AIR SOLUTION TECHNOLOGY

Improve any working environment with the technology

Nippon Puretec Co., Ltd., specializes in industrial ventilation, air conditioning, and dust collecting. We have satisfied the high-grade demands of textile and pharmaceutical factories over the years. Currently, those technologies and the expertise cultivated to date are being applied in other fields. We propose to regulate working environments to achieve optimal working conditions with our technologies. We not only offer overall engineering from initial planning to design, production, and installation, we also respond flexibly to any need, such as reconstruction and expansion of existing factories and facilities.

Main environmental items for improvement

- High temperature countermeasure
- Paper dust countermeasure and Insect Protection with positive press
- Noise countermeasure

Air Solution Technology

- Insect Protection with positive press P03
- High temperature countermeasure P05
- Paper dust countermeasure P07
- Air conditioning and dust collecting P11
- Airflow control P12
- Foreign substances (powdered dust, straw trash, etc.) P09
- Installation process P13
Insect Protection with positive press

In factories, exhaust facilities are installed, yet it is surprising that air supply facilities are often overlooked. As a result of lack of air supply,

- Negative pressure in the room results in the entry of outside air from and slit, door, window, or opening of a building.
- Meanwhile, insects and dust enter and cause quality problems.

We solved this problem by using a filter with an automatic cleaning function that can also maintain positive pressure within the factory.

FEATURES

Insects cannot enter against the air velocity of 4 to 5 m/s coming from the opposite direction. Therefore, we introduce outside air to raise the indoor air pressure by + 10Pa (wind speed 4 m/s).

To increase the effect of positive pressurization, it is important to achieve automatic cleaning of the outside air filter, airtightness of the building, and use of a double-door (entry and exit).

Nippon Puretec considers these factors while discussing the air supply to accomplish a design with aerial balance.

- Large air volume unit of 18,000~48,000 m³/Hr.
- We employ a filter with an automatic cleaning function developed by our company to maintain the designed air supply volume.
- High-performance filters, steam heaters, and many other options.

Customization is possible according to the scale and environment of the factory.

OPTION

- Primary Filter (Nylon Mesh) <Air supply unit>
- Secondary Filter
  - High Efficiency Particulate Air Filter (HEPA)
  - For food factories
- Air washer
  - For high temperature factories
- Steam heater
  - Condensation controlemulator
The working environment at a high-temperature factory (paper/corrugated box factory, dyeing house, etc.) is extremely severe and can reach 40°C to 50°C in summer. Working under a commercial spot cooler, the workers will experience fatigue. Workers become fatigued because of the environmental stress resulting from the excessive difference between the outlet temperature of the cooler and the temperature in the factory (20°C to 30°C), and the thermoregulation function of the human body cannot keep up with the change. We propose limiting the temperature difference by using an air washer to create effective airflow considering the radiation load and thus can create a comfortable working environment.

FEATURES

The air washer is a simple structure that sprays water into the blowing air and extracts water droplets with an eliminator at the rear stage. The blowing air is deprived of vaporization heat by contact with the sprayed water, and the outlet air temperature is 7°C to 8°C lower than the inlet air temperature.

Because sprayed water can be reused, the amount of water remains almost the same with only a small amount of evaporation.

- Because the temperature difference stress is added to the temperature regulation function of the human body, and an air condition causing little fatigue is achieved.
- Since the air washer has an air-cleaning function, it can be used as a filter to remove outside air pollutants during normal operation.
- Only blowing fans and pumps for the washer require a power source, therefore power saving is much greater than general package air conditioners.

Psychrometric chart

27°C 36°C

Air-washer air conditioner
(Heat countermeasure at high-temperature factory)

Various filters

Dampers

High temperature in working room countermeasure

MILD COOLING
In the process of manufacturing corrugated box, a large volume of corrugated paper dust is generated, especially at the periphery of the Carton Former, which cuts the grooves for folding and making boxes. Nippon Puretec proposes its automatic panel filter APF as a dust collecting facility for the carton box. We also propose the introduction of a cyclone exhaust and dust collecting system to prevent the scattering of paper dust around the wastepaper recycle system.

**FEATURES**

- **Dust collecting system for Cyclone exhaust** (wastepaper chamber)
  - Uses an exhaust fan for the conventional dust filter (APF) to control the internal pressure of the cyclone (negative pressure state). This prevents the paper dust from scattering from the cyclone or press packed bale machine.

**Paper dust countermeasure**

corrugated box factory

**Paper dust collector**

**FEATURES**

- **Main dust collector**
  - A variety of different processes are required for toilet paper production.
  - In the winder and rewinder processes that roll paper, a large amount of paper dust is generated. Measures are necessary not only for product quality control but also for improvement of the working environment for workers. Nippon Puretec proposes its dry dust-collecting device LDF as the dust collecting facility around the winder / rewinder.
  - Also, we propose the Circle Air, a ceiling-rotating blow cleaner that blows air into the place where dust accumulates easily.

**Paper dust countermeasure**

toilet paper factory

**Paper dust collector**
EXHAUST FILTERING

Foreign substances (powdered crust, straw trash, etc.)
countermeasure
Rice husks and cereals

It is necessary to take care of the surrounding area when treating dust and other foreign substances significantly generated in a large facility, such as a country elevator, a rice center, or seed center.
Nippon Puretei proposes a dry dust collector LDF as a countermeasure.
This does not require treatment of wastewater because no water is used, and there is no worry about bad odor.
The device is energy saving and has a long service life, which also contributes to reducing the workload of the operator.

FEATURES

The LDF processes the dust-contained exhaust in the rotary filter mode.
The simple structure is driven by a single motor and can process a large volume of air.
It is sufficient to install a small quantity of LDF and maintenance is easy.
The unit is an automatic cleaning type that monitors the differential pressure before and after the filter and collects powder dust automatically when it reaches a certain value.

- Since foreign substances and power dust are collected in the dry state, the area appears clean with no bad odors.
- Moisture does not flow back into the dryer, which will reduce the risk of problems.
- It is possible to cope with tasks through various combinations depending on the processing air volume.

Basic flow

Dust collector
Clean air
Dust collecting filter LDF
Mechanical dust-collecting exhaust
Primary sedimentation chamber
Dust collecting filter LDF
Cyclone type or Bag filter type
Foreign substances (powdered crust, straw trash, etc.)
Dust collector
Storage bin / Tank exhaust
Dryer exhaust
Clean exhaust (dust contained)
Clean exhaust (dust contained)
We propose overall air conditioning and dust collecting systems for dry nonwoven fabric production sites. Improve the working environment by means of purifying the exhaust and the return air of the production machines, which stabilizes the temperature and humidity and provides insect-proof positive pressurization.

We not only apply overall engineering from initial planning to design, production, and installation, we also respond to any need for reconstruction and expansion of existing facilities.

FEATURES

Air-washer air conditioner, automatic return filter, and dampers are all equipment developed by our company.

A variety of types of components by size and grade are available for a wide range of applications.

CONVENTIONAL AIR CONDITIONING

In the spun bonded nonwoven fabric manufacturing process, melted high-temperature resins are discharged from the nozzle and, at the same time, cooled by cool air (quench air) to become thin fibers.

The outlet of this cool air is called a quench chamber.

The quench chamber we propose realizes constant air speed and low-pressure loss. By doing so, we offer quality that meets customer demand.

FEATURES

Nippon Purotec, based on the unique technologies cultivated in the nonwoven fabric industry over the years, can meet any high-grade requirements that cannot be satisfied by other companies.

- Constant air speed at the outlet surface: ±10 of average air speed
- Low pressure loss: Approximately 160 Pa when the blowout air speed is 0.5 m/s.
- Approximately 360 Pa when the blowout air speed is 1.0 m/s.

We also design and manufacture monomer suction hood that is essential in nonwoven fabric manufacturing as the quench chamber.

Monomer suction hood (optional)
Flow of introduction

From inquiry to after-sales-and-follow-up service

Do you have such problems?

- Want to prevent insects from entering the factory.
- Want to change the air conditioning in the factory.
- Want to remove dust from the production machines.
- Want to implement measures against noise.

**STEP 1 Inquiry**

Please feel free to contact us first. Our technical sales personnel are cognizant of the technology and will serve you from first contact to after-sales maintenance. We also wait for your preliminary consultations before consideration of introduction.

**STEP 2 Hearing**

Please inform us of the environment and conditions that are necessary to select the device most appropriate to meet your needs and settle your problems.

<table>
<thead>
<tr>
<th>Purpose of use</th>
<th>Place of use</th>
<th>Processing air volume</th>
<th>Temperature condition</th>
<th>Noise level</th>
<th>etc.</th>
</tr>
</thead>
</table>

If you have any questions or require specialized knowledge, our technical sales personnel can visit the site directly and conduct surveys.

**STEP 3 Proposal of plan/Estimate**

We will examine the use conditions, such as the air volume and installation location, and select the optimum filter from a wide range of product lineups, design the system, and submit our proposal and estimate.

**STEP 4 Construction**

We will undertake construction under the supervision of technical sales personnel. We will also prepare detailed drawings in advance if necessary. It is also possible to measure the environment before and after construction and submit a report after completion of the construction.

**STEP 5 After-sales-and-follow-up**

Please entrust us with the after-sales-and-follow-up services concerning requests for periodic maintenance, especially if it has been several years since the initial introduction.

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**History**

- March 1980: Began sales of gas adsorbent Puro-Lix by the Development Group of Chemical Business Division of Nippon Chemical Industrial Co., Ltd.
- June 1994: Opened the headquarter office in Chiyoda-ku, Tokyo.
- November 2006: Acquired all issued stocks of Luft Technologies (former Luwa Japan) Ltd.
- November 2009: Opened the Kyushu Sales Office.
- October 2012: Merged with Luft Technologies Ltd. (Our company is the surviving company.)
- April 2015: Moved the headquarters to Nagoya.

**History of former Luft Technologies Ltd.**

- March 1967: Established Nippon Luwa Ltd.
- September 1985: Changed the company name to Luwa Japan Ltd.
- July 1997: Became a 100% owned subsidiary of Ziehl-Abegg Luwa AG.
- November 2006: Became a 100% owned subsidiary of Nippon Purenitec Co., Ltd.
- November 2010: Changed the company name to Luft Technologies Ltd.
- October 2012: Merged with Nippon Purenitec Co., Ltd.

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