


bulletin d'informations

Fabrication d'horlogerie et de bijouterie
Herstellung von Uhren und Schmuck

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TERRE DE RÉUSSITE
TERRITOIRES INNOVANTS

HARTER
drying solutions

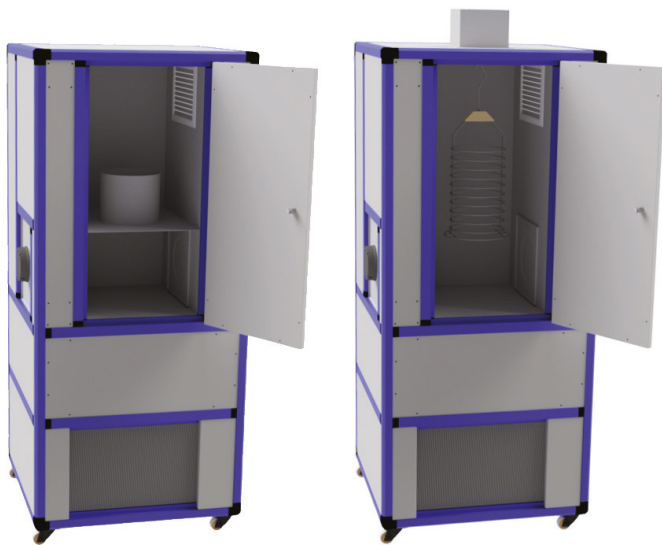
SPECIAL PRINTING

Reliable and Stain-free Drying

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If you want to optimize your drying process and do without final alcohol cleaning you need a good alternative. A heat pump based, low temperature drying system installed by a surface finishing contractor to the watchmaking industry yielded enormous improvement.

STS Saulcy Traitement de Surface has finished components for upmarket watch industry clients since 2006. The final process step, alcohol cleaning, had long been a nuisance to the owner-managed enterprise. Notorious drawbacks of alcohol cleaning include odours, high cost, health and, of course, fire hazards. Following a recommendation, STS contacted Southern Germany based drying system manufacturer Harter, a company who has made a name in the Swiss watchmaking industry with their alternative drying process, namely heat pump based condensation drying.



Kompakter Uhrentrockner: Dieses Seriengerät wurde speziell zur Trocknung von Kleinstteilen aller Art entwickelt. Die Kammer kann flexibel mit Bouclards oder Paniers bestückt werden.

Tests for Successful Drying

Reinhold Specht, Harter's managing owner, visited STS in the Swiss Jura Mountains to have a look at their electroplating shop and recommended to run tests in Harter's pilot plant station. These tests were then conducted using original "bouclards" (racks) and were witnessed by STS. The purpose of these tests was to determine the parameters relevant for successful drying such as time, temperature, humidity, air

speed, air flowrate and air routing. These parameters form an excellent basis for further layout and design. Initial test results were promising enough for STS to run further tests at their premises using a special test dryer. All test results were highly satisfactory. So STS decided to change their process and invest in a Harter dryer.

Custom Make for Bouclards

STS required a manually operated five-chamber dryer for their special process. A worker loads one bouclard each in a chamber. Then, they set the drying time and air speed, and start the drying process. The process ends automatically. Each chamber includes a rotating mechanism. The mechanism was purpose-developed by Harter; details may not be disclosed for know-how protection. The mechanism ensures optimum air routing. The right air at the right place is critical for Harter's technology.

Each drying chamber is covered by a lid that keeps the precious heat inside the system. The lid includes a clear pane for the worker to inspect the process. The highly diverse portfolio of items to be dried requires likewise diverse air speeds / flowrates. The worker may exactly control the process as required for the specific product. New, special fans provide ease of control of the parameters in the chambers, which may be operated independently.

Dry Air for Dehumidification

Harter's heat pump based condensation drying uses an alternative physical approach that makes it stand out from conventional processes. This drying method is based on the perfect combination of highly efficient air dehumidification and specific air routing. Extremely dry and, thus, unsaturated air is passed over or through the items to be dried. By physical action, the air very quickly absorbs any humidity present. Subsequently, the air is stripped of the humidity and carries in the so-called Airgenex dehumidification module. The moisture condenses and the condensate is drained off the system. Then, the cooled air is reheated and returned to the drying chamber. This is a closed air circuit. The drying cycle is thus almost free from any emission. Drying temperatures range between 20 °C and 90 °C, as required for the specific product and process. The Airgenex dehumidification module, which controls the environment inside the dryer, is separately attached to the drying station or integrated in the drying system, as required for the specific application, no matter if batch or continuous operation applies.

"The driest air, however, is of no avail unless directed to the spot where humidity is to be absorbed" explains Reinhold Specht, who was one of the co-developers of the technolo-

gy 25 years back. "We create an air routing system ideally suited to the specific product and process. Only in this way do we achieve complete and uniform drying." The hardware design to ensure perfect air routing is a specialty of Har-



ter and requires much experience and know-how. Operators may boost their production in this way. This quality improvement also means elimination of sources of undesired cost and deficiencies.

The Most Important Aspect – Freedom from Staining

Clients of Harter's normally face challenges associated with drying quality, particularly when it comes to meeting speci-

fied cycle times. Items failing to become dry within a specified period tend to obstruct the whole process. For STS, time and throughput were not so much important. The most important aspect to be reflected in this project was highest quality, which included absolute freedom from staining. The surface finished components are not only extremely delicate but also absolutely upmarket. Adequate drying at low temperatures renders them completely dry. The drying temperature of the five-chamber dryer is a gentle 45 °C. The dryer has a single Airgenex dehumidification module attached to condition the process air required in each of the chambers. The rated power of the system in production operation is 3.8 kW. Harter dryers are efficient and save carbon emission. This is why not only German but also Swiss customers may obtain government subsidies.

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