Secondarily, another aim of the invention is to limit or even eliminate contact between chemical solutions and other harmful components and the operators.

~~For this,~~According to a first aspect of the invention, ~~proposes~~ there is provided a machine adapted to metallise a cavity of a semi-conductive or conductive substrate such as a structure of the through silicon via type, according to a metallisation process comprising steps consisting of:

a) depositing an insulating dielectric layer in the cavity,

b) depositing a barrier layer to diffusion of the filling metal,

c) filling the cavity by electrodeposition of metal, preferably copper, and

d) performing annealing of the substrate,

characterised in that it comprises a series of wet-processing modules configured to conduct the steps a), b) and c) wet-processing in a chemical bath and at least one additional module adapted to conduct annealing step d) of the substrate such that the machine is capable of completing the entire metallisation process of the cavity.

Because it carries out metallisation of wet-processing vias (with the exception of annealing which is conducted by dry process) due to using adapted modules, the machine is therefore capable of performing all metallisation steps, and reducing the required footprint. The wet-processing deposit and filling modules do not in fact require the piece to be placed under vacuum or generation of plasma, and also produce vias having continuous deposit and compliant with a wide range of form factors and having excellent adhesion to the substrate.

Some preferred but non-limiting ~~aspects~~ embodiments of the machine ~~according to the invention~~ are the following:

* the substrate comprises an active face on which the cavity is formed, and a rear face opposite the active face and each wet-processing module comprises a container designed to contain the chemical bath, at the bottom of which a support intended to receive the rear face of the substrate is arranged horizontally such that the active face of said substrate is oriented upwards in the direction opposite the bottom of the module.

According to a second aspect~~,~~ of the invention, ~~also proposes~~there is provided a metallisation process of a cavity of a semi-conductive or conductive substrate such as a structure of the through silicon via type, comprising the steps consisting of:

a) depositing an insulating dielectric layer,

b) depositing a barrier layer to diffusion of the filling metal,

c) filling the cavity by electrodeposition of metal, preferably copper, and

d) performing annealing of the substrate,

characterised in that said steps are carried out entirely with a machine according to the first aspect of the invention.

Some preferred but non-limiting ~~aspects~~ embodiments of the process ~~according to the invention~~ are the following:

* it comprises successively the following sub-steps:

(i) pre-wetting of the substrate,

(ii) deposit of an insulating dielectric layer,

(iii) rinsing and drying of the substrate,

(iv) annealing of the substrate,

(v) activation of the barrier layer to diffusion of the metal,

(vi) rinsing and drying of the substrate,

(vii) deposit of the barrier layer to diffusion of the filling metal,

(viii) rinsing and drying of the substrate,

(ix) pre-wetting of the substrate,

(x) filling of the cavity by electrodeposition of the metal,

(xi) rinsing and drying of the substrate, and

(xii) annealing of the substrate;

* it further comprises an annealing step of the substrate between the rinsing and drying step of the substrate (viii) and the pre-wetting step of the substrate (ix);

* the rinsing and drying steps of the substrate (iii), (vi) and/or (viii) are carried out in the same module as the depositing (ii), activation (v) and/or deposit steps (vii) respectively.