



**HARLEY HUMIDIKOOL™
INDUSTRIAL HUMIDIFICATION
& OUTDOOR COOLING
SOLUTIONS**

**INDUSTRIAL
& COMMERCIAL
APPLICATIONS**

Company Profile

F Harley & Company Pvt. Ltd., a member of the Harley group, was established in 1825 as an English company and is also one of the oldest members of the Bengal Chamber of Commerce & Industry. It was bought over by the present management, The Shah family, in 1967. The company enjoys a long history that has seen it evolve from a predominantly textile-based company to being an eminent player in environmental engineering in the global market. F. Harley expanded its business line into the area of outdoor cooling and humidification systems through technical collaborations with international pioneers and has engaged in research with the Tocklai Tea Research Association, Jorhat on improvements in humidification for the tea industry. In addition, F. Harley was recently awarded Corporate Heritage Recognition 2022.



Our objective is to continuously upgrade our technology base through the absorption of the latest technology and internal R&D and offer a comprehensive range of solutions to our customers in the areas of dust control, filtration, and ambient cooling and humidification, backed by a professional and committed service. Thus, we remain committed to our motto of “Improving Your Environment” with our contribution in the area of environmental engineering.

Since 2010, F. Harley has introduced the pathbreaking and effective humidification system known as Harley Humidikool™— Industrial Humidification & Outdoor Cooling Solutions—for ambient applications in the tea industry, expanding further into machine applications to date. F. Harley has over 600 installations and is growing rapidly in Assam, North Bengal, Bangladesh, Africa, and Nepal. Over the years, F. Harley has successfully introduced these systems to the ambient cooling as well as mist chamber applications to the most renowned names in the tea industry.

We are a leading provider of commercial and industrial misting systems, with a diverse portfolio in both the commercial and industrial sectors. Harley Humidikool™ has a solid reputation in the Humidification and Outdoor Cooling industries. The company has a well-equipped 15,000-square-foot manufacturing facility with complete testing equipment backed by a modern in-house laboratory. Our well-trained and experienced technical team of engineers brings together several years of accumulated industry experience, which enables us to offer custom-made products and systems that are designed to exceed industry standards at a very competitive price.

Harley Humidikool™ Applications

Industrial Humidification

TEA HUMIDIFICATION- A moist environment promotes tea development, and the proper relative humidity level is critical for converting the harvested leaves into quality tea during manufacturing. With help of Harley Humidikool™ Humidification System temperature and moisture can be controlled significantly during oxidation. This cycle



creates the ideal conditions for polyphenols in wilted leaves to form theaflavins, thearugibins, and other mixtures that contribute to the distinct flavours and colours of teas.

If the leaves are dry, oxidation slows because water is required for the cycle. To maintain ageing, an all-encompassing relative dampness of 95-98%RH at 20-26°C is required, and even a minor decrease in mugginess

level will influence the process, decreasing tea production.

Humidification of other stages, such as in tea bag production to reduce electrostatic problems, also improve productivity. Tea consumption is increasing globally, and customers expect quality and choice. Manufacturers are under more pressure than ever before to meet demand while maintaining optimal quality. If you can't rely on the weather to provide the right conditions, Harley Humidikool™ ambient cooling humidification has been shown to provide profitable manufacturing environment with advanced machine humidification inside CFMs (patent published).

Benefits of Harley Humidikool™ Humidification System For CTC & Fermenting Room

- Reduction In Air Temperature
- Uniform Cooling and Humidification
- Better Fermentation
- No Dripping Problem, Lesser Bacteria, Contamination
- Enabling Of More Air Change in Processing Room Contamination
- Greater Area Coverage
- Easy And Minimal Maintenance
- Huge Energy Saving
- Option Available for Sensor Controller
- Very Low Noise Level
- Customized Solution Offered

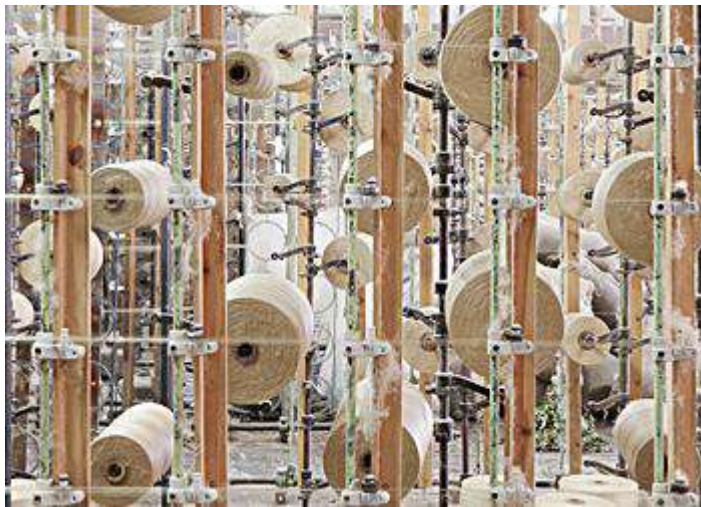
By Eliminating Mist Chamber

- Guaranteed 90% Or More RH!
- No Civil Construction Required
- Lesser Space Requirement
- No Water Deposition, Better Hygiene
- Much Lesser Power Consumption
- Much Lesser Water Consumption
- Easy And Minimal Maintenance

- Option Available for Sensor Controller
- Customized Solution Offered

TEXTILE & JUTE INDUSTRIES HUMIDIFICATION- The textile industry understands the importance of product integrity. When fibres and fabrics are in good condition, they provide both strength and comfort. Textiles, on the other hand, are inherently sensitive to changes in relative humidity because they are hygroscopic—that is, they release and absorb moisture from the surrounding air. In low humidity conditions, the fabric will release moisture. This weakens it, affecting its elasticity and tensile strength.

Correct humidity control through Harley Humidikool™ Humidification System will preserve yarn strength and elasticity, resulting in a higher-quality product with higher margins. Wastage is also reduced by reducing shedding. The yarns,



until the transformation in tissue, must balance their own moisture and that contained in the surrounding air. The absence of moisture in the air is unpleasant. Due to breakage and high static electricity levels, non-air-conditioned factories or those with a different humidification system frequently experience production difficulties during embroidery, weaving, and spinning yarns.

The American Institute of Textile Technology discovered that increasing relative humidity from 60% to 70% during storage and processing increases wool's elasticity by 15%, significantly reducing breakage during processing. Adjusting humidity levels with a misting system increases the tensile strength of all natural fibres, removes static electricity, improves yarn and fibre workability, controls suspended residual, and improves workplace comfort. Water is sprayed under pressure by patented nozzles present in Harley Humidikool™ Humidification System which is capable of producing very fine droplets of less than 5 microns in size that are immediately absorbed by the air without wetting surfaces or objects below. The results are significant with low installation and operation costs, and immediate effectiveness.

Water is an important part of yarns weight. About 7% of dry cotton weight is made by water, in a dry synthetic yarn such as Nylon it is 2-3%. The specific weight of wool is made by water up to 18%.

To control static electricity the textile industry is well aware that relative humidity, and thus moisture regain (content) of textile fibre, play a critical role in static electricity reduction. When completely dry, virtually all textile fibres have extremely high electrical resistances. However, as the relative humidity rises, the fibres absorb moisture and their electrical resistance falls, resulting in less electrostatic charge generation. Weaving efficiency also improves due to optimal humidification made by Harley Humidikool™ Humidification System reduces yarn breakages in weaving, reducing machine downtime as well as loom stop marks and weaver's knots in the finished product. It is also important to see our employee comfort Harley Humidikool™

Humidification System can deliver between 5-12°C of evaporative cooling to a textile production facility, while suppressing dust, fly and lint. This creates a healthier and more productive atmosphere for employees.

Benefits of Harley Humidikool™ Humidification System in Textile & Jute Industries

- Prevents Dryness in The Nose and Eyes, Burning Irritation, And Pain
- Decreases Production Downtime
- Improves Product Quality and Productivity
- Safeguards Against Hazardous Electrostatic Discharge
- Creates A Healthy and Pleasant Working Environment for Operational Staff
- Reduces Operating Costs Through Energy-Efficient Generation of Cooling Capacity.

COLD STORAGE/FOOD STORAGE HUMIDIFICATION- Controlling humidity is especially important in cold storage. You can extend the life of your food by maintaining ideal humidity levels. In refrigeration or freezing applications, excessive condensation can harm frozen foods. Controlling humidity levels is essential for preventing freezer burn and product loss. The Harley Humidikool™ Humidification System restores the humidity level in cold rooms and refrigerated warehouses to appropriate levels, halting the dehydration process and extending the life of food. Our



misting system emits a fine water mist on a regular basis. Because of their small size, these water droplets evaporate without becoming wet, preserving the humidity and coolness of the air, preventing dehydration, and maintaining the weight and condition of the goods.

Fruits and vegetables are mostly made up of water. The loss of freshness is primarily caused by rapid dehydration of the product, followed by evaporation of the water. Water evaporates as a result of a difference in its values between the vegetables and the surrounding air. The humidity level in the air is restored to optimal levels using a Harley Humidikool™ Humidification System, preventing dehydration. Every 10-15 minutes, our humidification system will spray an ultra-light mist of water directly onto the product for 1 to 5 seconds. Because of their small size, these small water droplets evaporate without being wet, maintaining humidity and coolness in the environment air, reducing dehydration, and maintaining product weight and condition.

Fish products are also subjects to the loss of freshness by dehydration, as they are composed of water in the measure higher than 70%. Moreover, the humidification system can control the spread of smells in the surrounding areas. Misting system can be easily assembled inside refrigerated displays. Meat is also susceptible to dehydration, Harley Humidikool™ Humidification Systems can naturally restore their suitable special microclimate, allowing them to be preserved or kept seasoning. Inside cold rooms, a misting system can be easily assembled.

Benefits of Harley Humidikool™ Humidification System in Cold Storage/Food Storage Industry

- Direct Room Humidification Maintains the Proper Humidity Level Throughout the Store, Ensuring Produce Quality Throughout.
- Drastically Inhibit the Moisture Loss in Certain Fruits, Fresh Vegetables, And Meat.
- Humidity-Controlled Storage Prevents Loss in Revenues Due to Product Weight Loss.
- Helps The Food Items Retain a Fresh, Attractive Appearance for A Longer Period.
- Precise Controls for Optimal Humidity Levels Prevent Damage Due to Excessive Humidity.
- Ensures Longer Storage in The Facility with Improved Shelf Life.
- High-Pressure Systems Require Less Water and Are More Economical.
- Anti-Drip Technology Prevents Messy Water Leaks from The Nozzles.

WINE CELLAR HUMIDIFICATION- Take the next step in ultimate wine quality preservation. Harley Humidikool™ Humidification System create perfect long-term wine storage conditions by introducing humidity back into your wine room or wine cellar. Harley Humidikool™ Humidification System combine a tough exterior with well-engineered internals to provide superior performance and dependability, ensuring your fine wine collection ages to perfection.



A low humidity level is the primary cause of natural evaporation of wine, resulting in a loss of quality and money, not only for the product time and manpower due to the necessary re-filling of wine into barrels. Furthermore, dehydration of the external board structure of wood barrels compromises both quality and

efficiency. A humidity level between 80% and 85% allows for significant reduction in "wine loss."

Harley Humidikool™ Humidification System solve all of these problems naturally and economically by regulating the humidity in wine cellars and maintaining their temperature. The water sprayed by the system is atomized by special patented nozzles that produce thin droplets with diameters of 5-10 microns or less, which are immediately absorbed by the air without wetting things or settling on surfaces. The results are notable barrels are kept efficient for longer periods of time, preserving the quality of the wood, allowing for excellent production, and preventing natural product evaporation. They enable such cost savings that the system pays back the investment in a matter of months.

Thanks to special devices like thermostats, hygrometers and remote timers it is possible to keep the desired environment, during the whole day, independently from the external climatic conditions.

Benefits of Harley Humidikool™ Humidification System in Wine Cellar Industry

- Increased General Productivity of The Wine Cellar.
- Keeping Of Constant Humidity Levels.
- Eliminates The Dehydration of Wood Barrels.
- It The Natural Evaporation of The Wine Prevents
- It Reduces the Costs of Manpower of Periodic Refilling
- It Helps to Keep the Right Temperature.
- It Is Economic If Compared to Other Solutions.

PAPER MILLS AND PRINTING INDUSTRY HUMIDIFICATION - Controlling humidity levels at all stages of paper processing and printing is critical for achieving the best production results. Humidity levels must be between 40% and 55% to maintain the moisture content of paper and ensure proper equipment operation.



An ideal humidity level ensures paper quality, a great finished product, paper dimensional stability, optimal ink transfer, and increased reliability. As a result, there are fewer paper jams or breaks, as well as less paper curl and cracking, all while maintaining maximum equipment speed. The process also eliminates shrinkage and static electricity.

Humidity In Winter Months

Heating and heat generated by machinery produce critical levels of humidity in the environment during the winter months, causing serious complications to the manufacturing process. Therefore, controlling the environment through Harley Humidikool™ Humidification System benefits paper production and storage.

Benefits of Harley Humidikool™ Humidification System in Paper Mills and Printing Industry

- Improved Product Quality, Increased Production Efficiency, And Decreased Waste.
- Removal Of Static Electricity.
- Minimization Of Scraps and Downtime.
- Reduction In Curl and Deformations.
- Improvement In Quality Folding Mechanical Process.
- Improvement In Flexibility and Dimensional Stability.
- Better Ink Transfer.
- Dust Reduction.

PLYBOARD INDUSTRY HUMIDIFICATION- The manufacturing environment influences the ply's quality. Plywood manufactured in extremely hot and dry weather conditions is brittle and easily breaks. Humidification of ply during the manufacturing process has a significant impact on the quality of ply produced.



Wood is a hygroscopic material, meaning it absorbs or releases water based on its relative humidity. Wood absorbs humidity in high relative humidity conditions until it reaches the same level as the surrounding air. The relative humidity is insufficient for manufacturing and varnishing processes for two-thirds of the year.

Harley Humidikool™ Humidification System keep the proper moisture content inside the wood fibres and effectively reduce many quality issues associated with woodworking, such as shrinkage, swelling, deformations, splits, and cracks. Different humidity levels, varnish diffusion issues, static electricity, and dust all contribute to these situations.

A Relative Humidity in The Measure Of 50-55% RH is of great importance, which can be easily achieved by Harley Humidikool™ Humidification Systems.

Benefits of Harley Humidikool™ Humidification System in Paper Mills and Printing Industry

- The Dimensions of Wood Hold Steady
- Manufacturing Process Is More Efficient
- Increase In Processing Speed
- Increase In Tool Life
- Shorter Production Stops
- Dust Reduction

TOBACCO INDUSTRY HUMIDIFICATION-Tobacco leaves and paper are extremely hygroscopic materials - that is they are both affected by the ambient moisture content of the surrounding air. If the surrounding air has a low humidity level,



moisture is drawn out from the materials, drying them out and degrading their properties.

This can result in anything from tobacco shrinking and falling out of cigarettes to cigar leaves cracking and paper misfeeding onto machines, causing production line delays. Each stage of the cigar and cigarette manufacturing process necessitates very specific humidity levels in order to

maintain the moisture content of the materials involved, ensuring production efficiency and product quality.

Tobacco humidifying systems utilising our Harley Humidikool™ Humidification System units are controlled by electronic humidistats and timers with digital humidity sensors, ensuring optimal and homogeneous humidity levels, better control of relative humidity, and better control in managing cured tobacco leaf moisture content, resulting in improved final product quality and production efficiency.

Gas-fired steam generators, air compressors, or evaporative pad-coolers are not required. An electrical power supply and mains water are required for installation. The proper humidity level, usually between 55% and 75% RH, results in better product quality with less downtime and waste, as well as lowers the risk of losses due to manipulation and over-humidification, increasing profits.

TOBACCO PROCESSING AND HUMIDITY?

The typical environmental conditions required for the majority of common tobacco processing phases are between 20 and 24 °C, 55 and 75% RH. The recommended storage temperature is 24 °C with a relative humidity of 70 to 75%.

Tobacco reacts quickly to changes in humidity and temperature, necessitating a dependable humidity control. Tobacco leaves, cut tobacco, and paper are hygroscopic materials they lose moisture content when the air is too dry, and it rapidly deteriorates when the humidity level is extremely high.

Benefits of Harley Humidikool™ Humidification System in Tobacco Industry

- Prevents Dehydration of Leaves
- Leaves Do Not Lose Flexibility Making Processing Easier and Faster
- Leaf Spines Remain Dry and Brittle
- Leaves Don't Crumble Reducing Loss and Saving Profits
- Reduces Paper Misfeeds on Cigarette Manufacturing Machines
- Low Energy Systems with Easy Configuration and Maintenance
- Uniform Humidity Levels Without Wetting
- Simple And Reliable RH Controllers
- Easy And Modular Installation from Small to Large Warehouses

Harley Humidikool™ Applications

In Outdoor Cooling

RESTAURANTS, CLUBS, HOTELS, CAFES, BEACH RESORTS AND SWIMMING POOLS HUMIDIFICATION- For the most effective and efficient method for cooling open and outside areas use Harley Humidikool™ Outdoor Cooling System. It is used globally to cool hotels, resorts, restaurants, and bars outside seating zones, terraces, and porches, as well as event cooling and sports sidelines.

They are also used for environment control, humidification, and residue concealment in a wide range of harsh modern, development, manufacturing, and farming settings. Harley Humidikool™ Outdoor Cooling System is an extremely powerful and effective method of cooling off vast areas - even in extremely moist environments.

Harley Humidikool™ Outdoor Cooling System creates a fog of atomized fine water droplets by forcing water through specially designed High Pressure humidification

nozzles. Harley Humidikool™ that produces 50 to 70 droplets employs a process known as "flash evaporation," which occurs when the High-Pressure Misting is forced out through nozzles with very small orifices, such as 0.1, 0.2, or 0.3mm.

It produces a fine mist that results in a significant temperature drop without wetness. While mist from Harley Humidikool™ Outdoor Cooling System for restaurants can help



keep patrons cool and comfortable, it produces fog cooling that evaporates almost instantly, leaving no wetness or moisture on the floor or dining tables. Anti-Drip Stainless Steel Mist Nozzles provide an instant on/off effect while preventing dripping on customers.

The framework for misting from Harley Humidikool™ maximises seating space by allowing outside seating for lunch and evening

meals even in the hottest of weather. Clients are very interested in the misting system and frequently like to sit outside with the misting system on. Investing in Harley Humidikool™ Outdoor Cooling a misting system for your restaurant is thus a very cost-effective way of cooling open or closed areas, particularly during a pandemic when air conditioners are not permitted to be used.

Benefits of Harley Humidikool™ Outdoor Misting System in Restaurants, Clubs, Hotels, Cafes, Beach Resorts and Swimming Pools

- Increase Top Client Comfort and Seating Time.
- Lowers Temperature
- Reduces Flying Insects
- Fully Expandable
- Absorbs Dust and Pollen
- Special Effects
- Increased Business Prospects
- Energy Saving

EQUINE INDUSTRY, MISTING & POULTRY HUMIDIFICATION- When birds and animals are comfortable, they are happier and more productive, just like humans. Humidification helps to reduce heat stress and boost productivity.

Harley Humidikool™ Cooling Systems relieves heat stress in all types of poultry. Mortality has been drastically reduced. Broilers that are not stressed continue to eat and grow. Layers lay more eggs. Breeders are more active and produce better eggs. Humidification increases the farrowing sow's appetite, which improves milk production in the hog world. As a result, the litter weight at weaning increases, the size of future litters increases, and the sow returns to heat faster. Cool temperatures boost sex drive, sperm count, and sexual development.

Heat stress affects cattle as well. This condition has the potential to impact milk production, weight gain, and breeding cycles. The misted cow is the contented cow, and the productive cow is the misted cow. When working in extreme heat, Mother



Nature has an unpleasant way of telling humans and horses to slow down, and if those warnings are ignored for too long, disaster can occur.

But races, heats, rounds, and shows are held in all kinds of weather, and if we want our horses to perform well in the heat, we must condition and acclimatize them to withstand high temperatures.

Benefits of Harley Humidikool™ Humidification System in Equine Industry, Misting & Poultry

- Increases Egg, Milk, And Meat Production
- Reduces Animal Heat Stress
- Reduces Water and Energy Consumption
- Extends Breeding Period and Growth Rate
- Results In Cleaner, Drier Surroundings
- Dust Suppression and Odor Control

AIR COOLED CHILLERS HUMIDIFICATION- Air conditioning systems perform the worst on hot summer days, when they are most needed. The cooling capacity falls by 14-15%, while the power draw rises by 31%. The issue arises in condensers, which must convert refrigerant vapours to liquid by forcing air through the unit and absorbing heat from the refrigerant, causing it to condense.



Installing a Harley Humidikool™ Outdoor Cooling System to air-cooled chillers improves the efficiency of their working conditions, as the water mist lowers the temperature of the air entering the condenser.

Water misting systems for air-cooled chillers can improve efficiency under most operating conditions by lowering the air temperature entering the condenser.

On typical air-cooled chillers, a reduction in condenser air temperature of 6 °C will result 14% improvement in efficiency and 12°C about 25-30%.

Benefits of Harley Humidikool™ Humidification System in Air Cooled Chillers

- Energy Consumption Decreased, As Much As 30%
- Air Temperature Outside the Unit Lowered by Up To 12 °C
- Increase The Efficiency of HVAC Units Up To 30%
- Life Of the Whole System Extended
- Low Start Up and Operating Costs
- Quick Installation

GREENHOUSE COOLING HUMIDIFICATION- Harley Humidikool™ Cooling Systems are incredibly beneficial for maintaining the ideal temperatures within greenhouses of all sizes. Systems for misting or creating fog are crucial for maintaining a comfortable climate in greenhouses.

Under conditions of forced or natural ventilation, misting systems are also utilised with significant advantages to maintain the proper temperature and humidity in the environment. Due to the evaporative cooling concept, the greenhouse will cool quickly in the summer while also humidifying the air in cases of low relative humidity.



The device maintains the proper humidity level throughout the winter to minimise crop drying brought on by heating systems. Whereas it is impossible to employ conventional methods, the atmosphere created by our system is suitable for the cultivation of the most sensitive crops (such as the growing of young seedlings, tropical plants, and in bloom plants) where the use of conventional spraying techniques like regular spraying is not feasible. The fog system

operates at a very high pressure, and it is intended to create water droplets that are no larger than 5 to 10 microns in diameter. Because of their small size, these droplets cling to the air for a very long time, creating the fog effect.

Typically, low humidity and high temperatures are a challenge for all crops. When the humidity in the greenhouse environment falls below 30% RH, serious issues start to happen. Plants will suffer, and their growth will usually stall or stop. In reality, a lot of greenhouses in arid regions shut down for the summer until the temperature drops to a manageable level.

Low-Cost Systems

Comparing our systems to other climate control options, its very affordable cost is a key benefit of misting in greenhouses. Given that the systems are available in a variety of solutions or D-I-Y Kits, or by the straightforward solutions of quick couplings, the energy costs are minimal, and the installations are straightforward and quick. Our systems are made to require extremely little maintenance and very little operating expense.

Benefits of Harley Humidikool™ Humidification System in Greenhouse Cooling

- Increased Greenhouse Productivity Overall.
- Increases Plant Growth Rate.
- Keeping Humidity Levels Stable.
- Reduced Water Usage for Irrigation.
- Growing Of a Reproduction Plants Stock in The Greenhouse.
- Suitable For Chemical Spreading (Fertilizers, Insecticides).
- Less Humidity Need.
- The Correct Micro-Climate in Any Season.
- Less Shading Needed.

CREATE Landscaping & Special Effects HUMIDIFICATION- A fantastic way to display your gorgeous landscaping and pool. For your event, expo, theme park, or sporting occasion, consider something special using Harley Humidikool™ Systems.

The promises of a fog system as an attraction are all true. Even in the night-time, it is



a sensory spectacle with light and sound. Water mist has a special attraction for kids, but it also appeals to adults seeking cooling and refreshment on hot days. The technique is simple to integrate into both existing buildings and concrete-made artificial rocks. With our expertise in planning and design, we can assist you if you're seeking for unique ideas.

Fog may offer a continually changing exhibit by creating a moving sculpture within a piece. A

breeze or even internal air currents can alter the fog's shape, adding to the job. For suspense, an early-morning, eerie, frightening, or jungle-like mood, like in this scorpion exhibit, a misty environment may be necessary. This environment is safely and effectively provided by Harley Humidikool™.

Benefits of Harley Humidikool™ Humidification System for Landscaping & Special Effects

- Special Effects for Swimming Pools, Artificial Lakes, Water Cascades.
- Special Effects for Landscaping, Gardens, Parks, Exhibitions.
- Special Effects for Amusement Parks, Artificial Lakes, Water Cascades.
- Special Effects for Fountains, Sport and Music Events, Exhibitions.

Get in Touch

If you have any questions or queries a member of staff will always be happy to help. Feel free to contact us by telephone, email or fax and we will be sure to get back to you as soon as possible.

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