CLAIMS

WHAT IS CLAIMED IS:

[Claim 1] A system, comprising:

a heat exchanging member that is capable of exchanging heat with a surface of a pad; and

a liquid supply unit that supplies a liquid to the heat exchanging member,

wherein the liquid supply unit comprises

a pump device that adjusts a flow amount of a liquid flowing through a heating liquid supply line,

a needle valve that is attached to a cooling liquid supply line,

a control device that controls operations of the pump device and the needle valve, and

a flow amount switching unit that switches a flow amount of a liquid flowing through the cooling liquid supply line, the flow amount switching unit comprising:

a pressure regulator and a first opening/closing valve that are attached to the cooling liquid supply line,

a bypass line that bypasses the pressure regulator and the first opening/closing valve, and

a second opening/closing valve that is attached to the bypass line.

[Claim 2] The system according to claim 1, wherein the liquid supply unit comprises a pulsation attenuator disposed on an upstream side of the needle valve in a flowing direction of the liquid flowing through the cooling liquid supply line.

[Claim 3] The system according to claim 1 or 2, wherein the pump device comprises

at least one pump, and

a pump controller that controls operations of the pump.

[Claim 4] A system, comprising:

a heat exchanging member that is capable of exchanging heat with a surface of a pad; and

a liquid supply unit that supplies a liquid to the heat exchanging member,

wherein the liquid supply unit comprises

a pump device that adjusts a flow amount of a liquid flowing through a heating liquid supply line,

a pump unit that is capable of operating on the basis of a pressure difference between a pressure of a liquid flowing through a cooling liquid supply line and a pressure of a liquid flowing through a cooling liquid returning line,

a control device that controls operations of the pump device and the pump unit,

a needle valve that is attached to the cooling liquid supply line,

a bypass line that bypasses the needle valve, and

an opening/closing valve that is attached to the bypass line.

[Claim 5] The system according to claim 4,

wherein the liquid supply unit comprises

a supply-side pressure sensor that is attached to the cooling liquid supply line, and

a returning-side pressure sensor that is attached to the cooling liquid returning line, and

the control device

calculates a pressure difference on the basis of a pressure measured by the supply-side pressure sensor and a pressure measured by the returning-side pressure sensor, and

controls operations of the pump unit such that the calculated pressure difference reaches a target pressure on the basis of a correlation between the flow amount of the liquid

flowing through the cooling liquid supply line and the pressure difference between the pressure of the liquid flowing through the cooling liquid supply line and the pressure of the liquid flowing through the cooling liquid returning line.

[Claim 6] The system according to claim 4 or 5, wherein the liquid supply unit comprises a pressure regulator that is attached to the cooling liquid supply line.

[Claim 7] The system according to any one of claims 4 to 6, wherein the liquid supply unit comprises a pulsation attenuator disposed on an upstream side of the needle valve in a flowing direction of the liquid flowing through the cooling liquid supply line.

[Claim 8] The system according to any one of claims 4 to 7, wherein the pump device comprises

at least one pump, and

a pump controller that controls operations of the pump.

[Claim 9] A polishing apparatus, comprising:

a polishing head that holds a substrate and causes the substrate to rotate;

a polishing table that supports a polishing pad;

a polishing solution supply nozzle that supplies a polishing solution to a surface of the polishing pad; and

the system according to any one of claims 1 to 8.