

Instruction for preliminary amendment of claims (EP, IN, ID)

[Claim 1]

A facility for continuously manufacturing a galvanized steel sheet, comprising:

a continuous annealing furnace divided into three zones including a heating zone that heats a steel strip which is a strip-shaped steel sheet to be passed through the furnace, a soaking zone that soaks the heated steel strip, and a cooling zone that cools the soaked steel strip, which are arranged in this order from an upstream side of a transport path;

a galvanization bath;

a snout that directly connects the furnace to the galvanization bath therethrough, the snout being a closed space through which the steel strip is directly fed into the galvanization bath from the furnace;

a first dewpoint meter and a suction port and a spray port for a gas within the furnace that are provided in at least one of the three zones of the furnace;

a gas cyclic path that connects the suction port and the spray port to a refiner, which is a moisture removing device provided outside the furnace, separately formed for each of the connected zones; and

a second dewpoint meter and a humidification device, which humidifies an inside of the snout, that are provided in the snout,

wherein:

the refiner functions so that, for each of the gas cyclic paths, a first measured value of the first dewpoint meter in the connected zone is equal to a first target dewpoint; and

the humidification device functions so that a second measured value of the second dewpoint meter in the snout is equal to a second target dewpoint for the snout.

[Claim 2]

The facility for continuously manufacturing a galvanized steel sheet according to Claim 1, further comprising a snout suction port and a snout spray port for a gas within the snout that are provided in the snout, and a snout gas cyclic path formed between the refiner and the snout by connecting the ports thereof to the refiner,

wherein the refiner functions along with the humidification device so that the second measured value of the second dewpoint meter in the snout is equal to the second target dewpoint for the snout.

[Claim 3]

The facility for continuously manufacturing a galvanized steel sheet according to Claim 1 or 2, wherein the first dewpoint meter and the suction port and the spray port are provided at least in the soaking zone and the gas cyclic path is formed at least for the soaking zone.

[Claim ~~3~~4]

A method for continuously manufacturing a galvanized steel sheet using the facility for continuously manufacturing a galvanized steel sheet according to Claim 1 or 2, wherein a galvanization operation is performed while setting the first target dewpoint of the furnace to -50°C or lower and -80°C or higher and the second target dewpoint for the snout to -35°C or higher and -10°C or lower.

[Claim 5]

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A method for continuously manufacturing a galvanized steel sheet using the facility for continuously manufacturing a galvanized steel sheet according to Claim 3, wherein a galvanization operation is performed while setting the first target dewpoint for the soaking zone to -50°C or lower and -80°C or higher and the second target dewpoint for the snout to -35°C or higher and -10°C or lower.

A dependent claim for a faculty that is capable of controlling the dew point of the soaking zone by providing the first dewpoint meter, the suction port, the spray port, and the gas cyclic path for the soaking zone, as in the embodiments shown in FIGs. 1 and 3, is added. A claim for a method that utilizes such faculty is also added.

ABSTRACT

~~Provided is a~~ facility ~~and method~~ for continuously manufacturing a galvanized steel sheet ~~capable of stably achieving high galvanized product quality and high zinc coatability. The facility for continuously manufacturing a galvanized steel sheet which~~ includes a continuous annealing furnace, a snout, and a galvanization bath. The furnace is divided into ~~three zones, i.e.,~~ a heating zone ~~for heating a steel strip that is a strip-shaped steel sheet to be passed through the furnace,~~ a soaking zone ~~for soaking the heated steel strip,~~ and a cooling zone ~~for cooling the soaked steel strip, which are arranged in this order from an upstream side of a transport path.~~ The bath is directly connected to the furnace through the snout, ~~which is a closed space through which the steel strip is directly fed into the galvanization bath from the furnace.~~ The facility has a dewpoint meter and a draft port and a suction port for a furnace gas that are provided in at least one of the ~~three~~ zones, gas cyclic paths which connect the ~~draft~~ draft port and the suction port to a refiner, and a dewpoint meter and a humidification device, ~~which humidifies an inside of the snout,~~ that are provided in the snout. ~~The refiner is a moisture removing device provided outside the furnace and the~~ The gas cyclic paths are separately formed for the respective connected zones. The refiner functions so that, ~~for each of the gas cyclic paths,~~ a measured value of the dewpoint meter ~~in the connected zone~~ is equal to a target dewpoint, and the humidification device functions so that a measured value of the dewpoint meter in the snout is equal to a target dewpoint for the snout.

FIG. 1

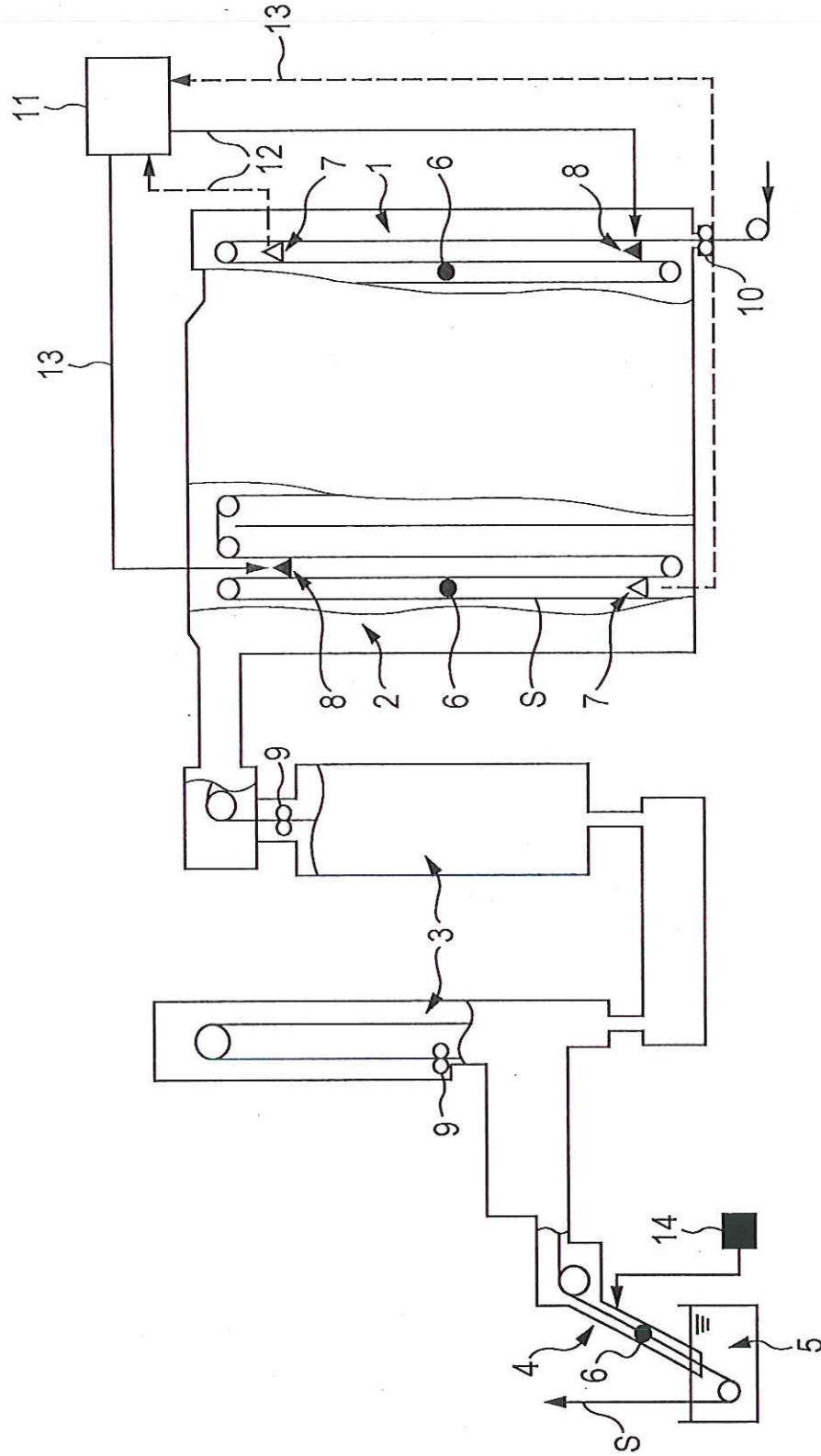


FIG. 2

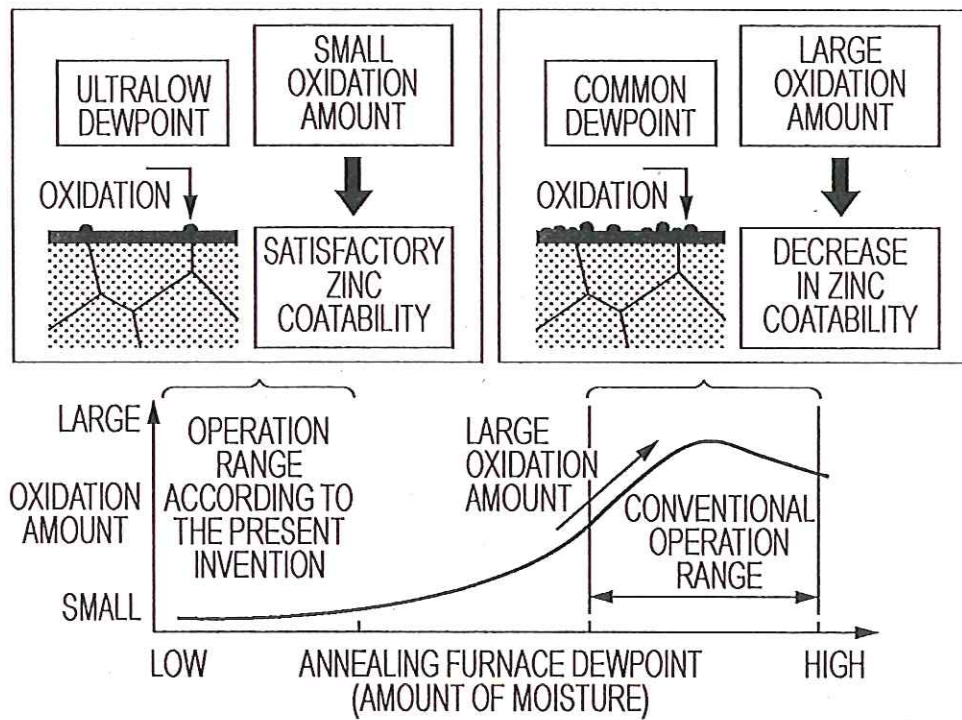


FIG. 3

