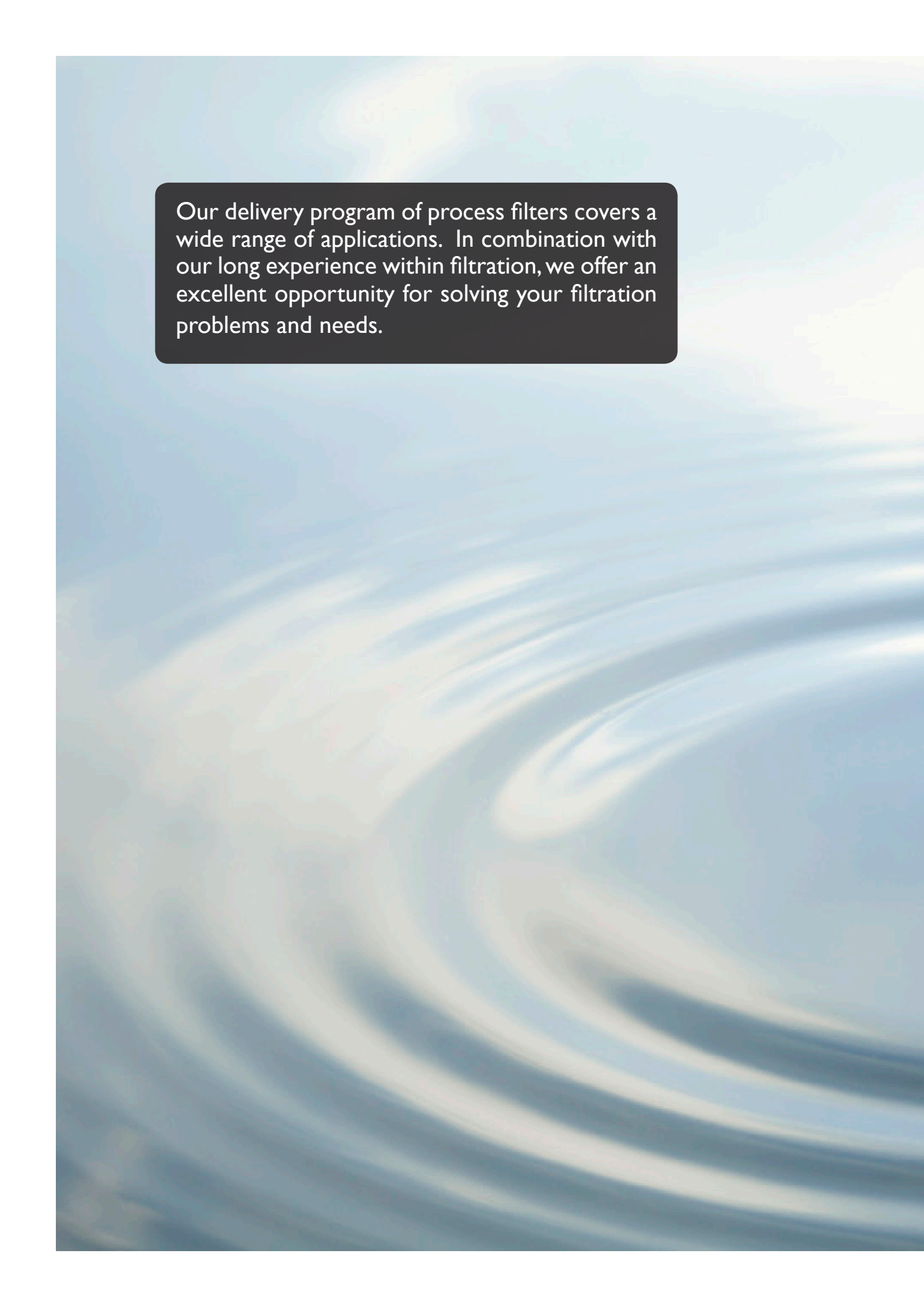




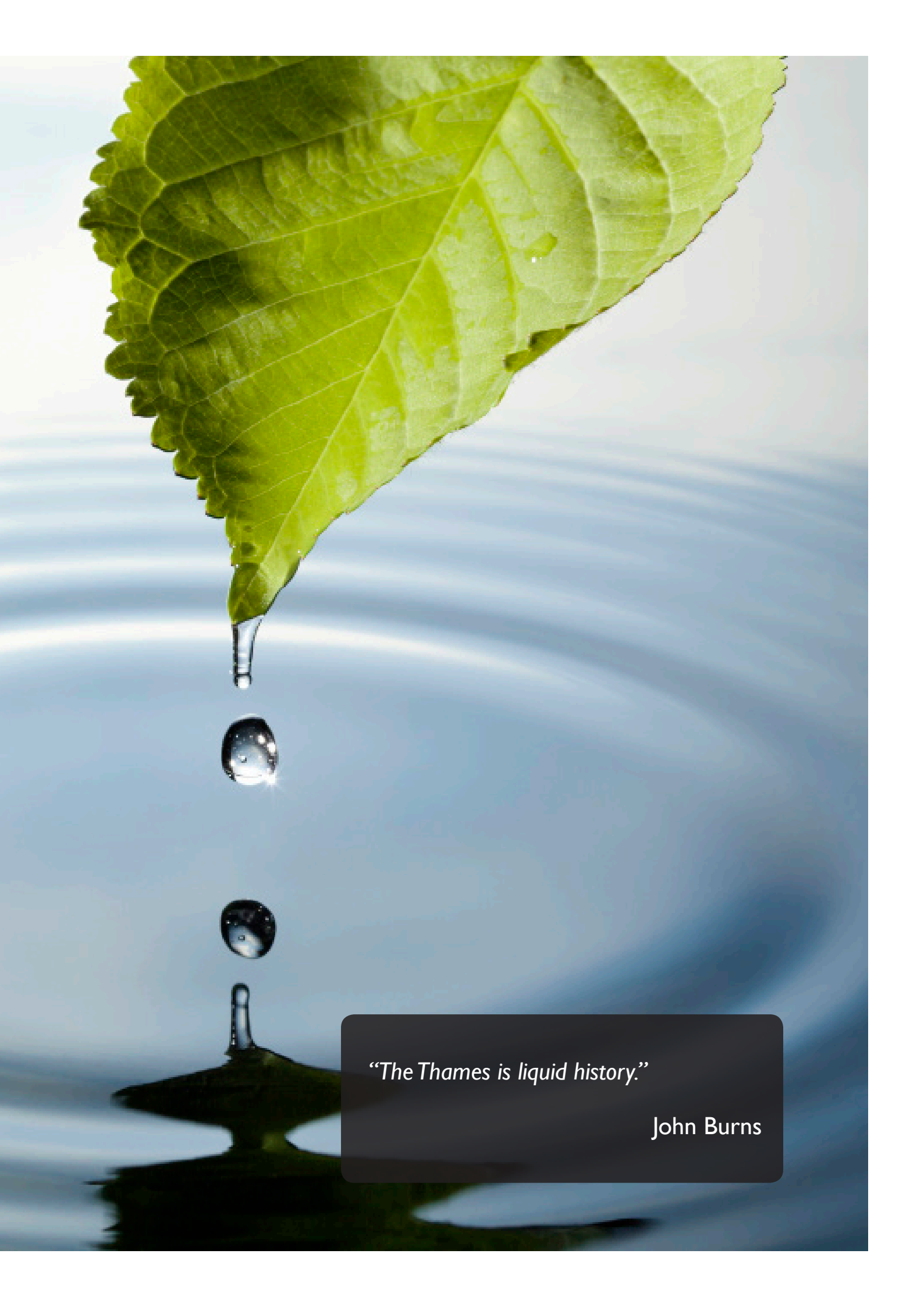
PROCESS FILTERS

The Complete Range

 **THURNE**
TEKNIK

The background of the entire page is a close-up photograph of water ripples. The ripples are concentric and spread out from the bottom right towards the top left, creating a sense of movement and depth. The colors range from light, almost white, to deep blues and greys, with soft gradients between them.

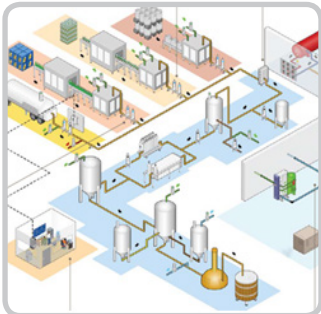
Our delivery program of process filters covers a wide range of applications. In combination with our long experience within filtration, we offer an excellent opportunity for solving your filtration problems and needs.



“The Thames is liquid history.”

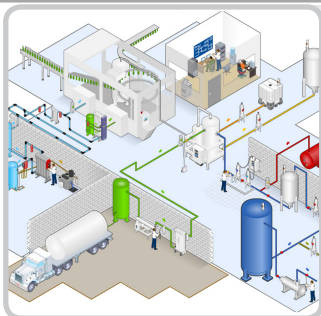
John Burns

Pharmaceutical & Bio Pharmaceutical



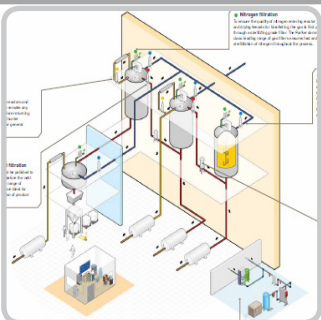
Thurne Teknik is a supplier to the Pharmaceutical Industry of high quality products for the clarification, stabilization and sterilization of liquids and gases, providing full scalability and validated performance from small scale development units up to the GMP production scale. Each filter has been specifically developed to meet industry application needs and requirements.

Food & Beverage



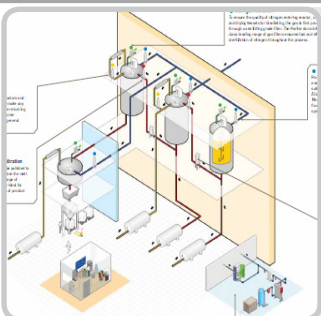
With a dedicated product range specially designed for quality and costeffectiveness in food and beverage processing we are committed to improve process efficiency while preserving the quality of your food and beverage products.

API & Organic Synthesis



The clarification and filtration needs vary from process to process but generally follow some similar pattern: Solvent filtration into the reactor (for particle removal), clarification of the process intermediates before the crystallization, reflux clarification, nitrogen filtration. The chemical compatibility of the filters and filter housing materials is of special interest here.

Chemicals



The clarification of chemicals require normally highly cost-effective solutions and fast turnaround times. Whereas the validation requirements are not of interest in chemical industry (as they are in pharmaceutical) the robustness and chemical compatibility of the filter media and filter housing materials play the most important role.

Pharmaceutical & Biopharmaceutical



PLATE & FRAME FILTER SYSTEMS AND FILTER SHEETS

The filter sheets, with or without filter aids such as DE and perlites, provide high dirt holding capacity and wide range of filtration ratings from coarse pre-filtration up to fine filtration towards the end of the process.

Technical details:

Filter systems from 200x200 to 1200x1200mm filter sheets + special designs available. Filtration ratings from 0,2 to 35 um.



SINGLE USE LENTICULAR FILTER FOR CELL SEPARATION

A lenticular filter module in fully disposable format is now available specially designed for cell harvesting. Gentle alternative to centrifugation.

Technical details:

Fully scalable from 0,02 up to 2 m2 filter units. Pharma grade filter aid is included within the filter units.



REUSABLE & SINGLE USE HOLLOW FIBER MEMBRANES

High-capacity, anti-fouling, UF and MF hollow fiber membranes optimize your cross-flow filtration processes. Single-use membranes are ready-to-use cross-flow filters, with no pre-rinse, no cleaning & cleaning validation required. 100% integrity tested.

Technical details:

Cutoffs from 5K – 750K Dalton and 0.1 – 0.45um.
3 fluid path-lengths, 12”-24”-41”



CARTRIDGE & CAPSULES FILTER FOR PRE FILTRATION

Pharmaceutical grade of filters offer the reliability and safety protecting the sterile filters or other unit operations downstream

Technical details:

Filter materials in PP and/or borosilicate from 0,5...100um in variety of configurations and connections to fit your process requirements. Validation guides available for all pharma filters.



CARTRIDGE & CAPSULES FILTER FOR FINAL FILTRATION

The requirements for sterilizing grade filters to apply is described per ASTM F838-05. The reliability and validated performance will guarantee the quality and safety of your final product.

Technical details:

Fully validated PES filters in 0.1, 0.2 and 0.45um in both capsule and cartridge formats. 100% integrity tested. Validation guides available.

Food & Beverage

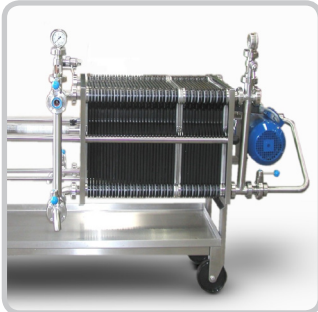


PLATE & FRAME FILTER SYSTEMS AND FILTER SHEETS

Filter systems for standard filters sheets (200x200 to 1200x1200) for the intermediate or final filtration. Stand-alone system or complete systems available.

Technical details:

Filter elements from 316L, PP, PVDF or Noryl, also activated carbon available. ATEX closing system available. Micron ratings from 0,04 μm and up.

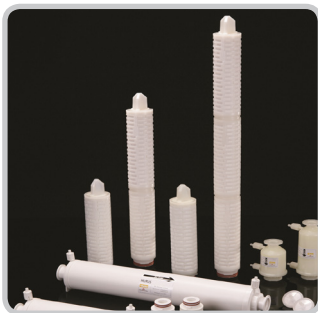


DEPTH FILTER LENTICULAR MODULES, FOR COARSE, FINE AND STERILE FILTRATION

Depth filter modules allow the user to handle large filter areas easily in a disposable assembly. Filtration is performed in a closed system. Depth filter sheets inside have a high dirt holding capacity of up to 4 kg per m^2 .

Technical details:

Available in different heights dependent upon the desired number of modules and with diameter 12" and 16". Micron rating from 0,04 and up.



CARTRIDGE FILTER PRE FILTRATION

Prefiltration liquid filter provide a high efficiency removal of particles that maximises the effective filtration area and provide wide chemical compatibility, coupled with low extractable levels.

Technical details:

Capture of particles is throughout the depth of the media, larger particles being retained in the outer prefiltration layers, whilst the inner graded density media provides accurately defined retention under wide extremes of operating conditions. Micron rating from 0,1 μm and up. Material: PP, GF and PES



CARTRIDGE FILTER BIO BURDEN REDUCTION & FINAL FILTRATION

Prefiltration or final filtration liquid filter provide a high efficiency removal of spoilage organisms and yeast removal providing economic stabilization of the product.

Technical details:

Capture of particles is throughout the depth of the media, larger particles being retained in the outer prefiltration layers, whilst the inner graded density media provides accurately defined retention under wide extremes of operating conditions. Micron rating from 0,2 μm and up. Material: PP, GF, PES



DYNAMIC CROSS FLOW FILTER

The DCF system works with overlapping rotating ceramic filter discs, which generate a turbulent flow of the feed towards the filter surface and minimize clogging and cake building on the filter.

Technical details:

High filtration throughput and handling also high viscous products. Filtration ratings from 7 nm to 2 μm . Suitable for SIP and filtration in dead-end mode.

Organic Synthesis



PLATE & FRAME FILTER SYSTEMS AND FILTER SHEETS

Filter systems for standard filters sheets (200x200 to 1200x1200) for the intermediate or final filtration. Stand-alone system or complete systems available.

Technical details:

Filter elements from 316L, PP, PVDF or Noryl, also activated carbon available. ATEX closing system available. Micron ratings from 0,2 um and up.



BAG FILTERS

Bag filters enable high solids separations and easy change-out of the filters even during the process. Bag filter housings are also available.

Technical details:

Bags are available in wide range of materials to suit most application needs, micron ratings from 0,5 um to 1mm.



LENTICULAR & CARTRIDGE CARBONE FILTERS

Activated carbon filters offers efficient way for discolorisation (colour removal) from your products. The Carbofil modules allow users to handle large areas of activated carbon sheets in disposable format.

Technical details:

Modules are available in 12" and 16" formats. Activated carbon up to 600 g/m². Modules with bayonet or double open end (DOE) available to fit existing housings.

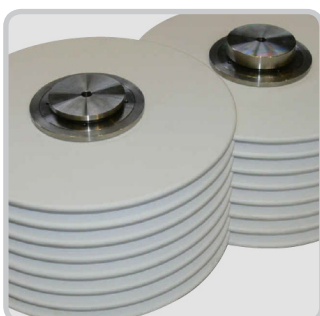


CARTRIDGE FOR CHEMICAL FILTRATION

Filter cartridges with PP or PTFE material for optimized chemical compatibility ensure the robustness and prolonged life-time of the filters in your process. Several different gasket materials are available.

Technical details:

Filters cartridges and capsules (no filter housing needed for capsules) are available from 4" up to 40". Filtration ratings from 0,05 um up to 100 um.



DYNAMIC CROSS FLOW FILTER

The DCF system works with overlapping rotating ceramic filter discs, which generate a turbulent flow of the feed towards the filter surface and minimize clogging and cake building on the filter.

Technical details:

High filtration throughput and handling also high viscous products. Filtration ratings from 7 nm to 2 um. Suitable for SIP and filtration in dead-end mode.

Chemical



PLATE & FRAME FILTER SYSTEMS AND FILTER SHEETS

Filter systems for standard filters sheets (200x200 to 1200x1200) for the intermediate or final filtration. Stand-alone system or complete systems available.

Technical details:

Filter elements from 316L, PP, PVDF or Noryl, also activated carbon available. ATEX closing system available. Micron ratings from 0,2 um and up.



BAG FILTERS

Bag filters enable high solids separations and easy change-out of the filters even during the process. Pleated bag filter design for increased capacity and filter housings are also available

Technical details:

Bags are available in wide range of materials to suit most application needs, micron ratings from 0,5 um to 1 mm.



CARTRIDGE FILTER

The best performance of the filtration process is achieved through proper filter selection and sizing. "Over-filtration" is never recommended as the capacity and the flow rates typically decrease.

Technical details:

Filter cartridges from variety of materials (e.g cellulose, PES, PP, PE PTFE) for optimized performance in most applications, from 0,05 to 100 um.

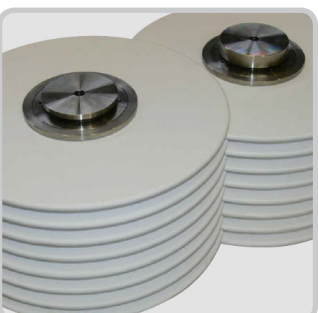


FILTER PRESS

For solid/liquid separation using the principle of pressure drive, provided by a slurry pump. Basic components are the frame, filter plate pack, closing device, and optional additional features.

Technical details:

Sizes 250 x 250 to 2,600 x 2,600 mm and filtration pressures up to 60 bar. Available from simple manual to fully automated equipment designs. Maximum degree of automation, also with extremely sticky filter cake.



DYNAMIC CROSS FLOW

The DCF system works with overlapping rotating ceramic filter discs, which generate a turbulent flow of the feed towards the filter surface and minimize clogging and cake building on the filter .

Technical details:

High filtration throughput and handling also high viscous products. Filtration ratings from 7 nm to 2 um. Suitable for SIP and filtration in dead-end mode.

UTILITIES (water, air/gas & steam)

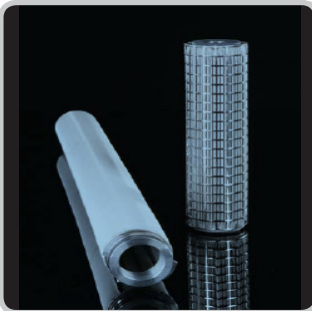


COMPRESSED AIR FILTERS

OIL-X EVOLUTION is a range of high efficiency compressed air filters consisting of coalescing filter grades for the removal of water and oil aerosols, solid particulates and micro-organisms.

Technical details:

Delivered air quality in accordance with ISO 8573-1:2001, the international standard for compressed air quality. Coalescing filters performance tested to the stringent requirement of ISO 12500-1. Dust removal filters performance tested in accordance with the test methods of the ISO 8573 Series.

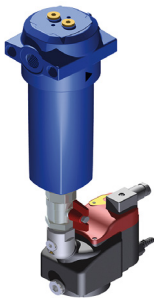


STEAM FILTER

The quality of steam used within the food and dairy industries has been raised higher on the agenda in an ever increasing number of companies. It is critical that this steam is of a high quality to ensure effective and continuous operation of the process.

Technical details:

3 l6L stainless steel filter, cartridges. Exceptionally high flowrates. Available in process and culinary grade 1 – 25µm. High dirt holding capacity.



CARTRIDGE FILTER FOR WATER FILTRATION

In industrial applications water treatment is employed to optimise processes such as heating, cooling, processing, cleaning and rinsing. Typically filtration is required in areas where scaling and corrosion occur.

Technical details:

Process water is typically filtered in large volumes with filters primarily being used in desalination and municipal water plants. Due to the volume of water filtered in these applications there is a requirement for larger diameter cartridges such as the PARMAX and MAXGUARD elements which are ideal for general clarification.



CARTRIDGE FILTER FOR GAS

There is an increasing demand in the industry for filtration of Air/Gas which can be used in applications such as a line cleaning, storage tanks, machines and the venting from storage tanks. It can be particles filtration or sterile filtration of the gas stream.

Technical details:

Wide spectrum of cartridges with different membranes and construction depending of the application and what retention is needed to maximise the flow rate.



TWIN FILTER

Automatic Self Cleaning Filter, highly effective in removing suspended solids down to 50 micron without flocculants, pre coats or granulated media, equipped with one or several 50 to 150 micron screens. Operates fully automatically, eliminating the need for manual cleaning.

Technical details:

Min. operating pressure 2 bar (29 psi), clean filter pressure loss 0.1 bar (1.45 psi)
Max. water temperature 50°C (122°F), filtration range 50-500 micron, control system electrical / PLC, 380V AC, 3ph, filter housing materials steel epoxy coated.

Service & Support



VALIDATION SERVICES

For any pharmaceutical filtration process we can offer validation services to match your quality and regulatory requirements. These services will include extractable testing, product based integrity testing value validation, bacterial challenge testing. Parker Domnick Hunter's qualified validation laboratories in Newcastle, UK and in Denmark (from Q2/2012) will provide services and trouble-shooting support to make your process development as smooth as possible.



BASIC FILTRATION SCHOOL

It is one thing to understand a filter itself as a product, and it is another thing to understand how it works when fulfilling a filtration task. Therefore, Thurne Teknik offers a basic filtration course to explain the theoretical background of separation by filtration. The theory is varied with practical examples. Duration of the course is half a day.



TFF FILTRATION SCHOOL

It is one thing to understand a filter itself as a product, and it is another thing to understand how it works when fulfilling a filtration task. Therefore, Thurne Teknik offers a TFF course to explain the theoretical background of separation by filtration. The theory is varied with hands on and practical examples. Duration of the course is 2 days.



TROUBLE SHOOTING

The aim is to improve economy of filter use and to improve product yield and quality. We understand the practical needs within the process. If system performance is found to be out of specification, or showing deviation from the norm we can count on active support on-site to identify and resolve problems.



FILTRATION TEST FOR SELECTION OF OPTIMAL FILTER SOLUTION

- Dead-End filtration – Optimized
- Filterability Studies
- Vmax Determination
- Automated Data Collection and Trend graphing

FILTER table - summary

INDUSTRY SEGMENT / FILTRATION STEP

	PHARMA & BIOPHARMA	FOOD & BEVERAGE	INDUSTRIAL	API & ORGANIC SYNTHESIS	CHEMICAL
FILTRATION RANGE 10...100 UM	Filter cartridges & Capsules PARKER DOMNICK HUNTER Filter sheets/ lenticulars FILTROX	Filter capsules PARKER DOMNICK HUNTER Sheet filters FILTROX	Sheet filters FILTROX Bag filters PARKER DOMNICK HUNTER	Sheet filters FILTROX Bag filters PARKER DOMNICK HUNTER	Pressure filters, Filtrdisc HT –modules FILTROX Bag filters PARKER DOMNICK HUNTER
CELL HARVESTING	Dynamic Cross Flow ANDRITZ KMPT Filtrdisc BIO SD FILTROX	Dynamic Cross Flow ANDRITZ KMPT Filter sheets FILTROX	n/a	n/a	n/a
FILTER AIDS	Carbofil filter modules (incl. activated carbon) FILTROX	DE, Perlites for drum filters, filter presses etc. FILTROX	DE, Perlites for drum filters, filter presses etc. FILTROX	Carbofil filter modules (incl. activated carbon) FILTROX	n/a
PRODUCT CONCENTRATION	TFF systems SCIOG	Dynamic Cross Flow ANDRITZ KMPT	Dynamic Cross Flow ANDRITZ KMPT	Dynamic Cross Flow ANDRITZ KMPT	Dynamic Cross Flow ANDRITZ KMPT
FILTER HOUSINGS (FOR CARTRIDGES)	Filter housings SS 4"...30", SS316 Ra 08, 0.6um	Liquid and gas housings, multi round	Housings 10...40", std single or multi-round	Housings 10...40", std or specials (eg Alloy22)	Filter housings SS, PP, Alloy22
FINAL FILTRATION E.G 5 UM OR 0.2 UM (STERILIZING)	Propor SG or HC (sterilizing grade), SG – low plugging streams HC – High Capacity	Bevpore PARKER DOMNICK HUNTER	Industrial filter cartridges, 0,5...10 um PARKER DOMNICK HUNTER	Tetpor liquid (PTFE) for solvent filtration PARKER DOMNICK HUNTER	Industrial filter cartridges, 0,5...10 um/ Filter sheets PARKER DOMNICK HUNTER
DISPOSABLE ASSEMBLIES WITH OR W/O FILTERS	Bags + filters pre-sterilized JM SEPARATION PARKER DOMNICK HUNTER	n/a	Tank Liners JM SEPARATION	Bags JM SEPARATION	Tank Liners JM SEPARATION



SUPPLIERS

Process Filters



Some equipment may not be available from Thurne Teknik in certain geographical areas.

FILTERS WITH PROCESS UNDERSTANDING.

By tradition, our scope of supply has been process equipment and process systems. This gives us high process understanding, which we believe also helps us when serving customers within the field of components. Furthermore, our aim is to be easy-to-do-business-with, which for us means simple administration and communication according to customer wishes.

We are proud to present our partners below:



Thurne Teknik AB
Lugnets Allé 1
SE-120 65 Stockholm, Sweden
Phone: +46 8 55 69 31 40
Internet: www.thurne.se
E-mail: info@thurne.se

Thurne Teknik Danmark
Valhøjs alle 154
DK-2610 Rødovre, Denmark
Phone: +45 89 88 35 00
Internet: www.thurne.dk
E-mail: info@thurne.dk

Thurne Teknik Finland
Vapaalantie 2B
FI-01650 Vantaa, Finland
Phone: +358 42 45 10 70
Internet: www.thurne.fi
E-mail: info@thurne.fi

Thurne Teknik Baltic
Baltā iela 1B
Rīga, LV-1055, Latvija
Phone: +371 6 616 3763
Internet: www.thurne.eu
Email: info@thurne.eu