



# Residential Sauna Safety & Design Guide



Building Traditional Finnish Saunas for Lifetime Use

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Presented by Ciancio Engineering



## Forward

Whether indoor or outdoor, a sauna is a structural building, not décor. Roofs, foundations, plumbing, electrical systems, HVAC... these are all elements of a luxury home that are designed to perform for decades, not purchased as a trendy fad. Saunas should be treated the same way.

Saunas aren't disposable. Built correctly, they become central spaces to your home that support wellness routines year after year. When built casually as an accessory, however, they can pose very real risks to occupants and the structure alike.

This guide is intended for homeowners in the Chicago North Shore and Southern Wisconsin areas who are considering a traditional Finnish-style sauna and want to understand what distinguishes a high-quality installation from a superficial one.



# 1. The Evidence Standard: Traditional Finnish Saunas

## Not All Saunas Are Created Equal

When it comes to sauna-related health outcomes, not all sauna designs are created equal. Modern enthusiasm for sauna usage stems largely from decades-long population studies centered in Finland. If regular use is part of your motivation for adding a sauna to your home, knowing the details of those studies helps narrow down the design details.

Finland hosts world-class sauna infrastructure and research. The bulk of available research on sauna use and long-term health focuses on traditional Finnish sauna design.

- High temperature
- Heated stone mass (optional steam)
- Dense, wrapping heat
- Brief but consistent sessions

This combination produces profound physiological effects that lower temperature systems can't easily replicate. Among both commercial and residential sauna installations, electric Finnish sauna heaters are by far the most common choice. They offer precision, reliability, and seamless integration with the rest of your home.

Wood-fired saunas are traditional and still commonly found in Finland, but require additional planning around combustion air, chimney design, fire safety, and more to meet local safety codes. That said, professionally designed and installed wood burning saunas can be safely installed in Northern Illinois and Southern Wisconsin.

Infrared sauna technology is fundamentally different, producing radiant heat without hotter air temperatures. While there may be benefits to infrared saunas relative to comfort or accessibility, infrared sauna data lags far behind that of traditional Finnish saunas.

You aren't just selecting a style or aesthetic when you choose a traditional sauna. You are committing to a very specific thermal environment in your home. Heater selection, stone-pack, room geometry, and material specifications all play a role in either delivering on that environment or falling short. Excellence in materials and attention to detail guarantees the sauna you build today performs for decades to come.



## 2. Safety Fundamentals

### Sauna Safety is Critical

Saunas are incredibly safe when used properly. Mistakes in construction or misuse can introduce needless hazards. Sauna safety should never be treated as an afterthought, particularly if you want to enjoy daily or near-daily use.

Clinical studies and population research shows that typical sauna use should involve:

- Short sessions, often 10–20 minutes
- Adequate hydration before and after
- Cooling periods between sessions
- Avoidance of alcohol
- Use by generally healthy individuals

These practices are not incidental; they are foundational to safe use. A good sauna design will take many of these safety considerations into account at the design phase — allowing you the homeowner to focus on behavior and routine instead of guessing about unknown risks, such as:

- Dry surface stability
- Burn-safe clearances
- Controls placement & reliability
- Runtime & cooling cycles



Saunas are not recommended for everyone, especially those who have existing cardiovascular issues, blood pressure concerns, or struggle with heat-intolerance. You should consult a physician before making a purchase. That said, professionally designed saunas place the burden of safety on the structure itself. Controls, heater placement, clearance to combustibles, material selection, and all aspects of installation are factors that influence safety.



### 3: Ventilation:

Ventilation isn't glamorous. It's often the last system considered during sauna design and, in many ways, the most misunderstood. Ventilation directly impacts moisture management, heat distribution and comfort during sessions, and even has an impact on the sauna's quality and longevity.

Traditional Finnish sauna ventilation:

- Delivers fresh oxygen while exposed to high heat
- Manages heat stratification
- Eliminates stale, stagnant air pockets
- Helps control moisture during sessions

High (or too high) ventilation in cold climates causes problems with heat stability and relative humidity. Too little and your sauna can suffer from stuffiness, or air quality concerns.

#### Ventilation at the Design Level

Successful sauna ventilation requires design-level thinking around:

- Intake and Exhaust Locations
- Passive vs. Mechanical Ventilation
- Integration with the Home's HVAC (if indoors)

Sauna ventilation isn't solved by buying a "sauna fan." Proper ventilation requires designers to think holistically about heat movement, air circulation, and how to safely remove moisture from the space without harming the structure.





## 4. Electrical and Fire Safety

Saunas operate at temperatures far beyond typical residential environments. Whether electric or wood, the heating must be designed with absolute clarity around safety, load, and code compliance.

Electric sauna heaters require:

- Proper sizing based on room volume and insulation
- Dedicated electrical circuits
- Correct clearances from combustible materials
- Reliable control systems

Wood-fired saunas add layers of complexity, including:

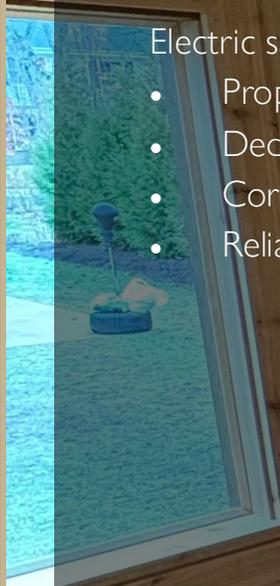
- Chimney design
- Combustion air supply
- Spark and ember management
- Local permitting and inspection requirements

In both cases, improper design can create real fire risks. Manufacturer specifications are a baseline, not a substitute for integrated design that accounts for the surrounding structure.

### Where Experience Matters Most

Sauna construction isn't a great DIY project. A misunderstanding of heat risks can lead to fire hazards no matter how beautiful the space might be.

Professional design ensures that safety margins are preserved even under frequent use. Quality materials, proper clearances, and disciplined installation practices turn high heat from a liability into a controlled, reliable system.





## 5. Managing Condensation in Cold Climates

It should come as no surprise that heat produces moisture. In cold climate regions like the Midwest, the meeting between heated, moist sauna air and freezing outdoors creates one of the most challenging aspects of sauna design.

Managing moisture means accounting for:

- Vapor intrusion into wall assemblies
- Condensation when cooling down
- Interfaces between sauna & existing home
- Potential impact on adjacent rooms
- A thoughtfully built sauna should include:
  - Continuous vapor barriers
  - Appropriate material selection
  - Floor pitch / drainage
  - Safe pathways for moisture to exit

Saunas hold a unique place in cold-climate homes. Their very function produces moisture that seeks out entry points into the home.

### **Materials Don't Lie**

Marketing can try to sell you “luxury vinyl” that will miraculously resist moisture. Unfortunately, even the highest graded vinyl will eventually face issues when used as a primary sauna material in colder regions. Paying close attention to materials is non-negotiable for successful sauna construction.

## 6. Designing Saunas for Lifetime Use

If done correctly, your sauna should only get easier to use with time. Traditional Finnish sauna design has massive overlap with concepts like aging in place — making it highly relevant to homeowners who plan on growing older in the family home.

Saunas for lifetime usage can incorporate details like:

- Accessible bench heights
- Stable, slip-resistant flooring
- Thoughtful lighting
- Ample room to circulate
- Materials that can stand up to decades of use

Will you be able to comfortably use your sauna in 20 years? More than simply avoiding hazards, good sauna design enables comfort and accessibility far into the future.



# Design & Integrity Matter

## Your Sauna is a Complex Space

A sauna is one of the most demanding spaces in or outside a home. It tests materials, systems, and craftsmanship daily. When designed and engineered correctly, it rewards the homeowner with decades of safe, consistent use.

Ciancio Engineering designs and builds custom traditional Finnish-style saunas for private residences throughout Chicago's North Shore and Southern Wisconsin, including the Lake Geneva area.

Our approach combines evidence-backed sauna philosophy with engineering-based design and craftsmanship to create a sauna that is architecturally sound, safe to use and a beautiful accent to your home.

If you're looking to add a sauna to your property and want someone who will treat it as thoughtfully as the rest of your home, we hope you'll consider Ciancio Engineering.

## Why Ciancio Engineering

- Custom made – every sauna project is designed and built to your vision and specifications
- Engineered accuracy – engineering expertise ensures flawless execution and lasting quality
- Tailored design – each outdoor or indoor spa is carefully crafted to fit your lifestyle
- Premium craftsmanship – top quality wood and sauna products, skilled hands and meticulous attention to every detail
- Seamless experience – a guided process from design through completion, makes each project stress-free
- Enduring value – enhancing your home, your well-being, and your investment in a healthy lifestyle for years to come.

# Our Team

## Dominic Ciancio, Co-Founder

Dom graduated from the University of Missouri with a degree in Civil Engineering and is a licensed professional engineer. He brings a disciplined engineering-driven approach to every project, emphasizing design and structural integrity to ensure every build is as durable as it is beautiful.



## John Ciancio, Co-Founder

John graduated from the Kelley School of Business at Indiana University with a degree in Real-Estate Finance and brings a pragmatic approach to the business. He is focused on finding cost-effective solutions to ensure that each project is executed within budget while maintaining the highest quality standards.



The Crew!

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