



# SATT GEMS

Swiss Analytical Testing Tools

a subsidiary of the Swiss Gemmological Institute SSEF

## ASDI

Automated Spectral Diamond Inspection



- | Colourless round melee diamond authentication
- | Separating diamond imitations
- | Separating HPHT treated diamonds
- | Separating synthetics (CVD & HPHT)
- | Customizable size-sorting (optional)

ASDI | Technology for a secure diamond industry

# Background

ASDI stands for **A**utomated **S**pectral **D**iamond **I**nspection.

In 2007, the Swiss Gemmological Institute SSEF and the electronic laboratory of the University of Basel joined their expertise and launched the ASDI project. After five years of research & development, OPTEC Industries contributed their know-how in automation and size-sorting.

Finally in 2013, the first ASDI machine was operational at the Swiss Gemmological Institute SSEF and since then, has authenticated more than a million colourless meleees, hereby protecting the Swiss watch and jewellery industry.

In 2014, SSEF founded SATT Gems AG with the purpose of marketing and distributing additional ASDI machines.

As a result, in 2015 four ASDI units were already being operated by two major Swiss diamantaires and two major Swiss watch and jewellery groups.

## Principle

### Diamond positioning

An operator pours a large batch - **several thousand** - of colourless meleees into a vibrating bowl that delivers each single stone onto a rotating glass plate. A series of specially designed arms positions each stone table down and separates them. A digital camera pre-checks each stone for their **size, position and clearance** before analytical inspection begins.

### Diamond inspection

A Raman probe identifies all possible diamond **imitations** that are automatically 'rejected'. Then, a highly sensitive spectrometer checks the short wave ultraviolet (SWUV) transparency of each diamond. If its transparency is significantly high, the stone would be automatically rejected as a potential **HPHT treated** diamond or a potential synthetic diamond (**HPHT** or **CVD** grown).

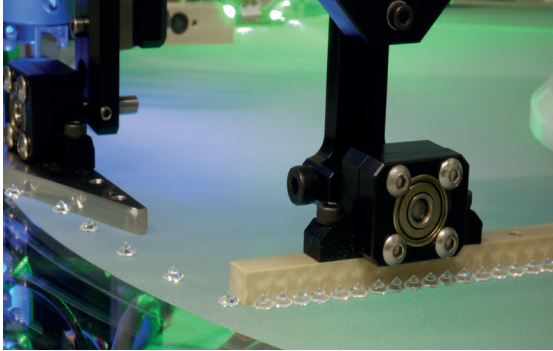
### Diamond size-sorting (optional)

A series of digital cameras record up to fifteen different measurements for each single authenticated diamond (precision for diameter measurements:  $\pm 0,005\text{mm}$ ).

An automatic sorting system distributes the diamonds into a maximum of four different bins according to their size. This function is conveniently **customizable** and has no impact on the ASDI sorting speed.

## Sorting speed

The average sorting speed is **4'000 stones per hour**.



**FAST  
RELIABLE  
ACCURATE  
PRECISE**

Adjustable distribution of diamonds on the rotation glass

Note: Sorting speed highly depends on the following factors:

- Cleanness of stones
- Room humidity rate
- Operator's experience

## Diamond and batch requirements

Diamond shape: round

Diamond cut: brilliant, 16/16 or 8/8

Minimum to maximum acceptable diameter: 1.00 mm to 3.80 mm

Maximum diameter range in one batch:  $\pm 0.10$  mm

## Conformity (CE)

The ASDI machine passed European Conformity tests for the following norms:

- 2006/42/CE (European Union Directive on machinery)
- 2006/95/CE (European Union Directive on machinery)
- EN ISO 12100: 2011 (Safety of machinery)
- EN 60204-1 (Electric equipment of machinery)
- EN ISO 13849-1: 2008 (Safety related parts of control systems)
- EN 61000-6-2 (Electromagnetic compatibility - immunity)
- EN 61000-6-4 (Electromagnetic compatibility - emission)

The ASDI machine is a 'class A equipment', which means that it should be used in an industrial environment. In a domestic environment this product may cause electromagnetic interference in which case the user may be required to take adequate measures.

# Specifications

Electricity: 230 VAC - 50 Hz - 2 kW  
Dimensions: 170 cm x 90 cm x 160 cm, (L x W x H)  
Total weight: 350 kg  
Temperature range: between +15°C and +25°C  
Humidity range: between 50% and 60%, never exceeding 70%  
Observed sound level in normal use: <70 dB

# Price

ASDI machine | Standard option <sup>(1)</sup> .....starting from CHF 350'000  
Diamond size-sorting option <sup>(1)</sup> ..... up to CHF 50'000  
Delivery cost ..... on request

<sup>(1)</sup> Final price depending on additional accessories.

Detailed video of ASDI machine can be viewed on  
[www.sattgems.com](http://www.sattgems.com)

# Contact us

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