Dear Western Digital Team,

Based on our discussions, please find below an offer for three custom designed software modules for automated analysis of Diamond Particle Distribution on Polishing Plate along with the assoctied module to import , work with and export correlative image data set .

The total price for the three workflow is 72,721.00 Euro.

Please don’t hesitate to contact us in case of any questions.

Best Regards,

Manoj Mathew

# Offer for automated image analysis modules

**Overview**

Western Digital acquires Scanning Electron Microscopy (SEM) images to evaluate the quality of diamond embedded polishing plates. These images are currently subjected to a semi-automatic analysis process with significant human intervention.

The three modules in this offer are designed to perform the required image analysis tasks automatically and to generate detailed reports of the analysis.

The three modules will be delivered as applications deployed on the ZEISS ZEN Core image analysis platform that enables ease of use and compatibility for further automation in conjunction with image acquisition.

**Description of Custom Solutions:**

**Module 1 [Cluster Density Analysis]**

Cluster Density Analysis module is an image processing cum machine learning module that encapsulates in itself state of the art algorithms to accurately segment diamond particles out of the raw image and cluster them into high-density and low-density groups. This module also creates a meta output containing density values of each cluster dumped in a csv file along with a histogram plot to pictorially depict information.

**Module 2 [Particle Distribution Uniformity Analysis]**

Particle Distribution Uniformity module uses complex statistical models under the hood to analyze the distribution of the diamond particles present in a cluster and compare it with an ideal uniform distribution and finally reporting it quantitively. The module outputs uniformity of individual clusters color-coded relative to the uniformity of all the clusters present in the input raw image along with csv data file containing actual value.

**Module 3 [Cluster and Particle Morphology Analysis]**

Cluster and Particle Morphology Analysis works as a geometric feature extraction module to calculate important geometric properties of diamond particles and the clusters like area of cluster analysis, area fraction of cluster analysis, equivalent diameter of cluster analysis, diamond particle diameter analysis, etc. These properties are reported by the module with the help of histogram plots and CSV files.

**Associated ZEN Module**

ZEN Module Connect

Contains:

- Export of merged project view as image

(ZEN blue: single and multi-channel)

- Export of project views as fly-through

movie

- Export to SerialEM file format

- Import of 3rd-party microscopy images

powered by Bio-Formats

**Pricing Information**

Estimated delivery time is 4 months from the placement of the purchase order:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sl.No: | Description | Catalog Number | Unit Price (Euro) | Man-Days Quantity (Nos)/Unit Nos | Total Price (Euro) |
| 1 | Module-1: Cluster Identification and Particle Density Measurement | 410190-0104-000 | 1,299.00 | 36 | **46,764.00** |
| 2 | Module-2: Cluster Uniformity Measurement | 410190-0104-000 | 1,299.00 | 12 | **15,588.00** |
| 3 | Module-3: Cluster and Particle Uniformity Measurement | 410190-0104-000 | 1,299.00 | 6 | **7,794.00** |
| 4 | ZEN Module Connect | 410136-1091-310 | 2,575,00 | 1 | **2,575,00** |
|  | Total |  |  |  | **72,721.00** |

This offer is valid until the xxx.

We hope this offer corresponds to your requirements.

Carl Zeiss Microscopy GmbH