

We are close to the major ports of Europe allowing us to easily deliver materials that allow us to serve our client's emergency parts and hardware of any kind.

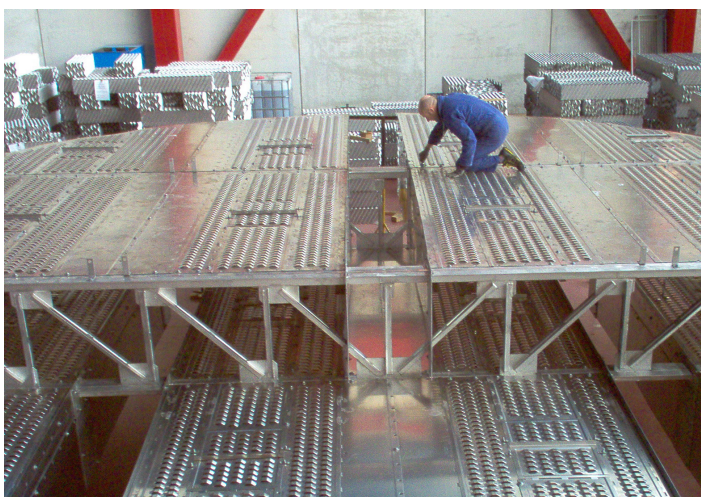
Our technical team is available 24 hours a day to assist our clients

BARETTI ADVANTAGES

A Complete Services

Baretti in addition to supplying trays and internals, provides a full range of services including:

- Process simulation design and optimization
- Mechanical design
- Installation supervision
- Column inspection
- Turn-around assistance
- Spare parts
- Turn-key Jobs



Baretti provides mechanical and functional inspection to analyze your systems for:

- Erosion
- Corrosion
- Polymerization
- Coking
- Pressure Profile
- Temperature Profile



BARETTI ADVANTAGES

Tray Design Software

Baretti has developed a new version of its Software working on the web.
This software is at disposal of all our clients and it is accessible at our server.

In order to have the possibility to use it, the following few inputs need to be given

- Contact our sales secretary at baretti@baretti.it
- Ask for a personal USERNAME and PASSWORD

You'll be furnished via e-mail with these data and an instruction file will guide you through the peculiarities of this software.

Our sales office will be always at your disposal to help you in special or complex cases.

The screenshot displays the Baretti Tray Design Software interface. At the top, the 'Baretti' logo and 'Marketing Data Warehouse' are visible. Below this is a navigation bar with 'COMPANIES', '+ ADD COMPANY', 'OFFERS', 'TRAYS', and 'STATISTICS'. The main interface is divided into several sections:

- General Data:** Includes fields for 'Item: T-30301', 'Service: Absorber', and 'Plant:'. Below this is a 'Fluid definition' table.
- Geometry:** A sidebar on the left contains input fields for 'Diameter (mm): 3100', 'Tray Spacing (mm): 610', 'Passes: 2', 'Contacting Dev: BV0', 'Valv. Length: 6', 'Hole diameter (mm): 0', 'Tray Mtl thk (mm): 2', 'N. Units: 1300', 'Off Crc CL/Shell: 0', and 'DC Sloping: 100'. It also includes a 'DOWNCOMER' table with columns for 'U.M.Side', 'Center', and 'Off Ctr'.
- Results Id Case 1:** A table on the right showing calculated values for '3% CO2' and 'U.M.'.
- Case:** A table at the bottom showing a summary of results for 'Tray #17 Case-A 100%'.

VAPOR Density kg/m3 (0 - 200)	System factor (<= 1)	LIQUID Rate kg/hr	LIQUID Multiplier (0.2 - 5)	LIQUID Density kg/m3 (200 - 1200)
72.33	0.75	262270	1	1068
72.33	0.75	262270	0.5	1068
72.33	0.75	262270	1.1	1068
77.8	0.75	231515	1	1068
77.8	0.75	231515	0.5	1068
77.8	0.75	231515	1.1	1068
75.28	0.75	348433	1	1068

3% CO2	U.M.	Side Area
Area DC Top	mq	0.529
Area DC Btm	mq	0.529
Ratio Btm/Top		100
Top Weir Length	mm	2033
Btm DC Length	mm	2033
Inlet Velocity	m/sec	0.065
Outlet Velocity	m/sec	0.337
Weir Loading	m3/m/min	1.01
Oper. Regime		Froth
Flow Path	mm	998
Act Area	m2	2.713
Weep Point		0

Id	Fluid name	Geometry	description	Jet Flood %	Weir Loading m3/m/min	DC Flood %	Loss Under DC mm of Lq	Liq Crest mm	DC Back-up mm	Dry P-Drop mm of Lq	Tray P-Drop mm of Lq	Tray P-Drop mbar	Weep Load %	% Valve Open	% Open Area	Valve Density #/m2
1	Tray #17 Case-A 100%	D_3100	3% CO2	45.96	1.01	31.22	16.05	36.4	210.4	26.49	84.74	8.84	36.4	0	7.94	240

LATEST

*Fully welded for heavy
duty services*



Indestructible

NOTES

Your Worldwide Partner

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