

Edge Grinder YH-8800

Edge Profiler EGPRO-EN

CERAMICFORUM CO.,LTD

Ver 1.0

2023/4/7

Contents

- ▶ Profiles
- ▶ Market Share of Edge Grinder in Japan
- ▶ Features
- ▶ Specification of YH-8800
- ▶ Internal Structure
- ▶ Size and Weight
- ▶ Processing Accuracy
- ▶ Structure of the system
- ▶ Productivity
- ▶ Utility
- ▶ Accuracy of each unit
- ▶ Components
- ▶ Process Flow
- ▶ Edge Profiler EGPRO-EN
- ▶ Distributor

Profiles

- ▶ **Edge Grinder YH-8800**
- ▶ **Edge Profiler EGPRO-EN**

Capable of processing and measuring Si wafer, sapphire and compound semiconductor wafers, such as SiC, GaN, GaAs, LT/LN etc. and so on.

The manufacturer is YUHI COMPANY LIMITED, the CEO of which has decades of experience in semiconductor wafer processing.

Sales Results

Edge Grinder: over 1,000 sets

Edge Profiler: over 50 sets

Market Share of Edge Grinder in Japan

- SiC: Over 70%
- Compound semiconductor: Over 80%
- Sapphire: Over 90%

Customers in Japan, Korea, Taiwan, Europe, U.S.A. etc.

Edge Grinder: YH-8800

5



Features

- ▶ **High Accuracy of the centering - $\pm 30\mu\text{m}$**

(※ A company is $\pm 50\mu\text{m}$.)

LESS GRINDING AMOUNT OF THE EDGE !

LONGER LIFE OF CONSUMPTION OF THE GRINDING WHEEL !

GET THE HIGH ACCURACY OF THE EDGE QUALITY !

- ▶ **High Throughput**

Equipped with **2 axes**.

- ▶ **Excellent Crystal Orientation**

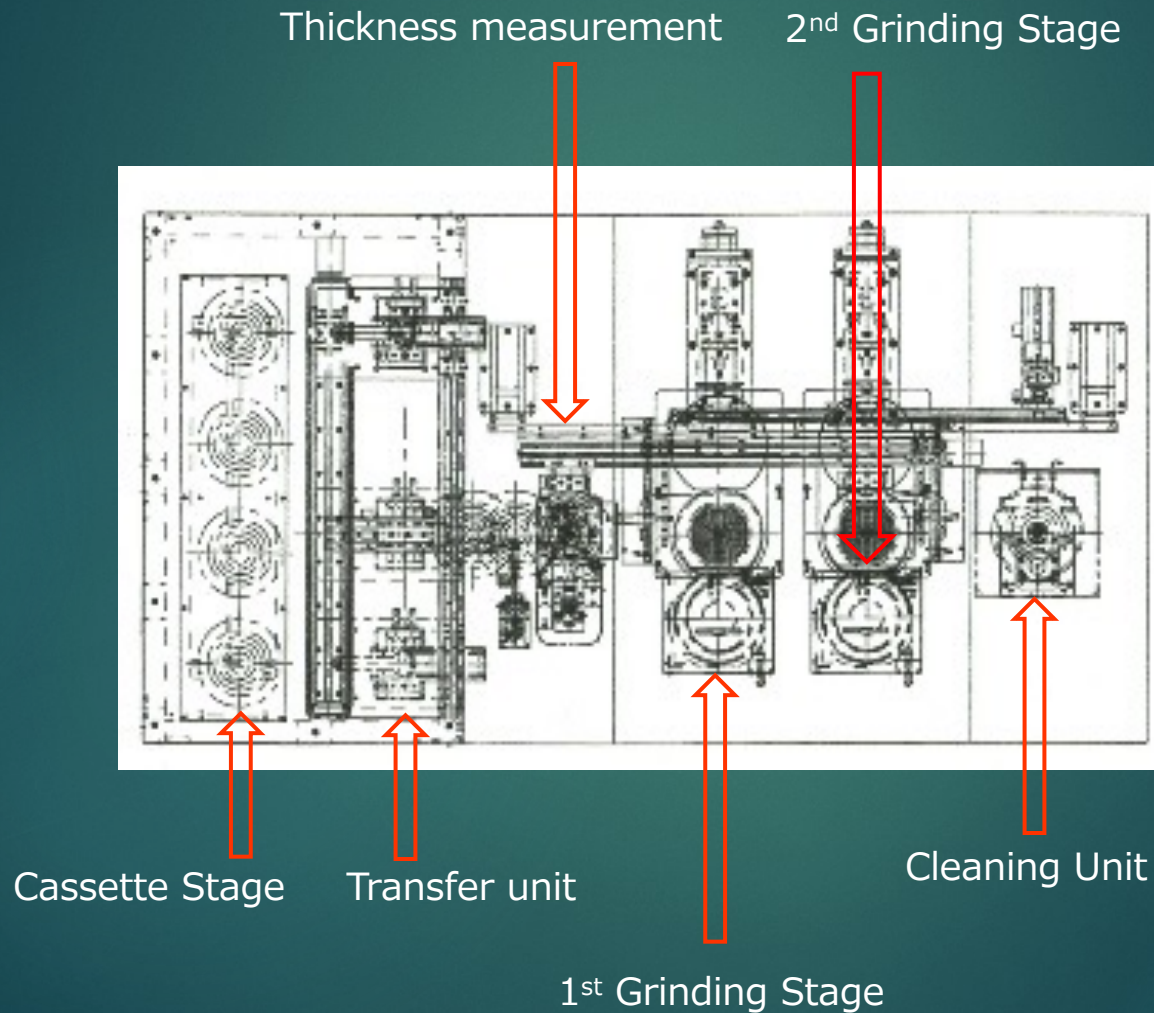
GET THE EXCELLENT CRYSTAL ORGANIZATION after the edge grinding due to high accuracy centering.

Specification of YH-8800

- ▶ Automatic system, cassette to cassette
- ▶ Wafer Size : $\phi 6'' \sim 8''$
- ▶ Wafer Thickness : 0.25mm \sim 2.0mm (O/F or Notch)
- ▶ Grinding axis : 2 axes (Independent controlled)
- ▶ Groove number of the wheel : Customized
- ▶ Grinding wheel : Outer diameter $\phi 202$ mm
Inner diameter $\phi 30$ mm
- ▶ Grinding wheel for Notch: Outer diameter $\phi 3$ mm
- ▶ Wheel speed : 1,000mm \sim 5,000m/min
(Invertor controlled)
- ▶ Wafer speed : Edge 1mm \sim 50mm/sec
O/F 1mm \sim 20mm/sec

※ Customized according to the customer's requirements

Internal Structure

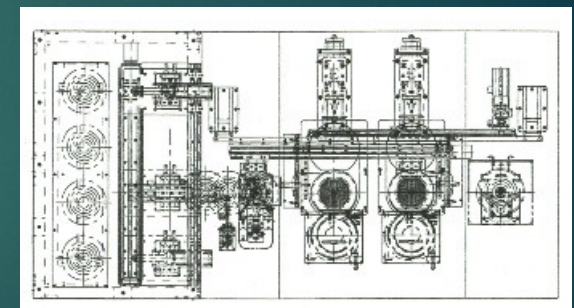
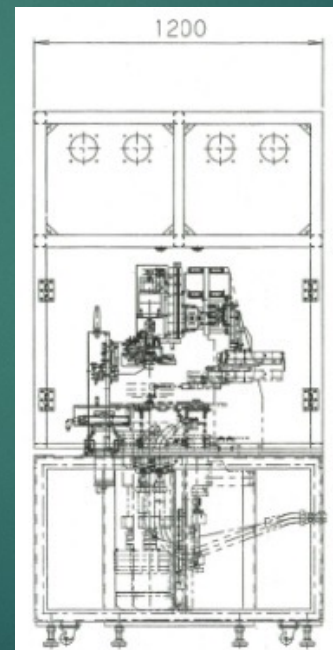
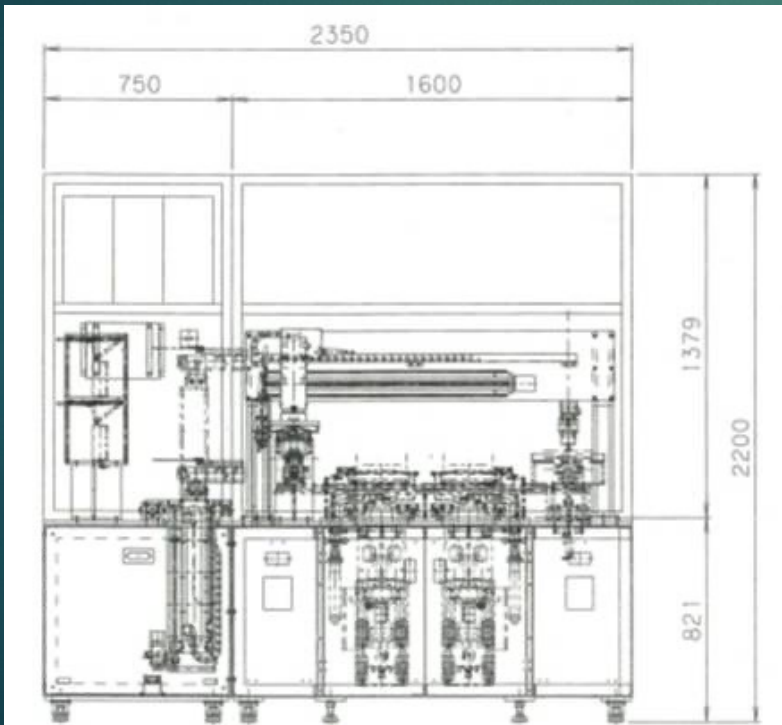


Size and Weight

Size : 2,400mm (W) × 1,680mm (D) × 1,995mm (H)

Weight : About 2,000kg

(At least 50cm should be left as operating space around the equipment.)



Processing Accuracy

- ▶ Diameter : $\leq \pm 10\mu\text{m}$
- ▶ O/F width : $\leq \pm 25\mu\text{m}$
- ▶ O/F direction : $\leq \pm 0.03^\circ$
- ▶ Straightness : $\leq 10\mu\text{m}$
- ▶ Roundness : $\leq 10\mu\text{m}$
- ▶ Surface width : $\leq \pm 30\mu\text{m}$

Productivity

- ▶ SiC ϕ 6" : About 409 sec/pc
- ▶ Operation Time: 24 hours/day \times 30 days
8.8 pcs/h \times 24h \times 1.7
= 359 pcs / day
359 pcs \times 30 days
= 10,770 pcs / day

(For reference only)

Utility

- ▶ Power : AC220V, 3 phase (Customized)
- ▶ Main power : 2.5KVA
- ▶ Air : 0.6Mpa (6.0kg/cm²)
330L/min
PT3/8 female
- ▶ Grinding water : Pressure 0.3Mpa (3.0kg/cm²)
4.0L/min
PT3/8 female
- ▶ Cleaning wafer : Pressure 0.3Mpa (3.0kg/cm²)
2.0L/min for grinding stage
- ▶ Drain : ϕ 26" male
- ▶ Vacuum : PT1/8 female

Accuracy of each unit

- ▶ Grinding Stage's Y Axis : $1\mu\text{m}$ (Resolution)
⇒ Pulse Motor + Ball Screw
- ▶ Grinding Stage Shaking : $\leq 15\mu\text{m}$ (θ / Y/Z Axes adjustable)
- ▶ Wheel's X Axis : $1\mu\text{m}$ (Resolution)
⇒ Pulse Motor + Ball Screw
- ▶ Rotation of Grinding Stage : 0.001° (Resolution)
⇒ Hollow shaft high torque motors
- ▶ Centering : $\leq \pm 30\mu\text{m}$
⇒ Mechanical Type + Fiber Sensor

Components

▶ Loading

(Up to 8 cassettes)



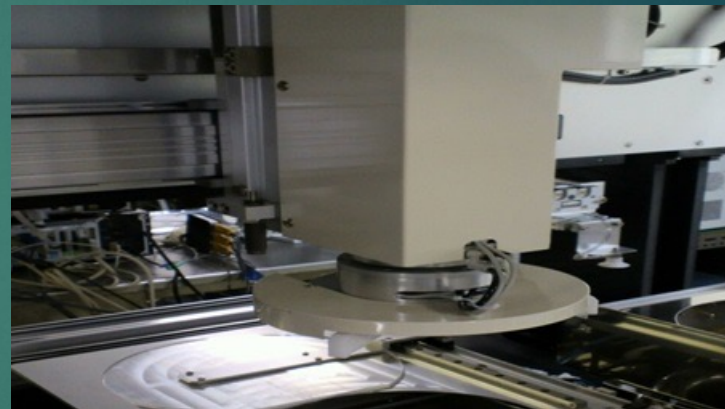
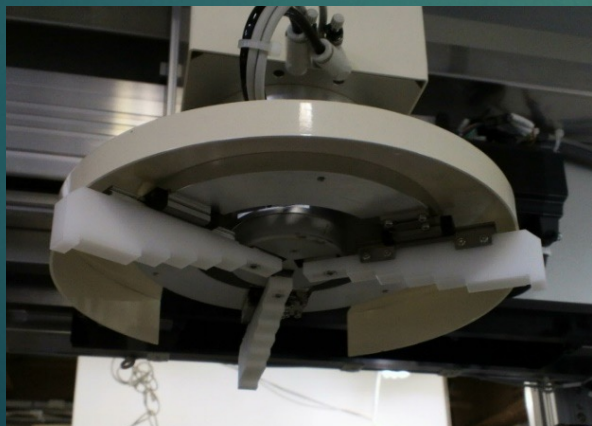
▶ Thickness Measurement

(Measure a point on the circumference of a circle)



Components

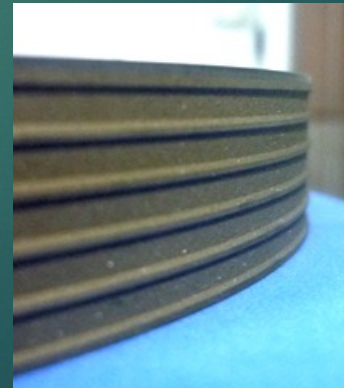
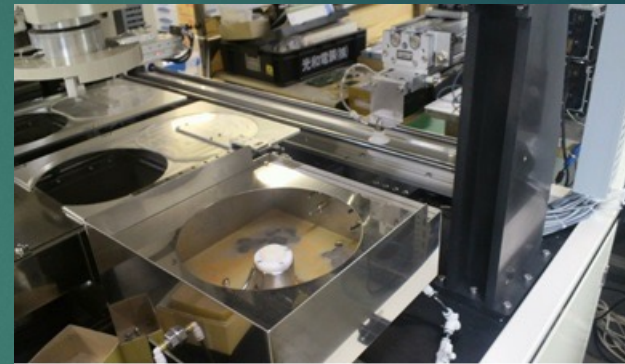
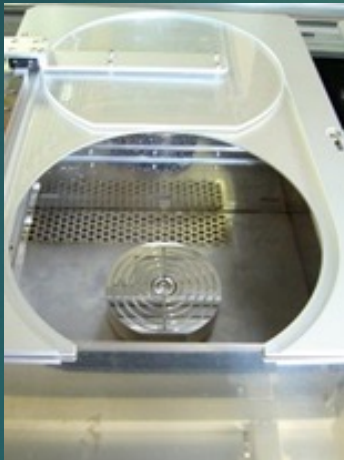
- ▶ Position Adjustment
 - ▶ Centering
 - ▶ OF/Notch Sensor
- ▶ The loading and unloading of wafers are done by robot arms.



Components

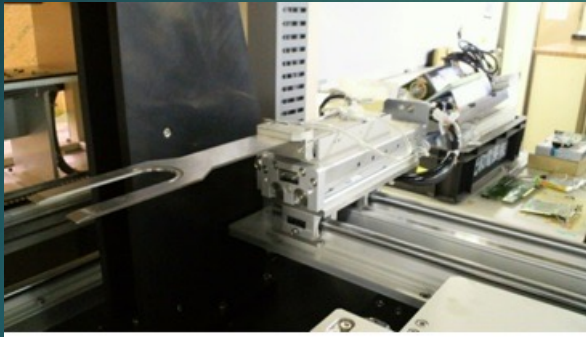
- ▶ Grinding Stage
(θ / Y / Z axes adjustable)
- ▶ Axes with Direct Drive Motor

- ▶ Drying

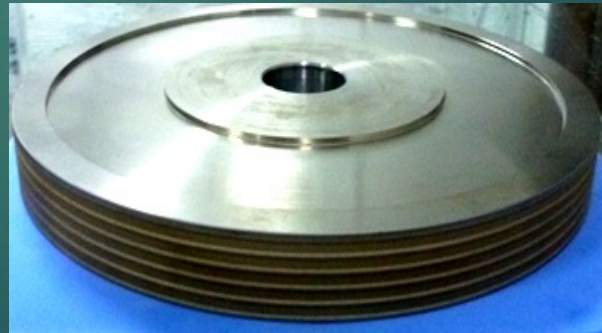


Components

▶ Unloading



▶ Grinding Stage (With cleaning function)



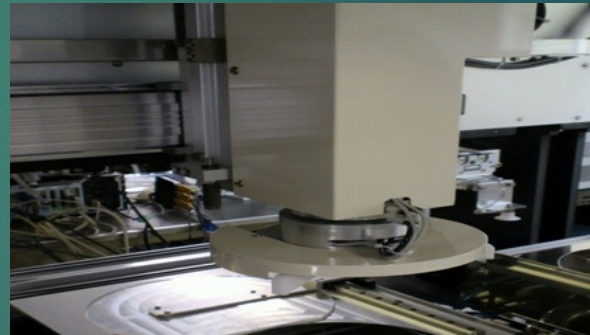
Process Flow

18

Set the cassette



Loading



Thickness
Measurement



Process Flow

19

Centering



Grinding



Cleaning



Unloading



Detailed Process Flow

20

Set the cassette

Pick the wafer up
By the robot arm

Thickness measuring

Pick the wafer up
By the robot arm

Transfer to the
grinding stage

Centering on the table and
detection of crystal
orientation of O/F

Down the Grinding table
and Grinding start

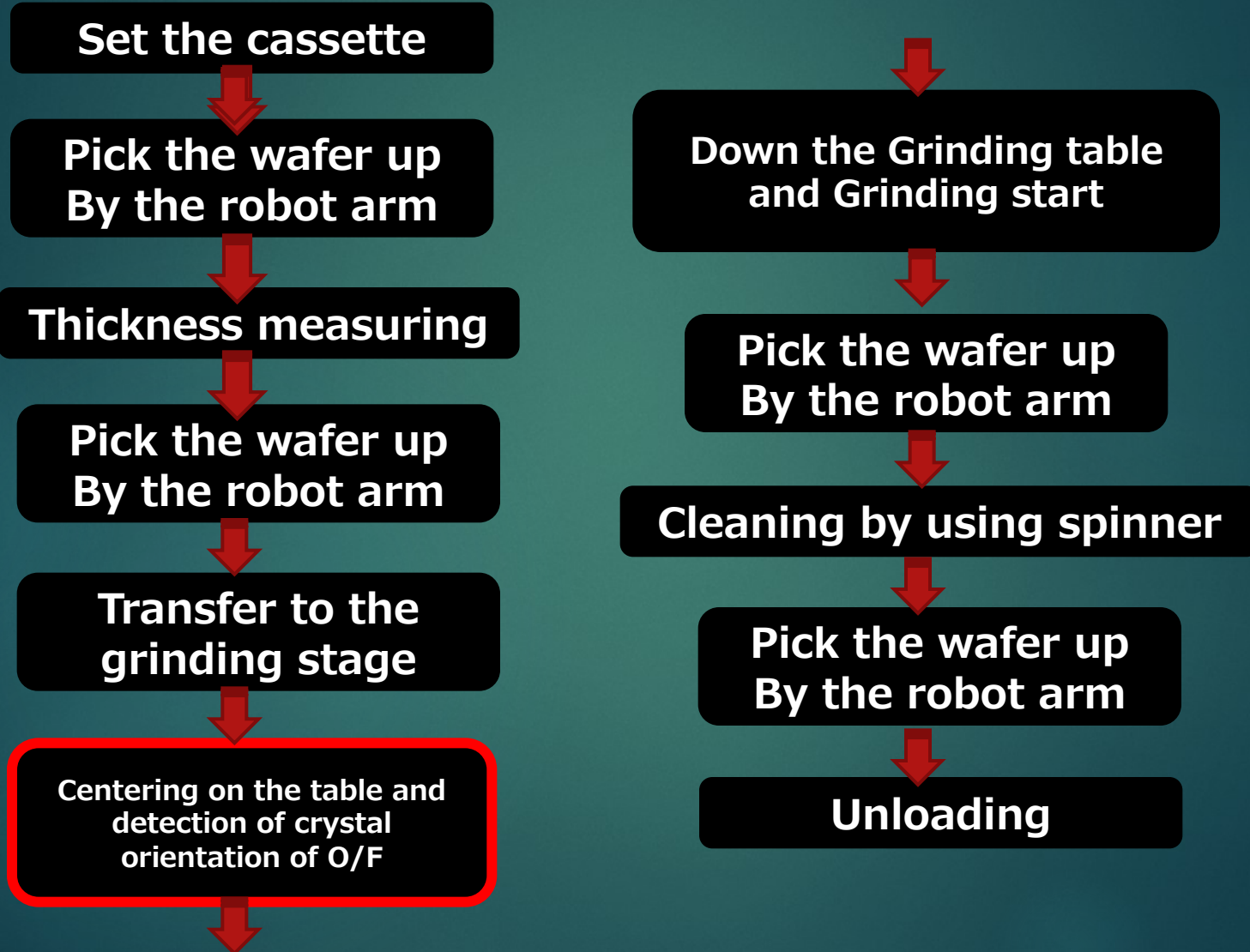
Pick the wafer up
By the robot arm

Cleaning by using spinner

Pick the wafer up
By the robot arm

Unloading

Point



Edge Profiler EGPRO-EN

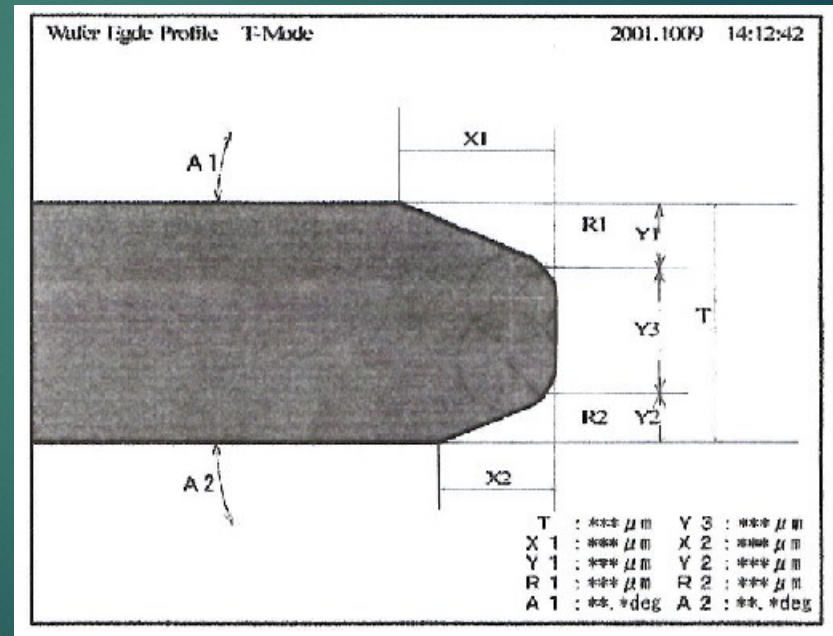
21

Capable of measuring wafer edge, O/F and Notch

Edge Profiler




Profile data



Specifications of EGPRO-EN

22

- ▶ Non-contact measuring
 - ▶ $\phi 2'' \sim \phi 12''$
 - ▶ Wafer Thickness : $200\mu\text{m} \sim 1,500\mu\text{m}$
(need to change the lens)
 - ▶ Monocline 130M pixel CCD camera
 - ▶ Measuring of Outer diameter (Optional)
-  In combination with our Edge Grinder, profile data can be sent to it for automatic correction.

Distributor

23

CERAMICFORUM CO.,LTD

Add: 3rd Kusumoto Bldg., 3-19-6, Kanda, Nishiki-cho,
Chiyoda-ku, Tokyo 101-0054 Japan

Tel: 03-5577-2947 Fax: 03-5577-2948

Email: semi@ceramicforum.co.jp

Website: www.ceramicforum.co.jp



THANK YOU!