

# The Buyer's Guide

to Oligonucleotide Synthesis

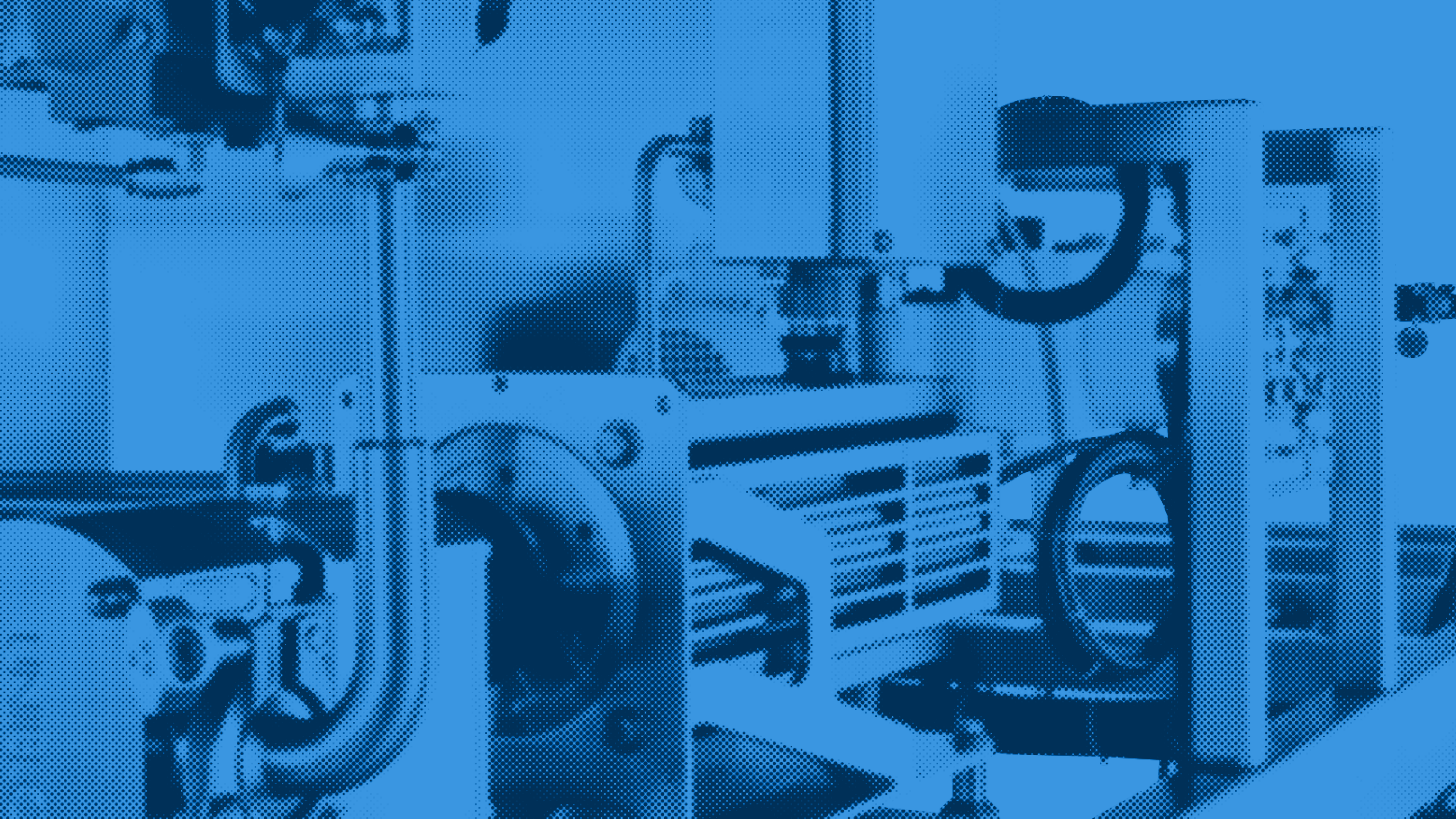
Acquiring the Equipment & Components Needed to  
Produce Oligos at Scale





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# Introduction

**What is oligonucleotide synthesis, and how do equipment and components play a role in the ability of biomanufacturers to produce oligonucleotides at scale? In this buyer's guide, our oligonucleotide synthesis experts provide in-depth insights and guidance on how to get started.**

Oligonucleotide synthesis is the chemical construction of short sequences of nucleic acids known as oligonucleotides or oligos for short. Oligos are essential to many cell and gene therapies because of their ability to modulate gene expression. Researchers and clinicians use them to develop treatments for genetic disorders, cancer, and other diseases. This has put oligos in high demand, resulting in a growing number of biomanufacturers that want to increase their oligo throughput and scale production.

However, scaling up oligonucleotide synthesis doesn't happen overnight. It's a challenging task requiring significant time and resources. Plus, your production needs change as you grow. For example, you may require longer oligos for gene synthesis. Producing longer oligos requires more steps in the synthesis process, and as the length increases, so does the number of reactions. This can lead to an increased likelihood of errors and challenges in purification.

**Then comes the question of what type of oligonucleotide synthesis will meet your needs. There are three main types of synthesis, each with its own process.**



## DNA Oligonucleotide Synthesis

A process that allows researchers to design and obtain custom-made DNA sequences for various molecular biology applications, including DNA sequencing and gene cloning.



## RNA Oligonucleotide Synthesis

Researchers can design RNA oligos with sequences complementary to specific RNA targets. The synthesis process involves using ribonucleotides instead of deoxyribonucleotides.



## Modified Oligonucleotide Synthesis

The synthesis of oligos with chemical modifications at specific positions within the nucleotide sequence. These modifications can be variations in the nucleotide structure, backbone, or the addition of functional groups.



**Choosing the right type of oligonucleotide synthesis for your needs depends on various factors, including your desired functionality, target application, cost, and availability. Carefully evaluate the characteristics of each type and select the one that best aligns with your research objectives.**

**It's also important to think about operational considerations:**

- ▶ Do you have enough facility space and workers for oligo scale-up?
- ▶ Will you need automation software to streamline operations?

All of these questions should be answered during the method-building stage to ensure your team and equipment are up to the task.

It's clear there are many factors to consider when it comes to oligonucleotide synthesis. Once the method is established, equipment and components play a crucial role in ensuring the efficiency and reproducibility of oligonucleotide synthesis at scale.

In this buyer's guide, we provide a comprehensive overview of the different types of oligonucleotide synthesis equipment and components that can take your operations to new heights. We also offer key considerations for features, budget and vendors so you can make an informed decision.

Let's Dive In.

## Equipment & Components

### The Basics of Oligonucleotide Synthesis

Before we dive into the types of equipment and components that are necessary for oligonucleotide synthesis, let's go over the core steps of the manufacturing process.

#### Step 1: Synthesis

The synthesis process begins by anchoring the first nucleotide onto a solid support, followed by the addition of subsequent nucleotides through a series of coupling reactions. Each nucleotide addition is preceded by the removal of protecting groups to expose reactive sites for coupling. This iterative process continues until the desired sequence length is achieved.

#### Step 2: Cleavage & Deprotection (C&D)

Once synthesis is complete, the oligonucleotide is cleaved from the solid support using appropriate cleavage agents, typically involving treatment with a strong base or a combination of reagents. This step releases the oligonucleotide from the solid support, freeing it for further processing. However, the crude oligonucleotide obtained after cleavage contains impurities such as protecting groups, incomplete sequences, and truncated sequences. Purification steps are essential to obtain a pure oligonucleotide product.

#### Step 3: Purification

Purification is the process of separating the desired full-length oligonucleotide from impurities and truncated sequences that may have formed during the synthesis process. One popular purification method is medium pressure liquid chromatography (MPLC), which effectively separates the desired full-length oligonucleotide from impurities based on factors such as size, charge or hydrophobicity.

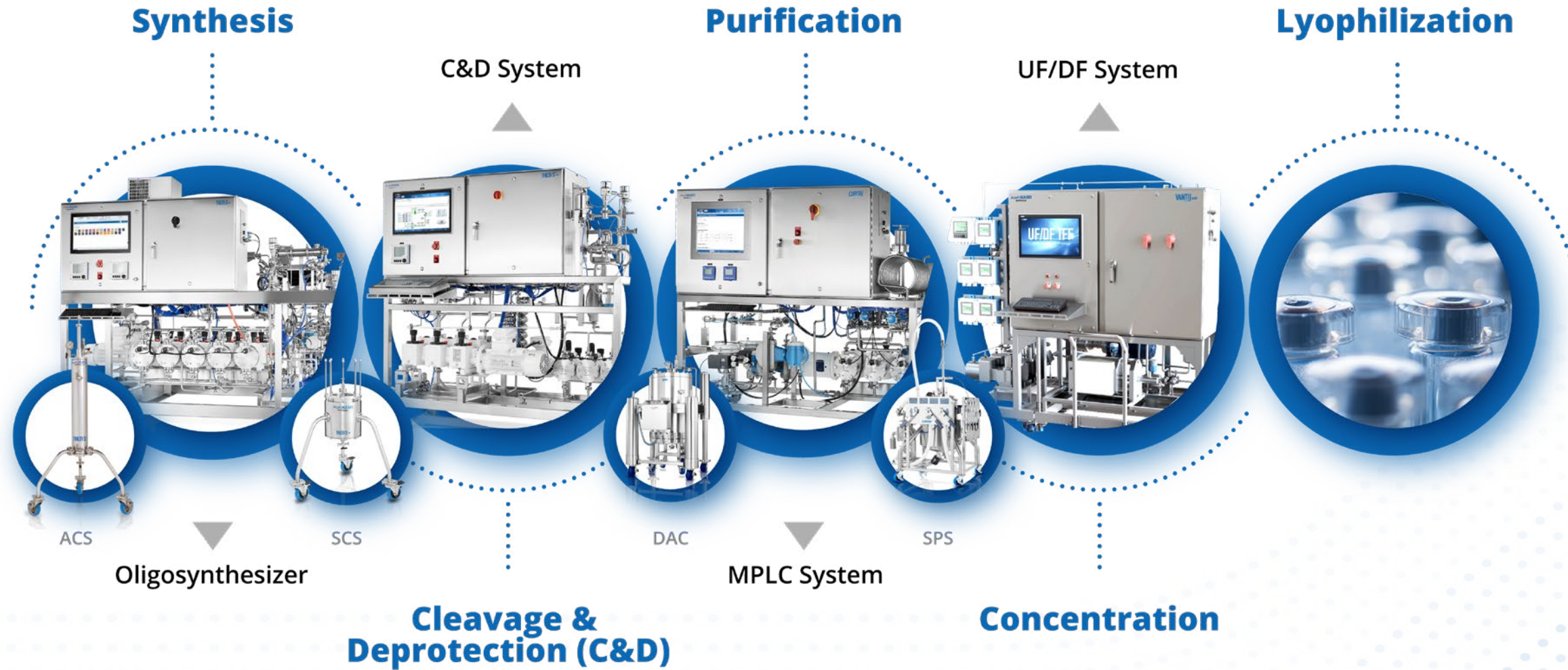
#### Step 4: Concentration

Concentration involves determining and adjusting the concentration of the oligonucleotide solution post-purification, ensuring it meets the requirements for subsequent applications. The crude solution obtained after synthesis contains the desired oligonucleotide along with impurities, and various methods, such as ultraviolet (UV) spectroscopy or quantitative polymerase chain reaction (qPCR), are employed to determine its concentration. Adjustment techniques like dilution or ultrafiltration are then utilized to reach the desired concentration.

#### Step 5: Lyophilization

Lyophilization, commonly known as freeze-drying, is integral to oligonucleotide synthesis as it removes water from the oligonucleotide solution, transforming it into a dry, solid form. This process follows purification and concentration, ensuring the oligonucleotide's stability for storage or shipment. Frozen oligonucleotide solutions undergo sublimation in a vacuum chamber, where water transitions directly from ice to vapor, leaving the oligonucleotide intact.

Lyophilization is preferred over other drying methods due to its ability to prevent oligonucleotide degradation. The resulting lyophilized product is stored in a desiccated environment at low temperatures until reconstitution for downstream applications like PCR, sequencing or gene editing, thereby prolonging its shelf life and maintaining its integrity.



**With a clear understanding of the oligonucleotide synthesis process, you can start looking at the types of equipment and components you will need in your facility.**

Let's explore them now.



- **THESYS™** Oligosynthesizers
- **THESYS™** ACS & ACS ERGO Columns
- **THESYS™** SCS Columns
- **THESYS™** Cleavage & Deprotection Systems
- **THESYS™** Cleavage & Deprotection TFF Systems
- **CURSIV™** MPLC Systems
- **CURSIV™** DAC & DAC ERGO LC Columns
- **SLURIPREP™** Systems & Mixers
- **VANTIJ™** Ultrafiltration/Diafiltration TFF Systems

## Must-Have Oligonucleotide Synthesis Equipment & Components

Asahi Kasei Bioprocess offers the following types of equipment and components to improve the oligonucleotide synthesis process:

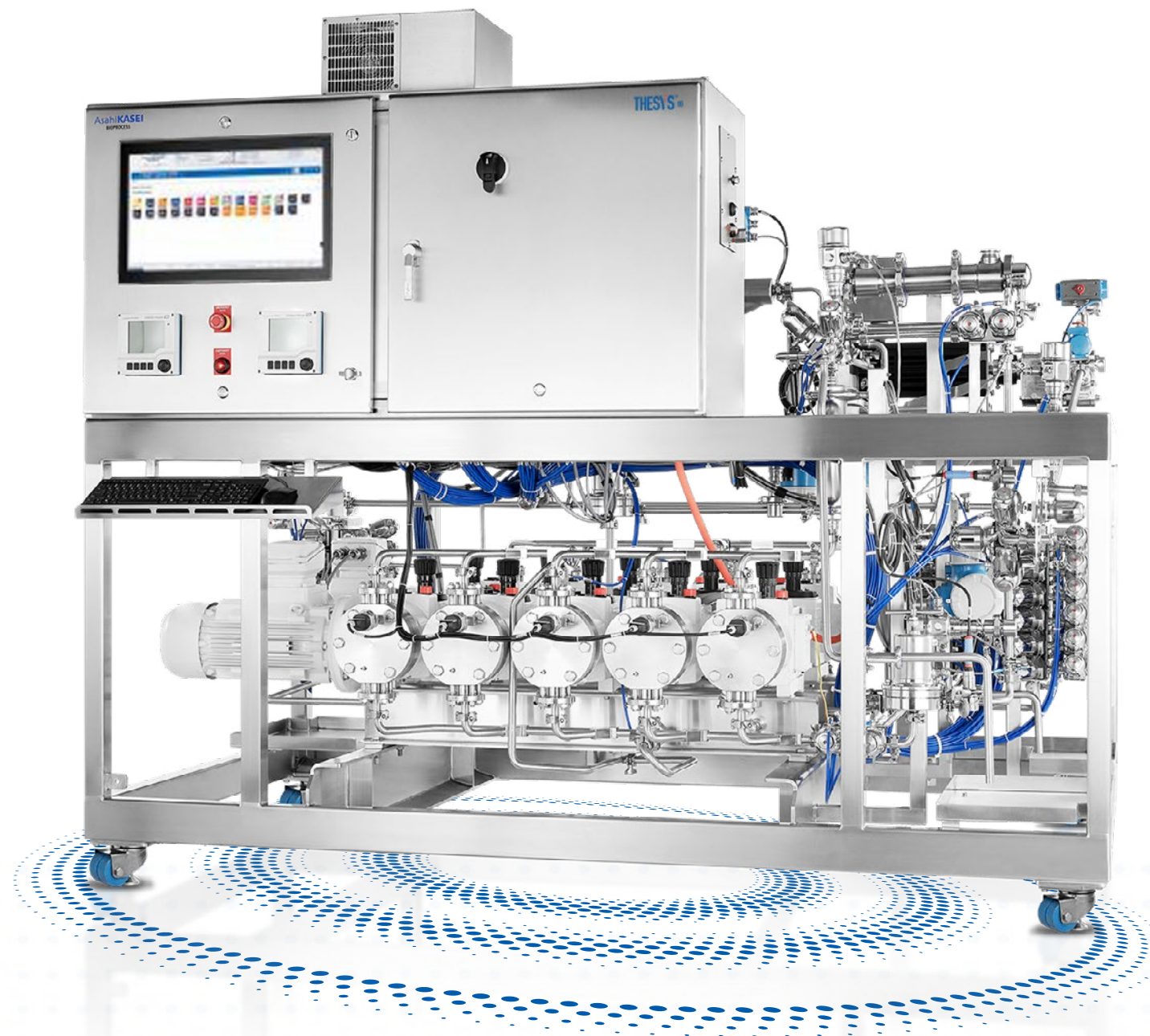
## THESYS™ Oligosynthesizers

The **THESYS™ Oligosynthesizer** is a cutting-edge oligonucleotide synthesizer engineered by Asahi Kasei Bioprocess to revolutionize your molecular biology and biotechnology workflows. With its state-of-the-art design and advanced capabilities, the Oligosynthesizer enables seamless synthesis of high-quality DNA and RNA oligonucleotides for various applications.

This versatile instrument offers unmatched flexibility, allowing synthesis at various scales to suit your specific needs. Its intuitive user interface and powerful software empower you with precise control over synthesis parameters, ensuring reproducible results with every run.

Catalog No.	Product Spec	Pressure Rating	Typical Column Pairing
Synth30	3-30 mmol*	10 bar	10-15 cm i.d. **
Synth100	10-100 mmol*	10 bar	10-30 cm i.d. **
Synth300	30-300 mmol*	10 bar	15-50 cm i.d. **
Synth1000	0.1-1 mol*	6 bar	30-90 cm i.d.**
Synth1500	0.15-1.5 mol*	5 bar	30-100 cm i.d. **
Synth2500	0.25-2.5 mol	5 bar	30-100 cm i.d. **

Built with reliability and robustness in mind, the **THESYS OS** is engineered to meet the demands of modern biomanufacturers.



## THESYS™ ACS & ACS ERGO Columns

The **THESYS™ ACS Column** is built for optimal performance with rigid supports that don't swell. Designed with ease of use in mind, this flow-through column offers "hoist-free" operation, revolutionizing frit removal and simplifying column packing and unpacking. The integrated piston enables axial compression, ensuring seamless manipulation without the need for additional equipment.

Utilizing the same advanced "active" flow distribution technology as the acclaimed **THESYS™ SCS Column**, the ACS Column guarantees uniform dispersion of amidites and reagents across your solid support, maximizing coupling efficiency.

Unlike traditional columns, the piston of the Asahi ACS Column maintains continuous contact with the packed solid support, eliminating gaps and enhancing synthesis precision.

**The THESYS™ ACS ERGO Column is a patented synthesis column designed for user-friendly operation, enabling smooth transitions between batches while maintaining high performance. Engineered for ergonomic efficiency, it simplifies routine maintenance by eliminating intricate disassembly and cleaning processes.**



## THESYS™ SCS Columns

The **THESYS™ SCS Column** is meticulously designed to excel in fixed bed height applications utilizing swellable supports. Engineered with precision, the CAD-modeled "active" flow distribution ensures uniform dispersal of amidites and reagents across the entire column surface, guaranteeing maximum coupling efficiency even in columns with short bed heights.

The innovative scraper seal arrangement facilitates effortless exchange of column frits, enhancing operational efficiency. Offering unparalleled versatility, the SCS Column allows for manual bed height adjustments ranging from 2 to 15 cm, while maintaining a user-defined gap between the support surface and the top plate frit.

**This unique feature accommodates support swelling and mitigates pressure spikes during the synthesis process, ensuring consistent and reliable results.**



## THESYS™ Cleavage & Deprotection Systems

The **THESYS™ Cleavage & Deprotection System** streamlines and automates the crucial unit operation of cleaving oligos from solid supports and conditioning them for downstream processing.

After synthesis, efficient cleavage from the solid support is essential for further processing. C&D Systems offer a range of flow rates, starting at 180 L/h and extending up to 2000 L/h, catering to both clinical and commercial-scale oligo manufacturing needs.

Engineered with precision and versatility, the C&D System can accommodate both DNA and RNA processes, ensuring seamless integration into your oligonucleotide production workflow.

Catalog No.	Deprotection Vessel Working Volume	Pressure Rating	Metering Pump Flow Rate	Material of Construction
CD020	20 L	6 bar	6 to 180 L/h	316L SS
CD100	100 L	6 bar	20 to 600 L/h	316L SS
CD350	350 L	6 bar	48 to 2000 L/h	316L SS

Asahi Kasei Bioprocess also offers a C&D with built-in UF/DF capabilities to increase process efficiencies and reduce equipment footprint further.



## CURSIV™ MPLC Systems

The **CURSIV™ MPLC System** is specifically engineered to cater to the purification needs of mid-sized therapeutics in the 4 to 15 kDa range, including microbial-derived proteins and oligos.

Unlike traditional preparative high performance liquid chromatography (HPLC) systems, medium pressure liquid chromatography (MPLC) systems are designed to handle higher backpressures, ranging from 15 to 40  $\mu\text{m}$ , without the need for significant upfront capital investment.



Catalog No.	Flow Rate Range	Pressure Rating	Typical Column Pairing
MPC180	18-180 L/h	20 bar	15-20 cm i.d.
MPC240	24-240 L/h	20 bar	15-30 cm i.d.
MPC360	36-360 L/h	20 bar	15-40 cm i.d.
MPC600	60-600 L/h	20 bar	20-45 cm i.d.
MPC900	90-900 L/h	20 bar	30-60 cm i.d.
MPC1K2	120-1200 L/h	20 bar	30-80 cm i.d.
MPC2K4	240-2400 L/h	20 bar	40-100 cm i.d.

MPLC Systems can accommodate both ion exchange and reverse-phase gradient elutions, providing versatility and flexibility to meet your specific purification requirements.

## SLURIPREP™ Systems & Mixers

The [SLURIPREP™ System](#) simplifies media preparation and packing specifically for oligonucleotide synthesis using Dynamic Axial Compression (DAC) LC Columns.

As the preferred choice for large-scale LC in oligonucleotide synthesis, DAC technology demands precise media handling for optimal results. The [SLURIPREP™ System](#) offers a range of sizes, from 100 to 600 liters, providing a closed mixing unit that seamlessly integrates with DAC LC Columns.

Whether you're working with 10 µm or 35 µm chromatography media for oligonucleotide synthesis, the [SLURIPREP™ System](#) ensures reproducible column packing, guaranteeing consistent and reliable performance.

**The [SLURIPREP™ Mixer \(SPM\)](#) is a handheld device that simplifies media preparation, working with SPS pumps or standalone pump carts for versatility. It homogenizes media in supplier containers, eliminating manual steps, enhancing efficiency, and prioritizing operator safety by minimizing exposure to media, optimizing workflow, and reducing risks.**



## CURSIV™ DAC Ergo LC Columns

Engineered with ergonomic design and advanced features, the [CURSIV™ DAC Ergo LC Column](#) revolutionizes the process of handling chromatography columns in oligonucleotide synthesis workflows.

Designed specifically to enhance efficiency and user experience for large-scale manufacturers specializing in oligonucleotide synthesis, DAC Ergo LC Columns offer intuitive controls and seamless operation, allowing operators to focus on their work with ease.

**Its innovative design facilitates easy access to column end plates, streamlining the changeover of columns crucial for oligonucleotide synthesis.**





## VANTIJ™ Ultrafiltration/Diafiltration TFF Systems

The **VANTIJ™** Ultrafiltration/Diafiltration TFF System is specifically engineered to excel in oligo manufacturing environments where hazardous conditions are the norm. While TFF systems are not novel in biopharmaceutical development, the UF/DF TFF System stands out as the first of its kind, meticulously crafted from the ground up to seamlessly integrate into oligo manufacturing processes.

Boasting explosion-proof components and regional certifications, this UF/DF TFF System instills confidence in its ability to operate reliably even under the harshest conditions. Designed for versatility, the **VANTIJ™** UF/DF is compatible with any widely available, industry-accepted cassette-style filters, accommodating a total area of up to 20 sqm.

**Whether positioned upstream to enhance purification efficiency prior to chromatography or downstream to facilitate concentration before lyophilization, this single unit optimizes performance and efficiency.**

*Now that you know what kinds of equipment and components are necessary for oligonucleotide synthesis, let's explore the specific features you need.*

## Features to Consider

As you shop for oligo manufacturing equipment and components, you will find that choosing the right features is paramount to the success of your synthesis endeavors. The selection process goes beyond simply acquiring tools; it involves carefully assessing the capabilities and specifications of each piece of equipment and component to ensure they align with your specific synthesis requirements. Here are essential features to consider:

- ▶ Automation
- ▶ Synthesis speed
- ▶ Synthesis scalability
- ▶ Quality control and monitoring
- ▶ Flexibility for different chemistries and scales

### Automation

Automation is a critical feature for oligonucleotide synthesis equipment and components due to the necessity for rapid, precise and repeatable processes. Automation expedites synthesis procedures while ensuring consistency across multiple batches, a fundamental requirement for achieving reproducible results in oligonucleotide synthesis.

*With automated systems, researchers can rely on the equipment to execute tasks precisely as programmed, batch after batch, without the risk of human error.*

This consistency is further enhanced by the inclusion of batch records, documenting every step and manipulation performed during the synthesis process, along with user information, thereby ensuring traceability and accountability.

### User-Friendly Interface & Software

User-friendly automation is crucial in oligonucleotide synthesis to ensure correct usage and maximize productivity. If the automation system is complex and difficult to navigate, operators may struggle to use it effectively, leading to errors or inefficiencies in the synthesis process.

**OCELOT™ System Control** addresses this challenge by offering an intuitive interface with drag-and-drop functionality. This adaptable design makes it easy for operators, including those with less specialized training, to understand and operate the equipment efficiently.

As pharmaceutical manufacturing scales up, there is a growing need to involve operators who may not have extensive scientific backgrounds but possess essential operational skills. By simplifying the user experience, **OCELOT™** enables these operators to effectively run the equipment, contributing to overall system productivity.







### Synthesis Scalability

In oligonucleotide synthesis, scalability is a pivotal consideration, facilitating the seamless transition from small-scale research to large-scale production. This scalability is essential for meeting the evolving needs of researchers and biotechnologists as projects progress from discovery to development and, ultimately, to commercialization.

*The ability to scale synthesis processes simplifies operations and enhances efficiency by eliminating the need for significant adjustments or redesigns when transitioning between different scales.*

Asahi Kasei Bioprocess columns are specifically designed with scalability in mind, offering a range of column sizes that cater to varying synthesis volumes and throughput demands. These columns not only facilitate scaling but also enable researchers to make accurate calculations and projections based on the column specifications, streamlining the planning process.

### Synthesis Speed

Synthesis speed influences the overall efficiency of the oligonucleotide synthesis process and directly impacts customer satisfaction and patient outcomes. Speed is not just a measure of how quickly the synthesis can be completed but also a crucial determinant of quality and efficacy.

Every moment lost in developing medicines or therapeutics translates to extended waiting periods for patients in need, potentially delaying access to life-saving treatments. Plus, time equates to money in the biopharmaceutical industry, with delays in synthesis processes incurring significant costs. Therefore, synthesis speed is an integral feature that's necessary for any oligonucleotide synthesis equipment and components.

### Quality Control & Monitoring

Oligonucleotide synthesis equipment and components with robust quality control features enable researchers to monitor and maintain the integrity of the synthesis process at every stage, from synthesis to purification. Two key features include purity analysis and yield monitoring.



### Yield Monitoring

Yield monitoring allows researchers to assess how effectively their synthesis process converts starting materials into the desired oligo product. Even small differences in yield percentage, such as 99% versus 97%, can have a significant impact on the overall amount of product obtained, especially over multiple synthesis runs or production batches.

*By optimizing synthesis parameters and process conditions based on yield monitoring data, researchers can maximize product yield, minimize waste and ultimately enhance productivity.*

Yield monitoring enables fine-tuning of the synthesis process to ensure that every run yields the highest possible amount of product, contributing to efficient oligo manufacturing and successful downstream applications.



### Flexibility for Different Chemistries & Scales

The ability to utilize the same equipment for producing various products with different chemistries or at different scales eliminates the need for costly reinvestment or reconfiguration of plant facilities. For example, contract manufacturers often set up production lines for specific synthesis processes, but the flexibility to adapt quickly to new requirements is essential for maintaining operational efficiency and meeting client demands.

With equipment that can accommodate different chemistries and scales, contract manufacturers can seamlessly transition between oligonucleotide synthesis projects without significant downtime or adjustments to their manufacturing setup. This adaptability not only enhances productivity but also ensures that manufacturers can remain competitive in the rapidly evolving biopharmaceutical industry.

**Beyond these fundamental features, it's crucial to factor in your budget and vendor options when selecting oligonucleotide equipment and components. Let's delve deeper into these considerations.**



### Purity Analysis

Purity analysis plays a vital role in ensuring the quality and efficacy of the final product. Oligos are complex molecules with specific sequences and structures, and even minor impurities or deviations from the intended sequence can compromise their function and effectiveness. Therefore, accurate purity analysis is essential to confirm that the synthesized oligonucleotides meet the required specifications and are free from contaminants or truncated sequences. Consider purchasing equipment and components that allow for purity analysis to ensure optimal results.

## Budget & Vendor Considerations

Before you buy oligonucleotide synthesis equipment and components, remember to think about your budget and vendor options. Your budget ensures your investment aligns with your financial capabilities while maximizing value. Meanwhile, the vendor you choose impacts the quality, reliability and support services associated with your purchase. By carefully considering your options, you can set yourself up for long-term success.

### Budget

There are three key parts of your budget to consider when purchasing equipment and components for oligo manufacturing:

- ▶ Initial investment
- ▶ Operating costs
- ▶ Maintenance and support

### Initial Investment

Regarding oligonucleotide synthesis equipment and components, your initial investment holds significant value because of its long-term implications on operational efficiency and overall cost-effectiveness. While the upfront cost may vary between competitors, opting for higher-quality equipment, even if it entails a higher initial investment, can yield substantial benefits in the long run.

*Investing in superior equipment often translates to lower maintenance requirements and reduced downtime, ultimately leading to higher productivity and cost savings over time.*

By maximizing uptime, researchers can increase their operational output, ensuring that synthesis processes proceed smoothly and efficiently. Given that time is a critical factor in oligonucleotide synthesis, mitigating downtime through the use of high-quality equipment is paramount.

### Operating Costs

Consumables such as column frits, filters and seals play a vital role in the synthesis process, aiding in the removal of products or waste and ensuring the efficiency of each run. These consumables need to be replaced regularly after each synthesis cycle, contributing to the recurring operating expenses of the equipment. By factoring in the cost of consumables, researchers can accurately estimate the total cost of ownership over the equipment's lifespan.

Additionally, understanding the operating costs allows for better budget planning and resource allocation, ensuring that ongoing expenses are manageable and do not exceed budgetary constraints.

### Maintenance & Support

Effective maintenance ensures your equipment operates optimally, minimizing the risk of unexpected breakdowns and downtime. Plus, timely support from the manufacturer or vendor can expedite issue resolution, whether through remote assistance or on-site interventions, ensuring minimal disruption to operations.

*The availability of knowledgeable support staff is particularly important as it provides reassurance to operators and enables prompt resolution of technical queries or issues that may arise during operation.*

Additionally, reliable support services foster confidence in the equipment's reliability and longevity, ultimately contributing to sustained productivity and cost-effectiveness.



### Number of Oligo Manufacturing Offerings

Working with a vendor that offers a comprehensive range of oligonucleotide synthesis equipment and components streamlines the procurement process with one-stop shop potential. It eliminates the need to source various items from multiple vendors, reducing administrative burden and potential logistical challenges.

Plus, when equipment and components are designed to work seamlessly together within a single integrated system, compatibility issues are minimized, ensuring optimal performance and efficiency.

Collaborating with a single vendor also fosters stronger relationships and communication channels. By interacting with familiar project managers and engineers, you benefit from a cohesive and personalized service experience. This cohesive approach also facilitates troubleshooting and support, as the vendor's team possesses a deeper understanding of your needs and preferences.

### Reputation & Experience

Reputation is often built on a track record of reliability, innovation and customer satisfaction. Choosing a reputable vendor reduces the risk of encountering issues such as product defects, delays or inadequate support, which can negatively impact research timelines and results.

Therefore, consider buying from a vendor with a positive reputation for meeting the needs of its customers.

*Positive word-of-mouth from industry peers and colleagues can also provide valuable insights into a vendor's reliability, product quality and customer service.*

### Customer Support & Training

A vendor that offers robust customer support ensures that researchers have access to assistance and guidance throughout the equipment's lifecycle. This support begins with comprehensive training programs that empower operators to effectively operate and maintain the equipment.

By providing hands-on training sessions and educational materials, such as manuals and tutorials, the vendor facilitates smooth implementation and usage of the equipment. Integrating recorded training videos can also expand accessibility to training resources, offering users a convenient and flexible learning option.

In addition, you should choose a vendor with responsive customer support teams that are available to address any technical issues or queries that may arise during operation. A vendor's commitment to on-site setup assistance and training further enhances the customer experience, ensuring that operators feel confident and competent in using the equipment.

### Warranty & Service Agreements

Warranty and service agreements are vital considerations when selecting a vendor for oligonucleotide synthesis equipment and components, as they provide assurance and support throughout the equipment's lifecycle. The warranty period, typically lasting one to two years, depending on the region, offers protection against defects in materials and workmanship, instilling confidence in the quality and reliability of the equipment.

Additionally, service agreements offer varying levels of support tailored to the buyer's specific needs and internal capabilities. For instance, buyers with highly skilled internal teams may opt for basic service agreements, while those lacking expertise may require more comprehensive agreements to access additional support and assistance. These agreements ensure that buyers receive prompt technical assistance, troubleshooting and maintenance services, minimizing downtime and optimizing equipment performance.



## Vendors

When you're evaluating vendors, keep these considerations in mind:



Number of oligo manufacturing offerings



Reputation and experience



Customer support and training



Warranty and service agreements



Regulatory compliance

## Regulatory Compliance

It's crucial to choose a vendor that takes regulatory compliance seriously. Firstly, adherence to industry standards such as Good Manufacturing Practices (GMP) and Good Laboratory Practices (GLP) ensures that the equipment meets stringent quality and safety requirements, minimizing the risk of product contamination or errors.

*Plus, vendors with ISO certification demonstrate their commitment to maintaining high-quality standards and effective quality control processes throughout the manufacturing and operation of their equipment.*

Secondly, validation and documentation support provided by vendors like Asahi Kasei Bioprocess assist customers in validating equipment performance and documenting compliance with regulatory requirements. This documentation is essential for regulatory audits and ensures that the equipment meets the necessary standards for operation.

Lastly, certifications such as UL, ASME and ATEX further validate the equipment's safety and suitability for use in hazardous environments, giving you confidence in their compliance with regulatory requirements and industry standards. This also safeguards you against potential risks and ensures the integrity of the synthesis process.

**Overall, buying equipment and components that fit your budget and come from a reputable vendor allows you to invest wisely in your oligonucleotide synthesis process, ensuring reliability, efficiency and compliance with industry standards.**

## Conclusion

The increasing demand for oligos has prompted biomanufacturers to reassess their oligo production capabilities and seek ways to ramp up their throughput and scale. This allows them to meet current demand and position themselves to capitalize on future opportunities in the rapidly evolving field of nucleic acid therapeutics and molecular diagnostics.

Increasing your oligo production starts with buying the right equipment and components. There are various pieces to consider, from oligosynthesizers to UF/DF TFF systems. By selecting reliable, high-performing equipment and integrating them into optimized workflows, you can maintain stringent quality standards and operational efficiency.

When shopping for oligonucleotide synthesis equipment and components, key features to consider include automation for precision and efficiency, user-friendly interfaces for productivity, synthesis speed for cost-effectiveness and scalability for seamless transition across scales. You should also contemplate quality control features and overall flexibility for minimizing downtime and enhancing competitiveness.

Lastly, your budget should include the initial investment, operating costs and maintenance expenses, ensuring long-term cost-effectiveness. When choosing a vendor, remember to evaluate their equipment offerings, reputation, customer support, warranty terms and regulatory compliance. Opting for a vendor with a comprehensive range of equipment and excellent customer support ensures smooth procurement and ongoing assistance, ultimately enhancing efficiency and compliance with industry standards.

*Asahi Kasei Bioprocess offers cutting-edge equipment and components for oligonucleotide synthesis, including the **THESYS™ Oligosynthesizer**, **THESYS™ ACS Column**, **THESYS™ SCS Column**, **THESYS™ Cleavage & Deprotection System**, **CURSIV™ MPLC System**, **CURSIV™ DAC Ergo LC Column**, **SLURIPREP™ System** and **VANTIJ™ Ultrafiltration/Diafiltration TFF System**. All of our products are built for you to ensure all your needs are met. To learn more about our products, [contact us](#).*



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