

10 THINGS TO KNOW

BEFORE BUYING FINNED TUBE



ENERGY TRANSFER



Overview

A finned tube is a sleek cylinder of efficient thermodynamics. It essentially performs two functions. First, it creates a barrier between two fluids or gases to enable the exchange of heat energy. Second, it utilizes prudent space and the principles of thermodynamics to spread and increase the cooling surface area to achieve superior efficiency.

A well-designed finned tube effectively optimizes that efficiency to its full potential.

Too often, however, an end user incorrectly assumes a finned tube is an out-of-the-box,

standardized item that can practically be ordered from a catalog. Moreover, they fail to recognize the inherent complexity of their own problems and challenges. *Unfortunately, they often select a design too generic to adequately address the specialty of their complications or deliver the efficiency they require.*

They also may overlook details that not only encumber the finned tube's capacity for efficiency, but incur needless overhead, time delays, and impracticalities that result in futile obstructions.

Often this results from a failure in communication and imagination. The end user does not convey the specificity of their needs, the details of their limitations, nor the intricacies of the challenges at hand. They do not proactively address timely deadline needs soon enough in the process. They do not stress regulatory considerations that need to be followed, nor previous product failures that may have occurred in the past.

Unfortunately, these breakdowns in communication can often result in delays, increased costs, product recalls and, in extreme cases, class action lawsuits. Through an approach of open and comprehensive communication, a thorough consideration of the needs, limits, and ambitions of the project, end users can achieve stunning results for the best possible cost efficiency.

This planning guide will walk you through the details of what needs to be communicated and considered when planning and purchasing a finned tube product.

Background

Finned tubes and heat exchanger tubing are engineered products that serve a very specific purpose. These tooled fabrications need to be crafted to meet national or international specifications such as ASME, SAE, and ASTM codes as well as other industry standards such as automotive or military criteria. Therefore, each must be purchased and designed to operate exactly as the engineer specifies.

It is critical that the finned tube producer cohesively understands these requirements early in the quoting process. **Each of these factors contains nuances that can result in cost ramifications, expensive delays, and hobbled efficiency outcomes.**





“Rather than a nut and bolt commodity, each finned tube is custom tweaked to the customer’s exact specifications,” said Kenny Barkan, CEO of Energy Transfer. “Too often, they think about the ramifications after the fact, or just assume we are entirely familiar with the complexity of their own end use.”

Step by step, this guide will walk the prospective customer through the process of selecting a finned tube. We will highlight the special considerations that need to be conveyed, as well as factors to keep in mind to achieve the best outcome possible.

By communicating what is absolutely critical to the finned tube producer in detail, the customer can obtain a product that will work right the first time, every time. They can shorten lead times by minimizing last minute changes, utilize the most efficient manufacturing processes available, and optimize energy savings to full potential.

Most importantly, the customer will save themselves needless frustration, preserving not only time and money but their very hairlines. **Pull out fewer hairs, lose less sleep, and achieve the efficiency capabilities of your dreams.**

10 Things to Know for the Perfect Finned Tube

1. Research: The Homework of Exploration

Comb through the websites of various providers and explore all options available for finned tubing. Read up on industry websites, whitepapers, and blogs to become familiar with the issues at hand. Whether tall or short, made of titanium, copper or aluminum, each type and design of finned tubing has distinct characteristics that work better for different applications. **It's important to understand what's available and how that applies to the particular problems you're looking to solve.**



"With a Porsche, you can optimize every detail, down to the button you push to lock the door," said Paul Barkan, Vice-President of Energy Transfer. "But if you don't know that's an option, you might not even think to ask. Finned tubing is much the same way. If you don't know what's truly possible, you might miss out on its full potential."

Ultimately, the right choice and design of finned tubing comes down to the application. What are the physical dimensions that you need? What are your material requirements? If a 4.2-liter engine would work better than a 4.6-liter, for example, it helps to know that's an available option to incorporate into the design. *By understanding the capacities of the finned tube market, you will better appreciate its capabilities and be able to actualize what's truly possible.*

2. Manufacturer's Experience & Knowledge: Do They Sell Snake Oil or Solutions?

Finned tubing is a very specialized product that serves a highly specialized niche. Does the manufacturer possess extensive and robust experience and knowledge of the industry? Can they provide the engineering, personnel, manufacturing support, equipment, facility, and infrastructure to produce the level of product that's required?



Some shops are simply too small or offer a relatively limited range of finned tube products.

They may not offer the level of customization that is needed. They may provide out of the box approaches that do not fulfill the potential for efficiency that a more customized solution can deliver.

It is essential to work with a sales representative that is completely knowledgeable about the industry, understands the products, and knows how to support the customer every step of the way through the right selection and purchase of finned tubing.

Fortunately, there are techniques to separate real solution providers from the snake oil salesmen peddling a quick fix. Trust your gut instinct when it comes to their understanding of finned tube products, as well as how they will be able to support the end user through the purchase and delivery of the product.



Ask the finned tube manufacturer:

- In what other similar use cases have you seen this product applied?
- Which finned tube would work best in this situation and why?
- What alternative approaches can you suggest?
- How long have you been making this type of product?
- Do you manufacture all your products in-house or are some subcontracted out?
- Do you have enough equipment capacity to fulfill the order?
- Do you have redundancy in equipment?
- What inventory do you have available as a supply chain?
- Can you offer technical support for your products?

3. Application & Design: What Your Manufacturer Needs to Know

Generally, the finned tube manufacturer does not design the heat exchanger itself. It merely provides the materials to produce the best finned tubes ideally suited to the buyer's design.

But to do that, the manufacturer needs to intricately understand what the buyer requires in function and mechanics to best achieve that design.

"The finned tube manufacturer needs to be placed into a box of criteria and limitations that we can then work our way out of," explains Cory Parrish, Technical Sales Specialist at Energy Transfer. "If I know what's critical that cannot be changed as well as what might be flexible in the design, I can say, 'Well, have you considered doing this?' There are dozens of ways each function can be accomplished. The best approach depends on the needs of the application and the specifications of the end user."



The application needs to be described to the sales representative in exacting detail:

- What are your limitations?
- What materials do you require and why?
- What design specialties are needed?
- What sort of considerations need to be made for high temperature?
- Is corrosion a factor?

Getting the details correct is essential to achieving a timely and accurate quote, as well as a product that works to the correct specifications. Elements such as noise vibration, temperature, physical environment, indoor or outdoor use, moisture factors, and corrosion need to be considered. "Establishing all your ducks in a row before you send the purchase order is key to making the project happen perfectly the first time," Parrish said.

In most cases, failure is completely avoidable and only results from a breakdown in communication or lack of detailed information. For example, one cooler ordered for a hydrogen plant failed to fit properly because specific dimensions for the unit were not provided correctly. The previous unit had been blown to shambles, and the finned tube manufacturer was left with only drawings to guess at. In the end, the new cooler did not fit the space requirements and needed to be redone. If the required diameter had been provided, this problem could easily have been averted.

By failing to properly accommodate environmental details, design needs, and application requirements, there is also a risk for tube fluids or gases to mix, resulting in catastrophic failure of the product. Such mistakes may require a complete rebuild of the product, as well as product recalls and even result in class action lawsuits.

"We work with costly materials and time crunches," Parrish cautions. "Not knowing all the details from the beginning risks extremely timely and catastrophic mistakes."

4. Project Deadlines: The Race Against Time

Time is more than just money. It's a ticking time bomb.

Every material procurement that must be made can have costly delivery consequences that must be planned for proactively. Understanding and communicating critical lead times early in the process is the best way to avoid stressful and costly races against a ticking clock of looming doom.

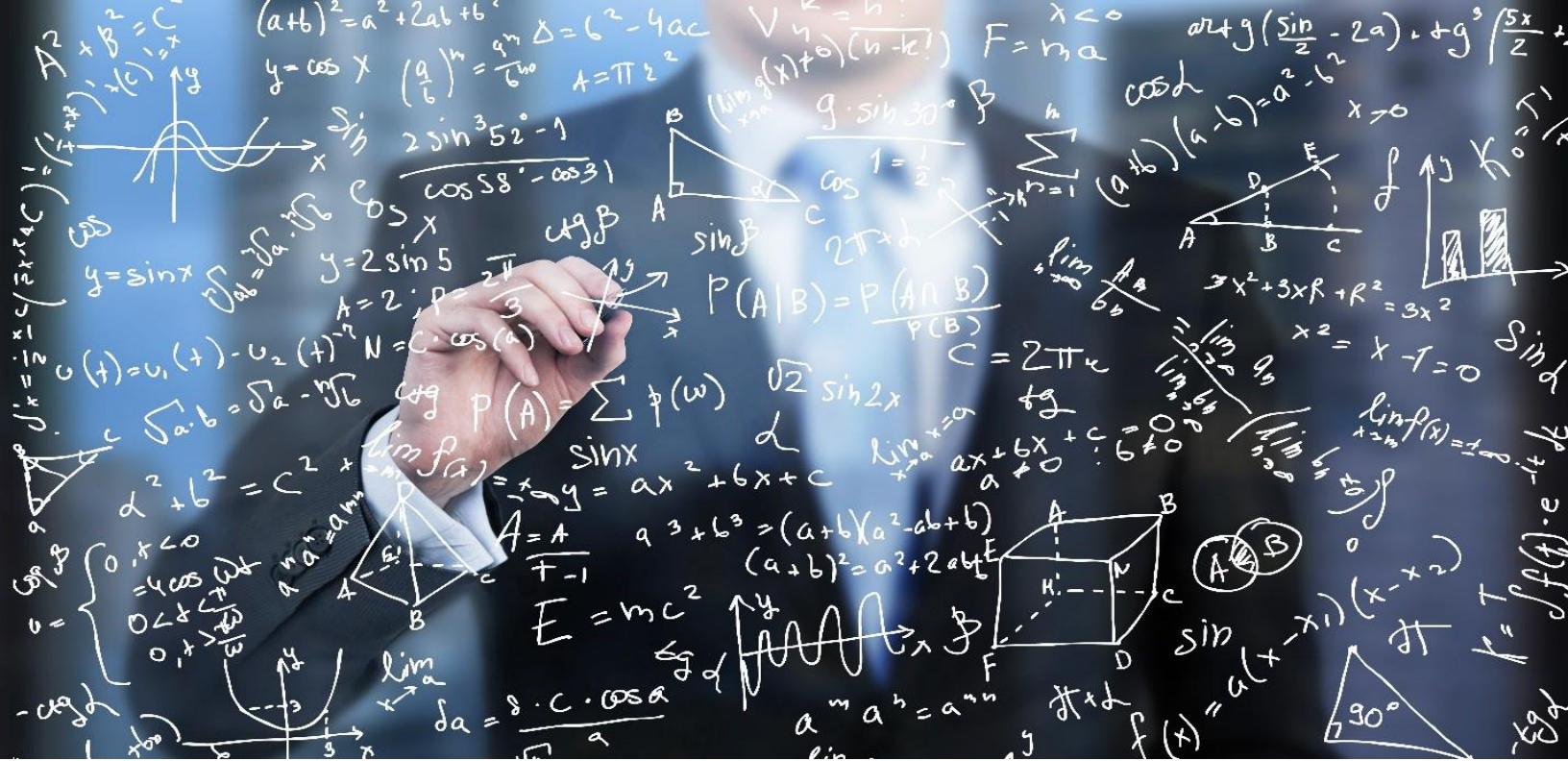


Even if you work with a provider with close access to a wide range of resources, not everything is necessarily available on a whim. In some cases, if you want it now, it's going to cost you. Early and comprehensive planning can minimize those costs through proactive ordering and procurement of resources. "Let us know early so we can start planning for materials," advises Kenny Barkan. "Buying agreements can be established ahead of time so we can prior stock your products and raw materials for a discount."

The timing itself may prove to be critical, especially in consumer use cases such as electric or power generation, water systems, or heating and cooling needs. Customers may face time restrictions that risk fines or other penalties if deadlines cannot be met.

When lead times are communicated proactively, manufacturing processes and material procurement can be optimized for either time or money, depending on what's required.

Those cost benefits can prove to be highly significant.



5. Project Scope & the Algebra of Savings: How Much, How Often?

Communicating the scope and use of the project can ultimately prove to be highly valuable for the finned tube customer. Is this a one-time order, or do you expect it to be periodic or recurring? Is the project short or long term? Is this a test project that may require additional allotments if the prototype proves to be successful?

The more comprehensively a finned tube manufacturer understands this scope, the better inventories can be managed to save on procurement and storage costs. A producer with ample access to resources can bulk purchase materials and pass those savings on to the consumer.

“Small vendors may have limited supply chain issues, but we tend to have access to inventories that can be very beneficial if a customer anticipates a project of sizable scope,” said Kenny Barkan. “We can help with engineering resources as well as materials in ways that can provide substantial cost savings.”

6. Delivery Requirements: Strategies to Minimize Shipping Costs

The primary purpose of any delivery is to get the product safely to the customer. Naturally, the only entity that earns money on delivery itself is the shipping company. *Minimizing costs through efficient planning is ultimately in the best interests of both the manufacturer and the customer.*

Consider these factors when minimizing shipping costs:

- Size of the load
- Export vs. domestic
- Loading/unloading requirements
- Protective packagings such as plastic, bubble wrap or foam support

For bulk orders, consider shipping two to three orders onto one truck, for example. How will packaging affect cost? For smaller orders, is LTL or FedEx shipping an option? Will you require dedicated freight? What are the loading and unloading logistics? Is a crane required, or will a loading dock suffice?





7. Special Requirements: the Nitty & the Gritty

Some customers may have specific requirements that demand special accommodations, affect the design, or may either enable or prevent certain cost efficiencies in the production of the project.

Knowing these specifics can have profound ramifications on price, material, and engineering approach. Will the project require a special kind of packaging? Is there any historical information such as previous failure modes, usage cases, space dimensions or material requirements that could affect the project? What is the criticality of the product?

"We need to understand any lessons they've learned from the past, use cases they can fill us in with to help us guarantee the quality of energy optimization," Parrish said. "We need to understand what they are going to do with it. Does the product just provide heat to warm someone's hands, or is it so critical that if it fails the power plant risks a complete breakdown?"

In some cases, cost efficiencies can be engineered into the project. For example, if a customer can purchase a finned tube and bend it themselves, the product may be more affordably modified in-house. **When it comes to pricing, those pain points hiding in the details can lead to not only savings but greater efficiency and capability.**

8. Dimensional Requirements: How Tight is Right?

Finned tubing is custom engineered to optimize energy efficiency for a specific use case.

Dimensional requirements play a critical role in that engineering. The level of tolerancing and amount of dimensional accuracy needed can greatly affect cost as well as determine the design and manufacturing of the tube. *How small can the footprint be and still guarantee a sufficient product?*

Dimensional requirements to consider:

- Tube OD (outside diameter)
- Tube wall
- Tube length
- Fin height
- Fin pitch



Holding dimensions to a specific tolerance can affect the spacing. Failing to meet the required space can require additional retrofitting or a complete redesign. At the same time, achieving a spatial construct as small as possible provides a number of functional benefits to the customer, including convenience of use, lightness of weight, and a tighter fitting product.

9. Cost: the Economics of Complexity, the Value of Quality

There is an intrinsic cost to the complexity of a finned tube's design. Multiple coatings, various specialized configurations, and highly customized material requirements all contribute to the expense of the tube's engineering in different ways.

To keep costs low, it is critical to communicate a comprehensive understanding of application and logistical requirements to a finned tube manufacturer.



Finned tubing generally incurs two types of costs: upfront expense and operating expense.

And while cost efficiency is an important logistical factor in the engineering of a tube, product quality should always be prioritized over lowest price. A tube's quality will ultimately

determine its energy optimization, weather resistance, maintenance needs, and lifecycle. A cheaper alternative may look similar on the surface but ultimately won't perform in the same way or last as long.

"Cheaper approaches often incur more downtime, an increase in maintenance issues, and frequent replacement costs," Kenny Barkan explained. "It is also essential to work with a manufacturer who can provide the infrastructure needed to support the product over time."

Like your dentist says: "Do you want to save pennies or teeth?" **Being too cheap can actually cost you more in the long run.**

10. The Earth Friendly Finned Tube: Optimizing Environmental Efficiency

At about 290 terawatt hours per year, air conditioning alone consumes 6 to 8 percent of the United States' consumption of electricity, [according to the Intergovernmental Panel on Climate Change](#). That's more power than the entire nation of Mexico consumes in an entire year!



And consumption only gets worse as the planet warms, not only in the US but around the world. One recent analysis predicts energy consumption for AC to [increase 8X by 2050](#). **Clearly, the efficiency benefits of finned tubing play an important role as our heating and cooling systems adjust to the realities of climate change.**

By increasing the cooling surface of an area using the properties of thermodynamics, finned tubing can improve the efficiency of a heat exchanger without substantially increasing its size. *Finned tubes can substantially improve energy consumption and reduce the environmental footprint by their very design.*

To optimize that design, a finned tube customer needs to clearly communicate their efficiency aspirations to the manufacturer. When an engineer lucidly understands both the limits and the function of the tube, he or she can better suggest creative approaches to increase that efficiency and further minimize the footprint.

"More and more companies strive to make a smaller impact on the environment," Kenny Barkan said. "The smaller you can build a unit while still increasing that efficiency means fewer raw materials and a better use of renewable resources."



Results: Actualizing Ambition Through Shared Knowledge

By following this guide and comprehensively communicating to the manufacturer the exact details of project need, function, deadlines, and goals, a finned tube customer can procure a product that superbly performs to expectations on time and at the best-optimized cost. They can more efficiently achieve a product that performs correctly the first time, every time.

When the manufacturer intricately understands what the customer wants and needs, they can then align their production processes to fit the user's requirements. When everyone is on the same page from the very beginning, the production process itself can be better engineered to meet the customer's specifications and ambitions.

When manufacturing processes are intrinsically honed to what the customer wants, lead times can be shortened, costs can be lowered, and more efficient processing methods can be achieved. **Through a proactively communicated approach, frustration, delay, and failure can ultimately be prevented, perfection more efficiently accomplished.**

"We want to achieve the aspirations of the customer, but we can only work to the level of the knowledge we are given," Kenny Barkan said. "By understanding critical information from the beginning, we can better match their expectations with the end result.

"If the process goes well, the finned tube customer should ultimately become a definitive innovations leader for their industry," he concluded.



Next Steps: Where Do You Go From Here?

Once you understand your requirements, ambitions, and deadlines, take this information and seek out the best manufacturers to fulfill those needs. Present a detailed product sheet to the finned tube company and see how well they can fulfill those stipulations.



"We've seen finned tube customers go through an arduous and difficult process of eliminating providers that can't really make the product," Paul Barkan said. "After much wasted time and money, the customer eventually returns full circle to a company that truly does understand the product. It can be a very expensive learning curve."

By eliminating unsuitable manufacturers early in the planning and quoting stage, you will achieve a reliable tube as well as a robust supply chain that will be available and sustainable for a long time to come.

The Scarcity of Supply & Demand: How Will You Survive?



No company can survive on an island. Without a consistent supply chain, the best-engineered project will ultimately starve out in extinction. **Essentially, a stable supply chain means a stable company.**

As the largest supplier of finned tube products in the United States, Energy Transfer features an extensive selection of finned tubes. We have ample access to products, material resources, and an abundant supply chain to meet nearly any challenge or need.

Furthermore, we have the experience and knowledge to anticipate your needs ahead of time.

In fact, we probably have the solution already in stock.

A Company Big Enough to Deliver, Personal Enough to Care



Energy Transfer is big enough to be adaptable, but not so large we lose sight of our customers.

“We consider ourselves the extension of our customers’ manufacturing environment; our plant is theirs,” Kenny Barkan said. “Companies that are too small can’t afford the resources to be able to fulfill that level of customized manufacturing. Companies that are too large won’t do it because it’s too disruptive. We’re a very service oriented company.”

With over 25 years of experience, Energy Transfer continues to invest significantly in finned tube technology. Finned tubing is a science and industry we relentlessly study, supply, and drive. **We provide not only current solutions, but the newest, freshest innovations that are transforming the magnitude of this industry.**

Tied Up in Knots? Break Free!

Variety and adaptability are the left and right arms of a finned tube manufacturer. They essentially determine the ability to accomplish the task required.

How can you ever expect to fight the battle with one arm tied behind your back?

The right finned tube product can make or break your project: Why not give it everything you've got?

Energy Transfer is the largest finned tube solutions provider in North America

[Contact us for a free consultation.](#)



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