# Vanadium concentrations in tanks and cells

## Nomenclature

The nomenclature used in the next one:

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Description** | **Units** |
|  | Concentration of vanadium specie j in the tank |  |
|  | Concentration of vanadium specie j in the cells |  |
|  | Flow rate from the tank |  |
|  | Number of cells | - |
|  | Volume of the cells |  |
|  | Volume of the tanks |  |
|  | Current |  |
|  | Number of electrons transferred in the electrochemical reaction | - |
|  | Faradays number |  |

## Tanks mass transfer equations

The following ones are the mass transfer equations of the tanks.

|  |  |  |
| --- | --- | --- |
|  |  | (1) |
|  |  | (2) |
|  |  | (3) |
|  |  | (4) |

## Cells mass transfer equations

The following ones are the cells mass transfer equations

|  |  |  |
| --- | --- | --- |
|  |  | (1) |
|  |  | (2) |
|  |  | (3) |
|  |  | (4) |

|  |  |  |
| --- | --- | --- |
|  |  | (9) |

## Determining the flow rate

The next equation is related to the teorical flow rate needed given a current.

|  |  |  |
| --- | --- | --- |
|  |  |  |

|  |  |  |
| --- | --- | --- |
|  |  |  |