Plastics
Manufacturing and Storage

Humiscope

Not everything is resilient to environmental fluctuations. Sometimes for your company to succeed, you need to master your indoor environment.

Master your indoors

Moisture in the air can play havoc in the manufacture of plastics. Condensation will begin to form on the moulds and plastic granules will begin to absorb the moisture.

Common Moisture Related Issues

- Condensation forms on plastic moulds
- Condensation absorbs into plastic granules
- Bubbles form in finished product
- Clarity and crystalline structure of end product is of poor quality
- Moisture causes problems with stored hygroscopic compounds

Hygroscopic materials are sensitive to moisture. Most polymers are inclined to absorb moisture which leads to changes in the plastics' properties and processing.

There is no external factor as detrimental to plastics processing than moisture.

Thermoplastics such as Polycarbonate, Nylon and PET are hygroscopic and extremely sensitive to moisture. While they are deemed a 'dry' material – by the time they get to the processor, they have absorbed moisture.

Polyamides such as ABS absorb moisture due to their chemical characteristics. In the presence of moisture, they form hydrogen bonds. While necessary at the end of the process to stop brittleness, it is highly undesirable before processing.

When plastics or polymer absorb moisture from its environment, it can sometimes act as a plasticiser, making the plastic softer and more flexible. However, it can also lead to irreparable degradation of the polymer composition.

Current Plastics Manufacturing Process
And the Issues That Occur

Heating

Thermoplastics (or resinous raw materials) used injection and blow moulding operations are heated to increase the material's plasticity which allows the material to be shaped into forms using a mould.

During this process a chemical reaction (hydrolysis) occurs which make the long polymer chains shorter. Long polymer chains are required to make high quality products. Short chains result in poor quality mouldings.

Chilled Water

Chilled water is generally used to keep the mould cold; this allows the plastic item to form faster – which means faster production. And the colder the surface, the faster the forming rates ergo, the higher the production volume.

However, when heat is mixed with cold it creates problems. Condensation begins to form on the mould's surface which results in watermarks on the products. This is a highly undesirable outcome within the plastics manufacturing industry.

This condensation also corrodes moulds, guide pins and equipment. Plastic manufacture equipment, including moulds is very expensive. Damage to equipment requires repair or replacement, increasing operating costs and slowing (or stopping) production.

A simple solution would be...

to increase the mould surface temperature. However, this increase means resin forming time is slowed, decreasing the volume of production and the quality of the end product (as defects often occur when forming time is increased due to longer exposure to condensation).

So what is the solution...

With over 35 years' experience it's safe to say we absolutely know our stuff

We live and breathe indoor environments and how to control them. As experts in our field, you can count on us to provide fully customised solutions while educating you on how to optimised the environent to best suit your assets.

A Desiccant Dehumidifier
Mould Dehumidification System

A Desiccant Dehumidifier used in the plastics industry is the ideal solution. A desiccant dehumidifier can achieve a consistent low mould temperature of 5°C or lower.

It will remove the moisture from the air, eliminating condensation. This allows for speedier cycle times which leads to greater production rates. A dehumidification system safeguards the equipment against corrosion by keeping the moisture at bay.

Injection moulding, thermo forming and polymer storage without condensation is possible!

A Desiccant Dehumidifier And How It Helps

Improved Plastic Products

A mould dehumidification system will eliminate the issue of shock cracks forming and it will improve the clarity and crystalline structure of the end product. Without water droplets forming on the mould, the surface finish of the product is highly improved.

Improved Raw Material Storage

A desiccant dehumidifier is also the optimal choice for the storage of raw materials. It is designed to eliminate moisture in the raw material before processing.

Plastic granules, generally stored in silos can absorb moisture, so adding dry air to the storage space removes this moisture. The Dehumidifier does this by forcing ambient air through a desiccant wheel blowing dry air over the plastic granules.

Improved Mould Storage

Dry air can also be used when storing moulds. No need to put in time and effort in greasing the moulds, they are kept free from corrosion when the relative humidity is below 50%.

Avoiding moisture in the pneumatic system is also highly beneficial. Adding dry air will stop mould formation and stop the granules from sticking together.

No Effects from Weather or Changing Seasons

Ambient air (unconditioned air – air in its natural state) is unfavourable to many of the processes within plastics manufacture and has a direct effect on the end product. A desiccant dehumidifier is unaffected by external air temperature and can maintain a consistent temperature in all seasons.

> *"Our manufacturing business has been using Humiscope for several years. They are always responsive & professional. Recently they completed a significant project for us & it was delivered on time and to a very professional standard. I have no hesitation in recommending Humiscope.*
>
> ~ Hygroscopic Powder Manufacturer


We understand the critical nature of our clients' processes and solve indoor climate challenges in ways our competitors cannot
Master your indoors

Who we are

We are a group of engineers, technicians and draftsmen dedicated to our clients and committed to providing energy efficient indoor environment systems; from simple applications to specially engineered solutions.

We hold ourselves to the highest professional standard. Our clients tell us time and again how easy we are to work with & that we have exceptional communication.

01

Dedicated

We are dedicated to our clients and providing the best solution possible

02

Supportive

We exist to support our clients, their business and each other

03

Integrity

We build and maintain trust with our clients by being honest, consistent and not compromising on our values

Our services

Design and Installation

We are experts in designing, building and installing state-of-the-art climate control systems and environments. We always begin the process with a friendly, obligation free chat. We provide a full evaluation of your operation and offer suggestions and advice. Respecting your vision and budget.

We are with you all the way including post installation data logging, tweaks and check ins. Our systems will provide stress free humidity control, allowing you to focus your attention on other matters.

We don't just provide solutions, we work with you as a partner to fully understand what you're trying to achieve.

Dehumidifier Hire

Whether the application is a temporary project or being able to test the technology before investing, renting is a risk-free option. Some temporary projects we have provided rental units for:

- Sand blasting
- Bridge restoration
- Flood restoration
- Freezers
- Transformer repair

From low dew-point applications to large air flow volumes in larger spaces, our rental fleet is highly versatile. There are many configuration options and easy customisation for easy application.

Service & Maintenance

With over 35 years' experience we are able to service any brand dehumidifier regardless of make or model. We can identify where improvements can be made so you can optimise equipment and system reliability and preserve your investment.

Call us - obligation free and we can talk through your specific concerns and suggest some solutions that would work best for you.

> *"We're very happy with the outcome. Drying times were reduced by 50%. Essentially we created our own climate.*
>
> ~ Peter Schulte, Managing Director Schultes Meat

> *"I just want to say a big thank you for your efforts and help in getting the rental dehumidifier to Narrabri.*
>
> ~ Neil Rattray, Supervisor, BSA

> *"Katherine was terrific! Nothing was too much trouble, and she couldn't have been more helpful. "*
>
> ~ Peter Schulte, Managing Director, Schulte's (drying room)

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