

The invention concerns a method for dehydrating an ethanol feedstock into ethylene, then oxidising the ethylene into ethylene oxide, comprising a step of vaporising a feedstock comprising said ethanol feedstock and at least a portion of a stream of dilution water comprising recycled ethanol so as to produce a vaporised feedstock, a step of compressing in a compressor driven by a condensing turbine driven by the steam generated by the oxidation step, a step of dehydrating a mixture comprising said compressed vaporised feedstock, a step of separating the effluent from the dehydration step into an effluent comprising ethylene and an effluent comprising water, a step of purifying at least a portion of the effluent comprising water and separating same into at least one stream of treated water and one stream of dilution water comprising ethanol, the latter being recycled upstream from the vaporisation step, and a step of oxidising the ethylene in the effluent comprising ethylene into ethylene oxide, this oxidation step comprising at least one tubular oxidation reactor cooled by vaporising a quenching stream, said vaporised quenching stream being used to drive a condensing turbine.