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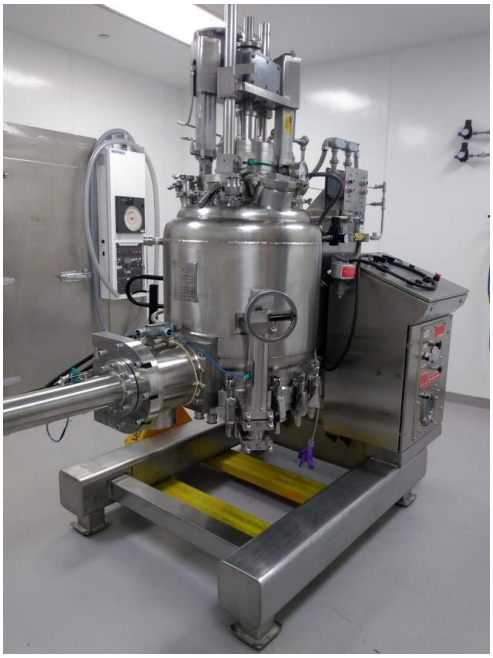
ZWAG Nutsche Filter



ZWAG Nutsche filters are enclosed, single-plate systems for pressure filtration and vacuum drying. With integral heating and drying, multi-functional ZWAG filters are compact and versatile for manufacturing, pilot and laboratory applications.

ZWAG filters by Chemap combine superior design with a program of total support that makes filtration easy.

Available with cGMP design for pharmaceutical industries.

ALL-IN-ONE OPERATION WITH ULTIMATE CONTROL

With ZWAG filters by Chemap, you can depend on cost-effective performance and our lifelong spare-part guarantee. These filters meet DGRL 2014/68/EU, ASME and any other industry standards. With hundreds of systems in place worldwide this technology has an extensive record of reliable performance across a broad range of applications:

- Pharmaceuticals
- Petrochemicals
- Food industry applications requiring FDA approval
- Fuel and oil additive filtration
- Hazardous materials filtration
- Precious metal and other catalyst recovery
- High solid content: up to 70%

Users appreciate the ZWAG filter's compact design for performance excellence and simple, safe, reliable operation.

At a glance you will notice the superior design of ZWAG filters. Unlike most other filters, it's a single, compact skid mounted unit with an uncluttered exterior designed with the operator in mind. Look beneath the clean exterior; you'll see design excellence throughout the system that delivers a top quality filtrate efficiently, reliably and safely.

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SAFETY THROUGH CONTAINMENT

Through all operation stages, the process is fully contained, a critical element when handling toxic or hazardous substances or solvents.

Operators can safely perform all functions, including filter removal and replacement. All unnecessary handling and its associated risks have been designed out of the ZWAG filter with the Integrated, fully automated vacuum drying system.

The vessel can be kept inert through nitrogen blanketing, preventing solvent vapors from being able to escape from the filter. The ZWAG Filter is available in an ATEX design.

When ordered with the optional gas-tight side discharge housing and customized seals, ZWAG filters can meet stringent US-EPA standard for toxic vapor emissions. If standards are raised, modifications can be incorporated with relative ease and low cost.

BASIC DESIGN ELEMENTS

Each ZWAG consists of four main parts, the vessel, the agitator assembly, the bottom plate, and the side discharge port.

The largest part of the ZWAG filter is the vessel, which is cylindrical in form with an integral spherical top. The head closes the top of the vessel and sup-ports the agitator assembly.

The agitator has a vertically oriented shaft, with horizontal blades mounted at the bottom. The agitator is motor driven and can rotate in forward and reverse. In addition, the agitator can move vertically, driven by hydraulic cylinders. The movement of the agitator allows for cake smoothing, re-slurrying, and cake discharge.

The bottom plate supports the filter screen. The side discharge employs a sealed plunger port which can be manually or automatically operated.

PROVEN CGMP DESIGN

ZWAG filters have been used for decades for production of active pharmaceutical ingredients and are capable of meeting the strictest safety and regulatory requirements. The ZWAG Filter accommodates through sanitary design, tri-clamp connections and cleaning in place (CIP) spray balls. The integrated high-torque agitator allows for complete washing of the product and drying to undetectable solvent levels, all in a fully enclosed environment.

SIZED TO MEET EXACT PROCESS REQUIREMENTS

Agitated Nutsche filter dryers come in a wide range of sizes from 0.1m2 to 12m2 in surface area, and 50L to 12’000L in volume. At the largest size, ZWAG units are able to process up 6,000kg of dried cake in one step.

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STEP-BY-STEP FOR QUALITY PERFORMANCE

ZWAG Nutsche filter features a single filter plate located at the bottom of the vessel. The single plate allows to build -up of a large amount of cake. This is beneficial for slurries that contain up to 70% solids.

During filtration, externally applied pressure forces the slurry downwards through the filter plate and the filtrate exits through a nozzle centered under the filter plate. The liquid passes through the filter medium while the solids particles start to bridge and build on the filter medium a layer, they become the barrier for further particle retention, creating the 'filter cake'.

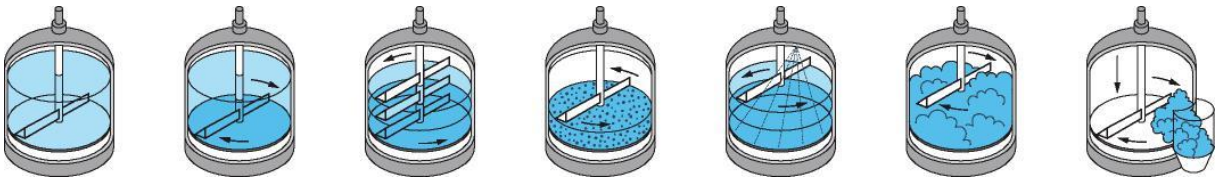
Depending on thickness and properties of the cake that builds-up in the Nutsche filter it could crack. Slurry would take the path of least resistance and flow through the cracks and not the cake, thus compromising filtration.

ZWAG filters use a motor driven, rotating agitator inside the vessel to continuously smooth the cake and keep it evenly distributed. Simultaneously, hydraulically driven actuators move the agitator vertically to follow the growth of the cake and thus prevent cracks.

Once the filtration process is complete, the cake can be washed and re-slurried by the agitator to achieve greater cake purity.

ZWAG filters offer the flexibility of vacuum and/or hot gas drying to achieve the correct cake consistency.

After the cake has been dried the side discharge valve is opened. The agitator rotation is reversed to push the cake out through the open valve.



1	2	3	4	5	6	7
ALL-IN-ONE OPERATION	**STIRRING FOR SLOW-FILTERING PRODUCTS**	**UNIFORMITY FOR QUICK-FILTERING PRODUCTS**	**PRESS FOR QUALITY**	**WASH FOR QUALITY**	**UNIFORM DRYING**	**TOP DOWN DISCHARGE**
Sized for your production batch, your ZWAG is never a bottleneck.	After filling, continuous stirring just above the filter plate reduces filtration time.	The cake is layered with evenly distributed particles by progressively raising the agitator blades	The agitator smooths down the cake to close cracks and create a uniformly permeable structure.	Liquid is sprayed evenly over the cake for thorough diffusion washing, and can be easily re-slurried for greater purity	Solids are kept moving over the heated bottom for speedy, complete drying.	The agitator blades scrape the cake through the side door from top to bottom.

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CAPACITIES

Your ZWAG filter is customer-configured to your specifications from standard components that have been proven effective many times over. It's the surest way to bring a new system on-line quickly and without problems. With a complete range of off-the-shelf options plus engineering applications know how, ZWAG by Chemap can meet your special needs.

Size	Surface Area	Vessel Diameter	Nominal Working Volume	Total Volume	Solid Volume	Agitator Stroke
m2	m2	mm	liters	liters	liters	mm
0.25	0.25	600	150	189	75	300
0.50	0.50	800	300	352	150	300
0.75	0.75	1'000	450	572	225	300
1.0	1.00	1'200	1'000	1'190	500	500
1.6	1.60	1'500	1'600	1'930	800	500
2.0	2.00	1'700	2'000	2'510	1'000	500
3.0	3.00	2'000	3'000	3'680	1'500	500
4.0	4.00	2'300	4'000	5'030	2'000	500
5.0	5.00	2'600	5'000	6'430	2'500	500
…	…	…	…	…	…	…
12.0		4'000	12'000	18'010	6'000	500

Efficiency

- ✓ Active agitation promotes homogeneous cake and speeds filtration
- ✓ Washing and re-slurrying eliminates impurities
- ✓ Single filter plate speeds cleaning and/or change-over for successive batches of different products and eliminates cross contamination
- ✓ Built-in vacuum drying reduces product handling
- ✓ Its compact design makes one person Operation easy and safe.

Engineered and built to our most exacting standards, the ZWAG filter is a reliable, low maintenance workhorse.

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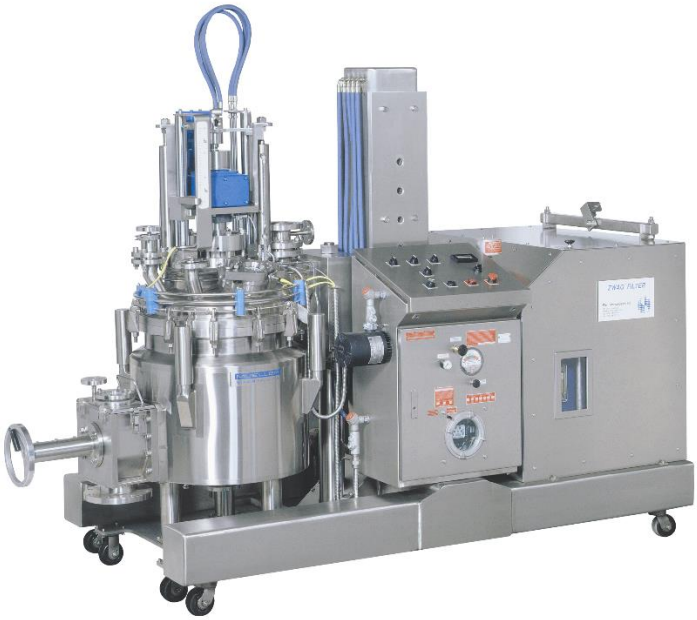
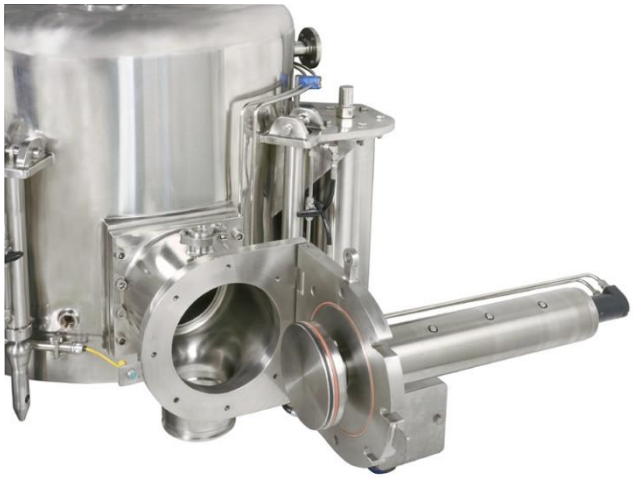
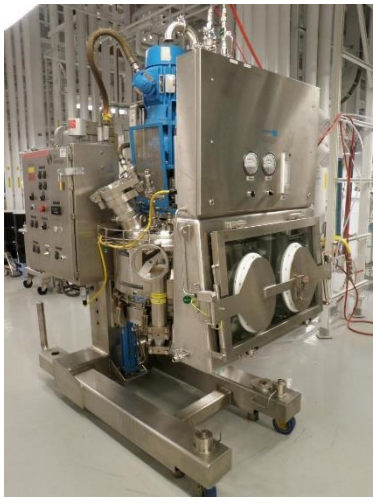
Pictures



Skid Mounted ZWAG



Discharge Details



ZWAG with Glove Box