**[0008]** Present day chiller plants that serve noncritical systems generally are piped with traditional single pipe systems. Critical systems that serve data centers are usually piped with dual pathways of piping, and the ability to concurrently isolate for the purposes of maintenance or replacement of any segment of the pipe circuit, or the equipment, such as the chillers. This is a costly way to build, maintain, and replace segments of the pipe circuit, and poses additional risk to the critical load when maintenance and replacement work is performed. Present day air-cooled chillers also have integrated or packaged evaporator and condensing sections.

## SUMMARY

In one aspect, the present disclosure features a cooling apparatus. The cooling apparatus includes a fluid cooler and a chiller. The fluid cooler includes evaporative pads, a water circuit for distributing water or a water solution across the evaporative pads, a free cooling air to water heat exchanger disposed adjacent to the evaporative pads, and an air to refrigerant heat exchanger disposed adjacent to the free cooling air to water heat exchanger. The chiller includes a first fluid circuit in fluid communication with the free cooling air to water heat exchanger, an evaporator in fluid communication with the water fluid circuit, and a refrigerant circuit, which includes a compressor, in fluid communication with the evaporator and in fluid communication with the air to refrigerant heat exchanger.

In aspects, the wet media is adiabatic wet media. In aspects, the free cooling air to fluid heat exchanger may be a micro channel free cooling air to fluid heat exchanger and the air to refrigerant heat exchanger may be a micro channel direct expansion condensing coil.

In aspects, the cooling apparatus further includes (a) a first cooling assembly including a first enclosure containing the wet media, the free cooling air to fluid heat exchanger, and the air to refrigerant heat exchanger, and (b) a second cooling assembly including a second enclosure

## CLAIMS

What is claimed is:

1. A cooling apparatus comprising:

a fluid cooler comprising:

evaporative pads;

a water circuit for distributing water or a water solution across the evaporative pads;

a free cooling air to water heat exchanger disposed adjacent to the evaporative pads; and

an air to refrigerant heat exchanger disposed adjacent to the free cooling air to water heat exchanger; and

a chiller comprising:

a first fluid circuit in fluid communication with the free cooling air to water heat exchanger;

an evaporator in fluid communication with the first fluid circuit; and

a refrigerant circuit in fluid communication with the evaporator and in fluid communication with the air to refrigerant heat exchanger, the refrigerant circuit including a compressor.

2. The cooling apparatus of claim 1, wherein the free cooling air to water heat exchanger is a micro channel free cooling air to water heat exchanger and the air to refrigerant heat exchanger is a micro channel direct expansion condensing coil.

3. The cooling apparatus according to any of the preceding claims, wherein the air to refrigerant heat exchanger is disposed adjacent to the free cooling air to water heat exchanger so that the free cooling air to water heat exchanger is located between the evaporative pads and the air to refrigerant heat exchanger.

4. The cooling apparatus according to any of the preceding claims, wherein the air to refrigerant heat exchanger is disposed adjacent to the free cooling air to water heat exchanger so that the air flows from the evaporation pads to the air to refrigerant heat exchanger via the free cooling air to water heat exchanger;

5. The cooling apparatus according to any of the preceding claims, further comprising a first cooling distribution unit (CDU) comprising:

a first condenser in fluid communication with the chiller evaporator;

a first CDU evaporator in fluid communication with the first condenser;

a first receiver in fluid communication with the first CDU evaporator and the first condenser; and

a second CDU coupled in series with the first CDU, the second CDU comprising:

a second condenser in fluid communication with the chiller evaporator;

a second CDU evaporator in fluid communication with the second condenser;

a second receiver in fluid communication with the second CDU evaporator and the second condenser; and

an air circulator;

wherein the first CDU evaporator and the second CDU evaporator are arranged in series with the air circulator.