CLAIMS

[Claim 1] A cooling unit for using in a semiconductor device test, comprising:

a jacket configured to dissipate heat of the semiconductor device,

wherein the jacket includes a central portion, and an outer portion located around the central portion,

an opening through which light from the semiconductor device passes is formed in the central portion,

the outer portion includes a contact portion that comes into contact with a stage on which the semiconductor device is disposed,

a supply flow passage through which a cooling fluid for cooling the semiconductor device flows is formed in the jacket,

a ventilation route configured to enable air circulation between an inner side of the outer portion and an outside of the jacket is formed in the jacket, and.

a groove is formed between the central portion and the outer portion in the jacket, and

the ventilation route is connected to the groove.

[Claim 2] The cooling unit according to claim 1,

wherein the ventilation route is connected to the groove through a ventilation member disposed in the groove.

[Claim 3] The cooling unit according to claim 2,

wherein the ventilation member includes an internal space connected to the ventilation route, and

the internal space is opened in a side surface of the ventilation member and connected to the groove.

[Claim 4] The cooling unit according to claim 3,

wherein the ventilation member includes a main body portion including the side surface, and a cover, and

the cover is disposed on the main body portion so as to protrude from the side surface.

[Claim 5] The cooling unit according to any one of claims 1 to 4,

wherein the ventilation route is always opened.

[Claim 6] A cooling unit for using in a semiconductor device test, comprising:

a jacket configured to dissipate heat of the semiconductor device,

wherein the jacket includes a central portion, and an outer portion located around the central portion,

an opening through which light from the semiconductor device passes is formed in the central portion,

the outer portion includes a contact portion that comes into contact with a stage on which the semiconductor device is disposed,

a supply flow passage through which a cooling fluid for cooling the semiconductor device flows is formed in the jacket,

a ventilation route configured to enable air circulation between an inner side of the outer portion and an outside of the jacket is formed in the jacket, and

the ventilation route is always opened.

[Claim 7] An objective lens module, comprising:

the cooling unit according to any one of claims 1 to 6;

an immersion lens disposed in the opening; and

an objective lens facing the immersion lens.

[Claim 8] The objective lens module according to claim 7, further comprising:

a holder attached to the objective lens and holding the immersion lens;

a first biasing member that is provided in the holder and biases the immersion lens to a side opposite to the objective lens; and

a second biasing member that is provided in the jacket and biases the jacket toward the stage without applying a biasing force to the immersion lens.

[Claim 9] A semiconductor testing device, comprising:

the cooling unit according to any one of claims 1 to 6;

an immersion lens disposed in the opening;

a stage on which the semiconductor device is disposed;

an objective lens facing the immersion lens; and

a photodetector configured to detect light from the semiconductor device through the immersion lens and the objective lens.