CLAIMS:

1. A method for producing light olefins, said method comprising:

(a) contacting a methanol-containing feedstock in a methanol conversion reactor zone with a catalyst and at reaction conditions effective to produce a methanol conversion reactor zone effluent comprising dimethyl ether and water;

(b) removing at least a portion of the water from the methanol conversion reactor zone effluent to form a first process stream comprising dimethyl ether and having a reduced water content;

(c) contacting a feed comprising at least a portion of the first process stream in an oxygenate conversion reactor zone with an oxygenate conversion catalyst at oxygenate conversion reaction conditions effective to convert at least a portion of the feed to an oxygenate conversion product stream comprising light olefins and heavy olefins, wherein the oxygenate conversion reaction conditions include an oxygenate conversion reaction pressure of at least 240 kPa absolute;

(d) separating the light olefins from the oxygenate conversion product stream to generate an ethylene stream, a propylene stream and a heavy olefin stream;

(e) reacting at least a portion of the ~~oxygenate conversion product~~ heavy olefin stream ~~heavy olefins~~ in a heavy olefins conversion zone to form a heavy olefins conversion zone effluent stream comprising additional light olefins, wherein the reaction of at least a portion of the ~~oxygenate conversion product~~ heavy olefin stream ~~heavy olefins~~ comprises at least one of an olefin cracking reaction and a metathesis reaction, wherein the metathesis a carried out at a pressure between 3 and 3.5 MPa; and

(f) recovering at least a portion of the additional light olefins from the heavy olefins conversion zone effluent stream, wherein the total light olefin product comprises the additional light olefins and wherein the total olefin product has a higher propylene yield compared to when steps (a) and (b) are not present in the method and the feed in step (c) is the methanol-containing feedstock.

2. The method of claim 1 wherein the oxygenate conversion reaction pressure is in a range of at least 240 kPa absolute to 580 kPa absolute.

3. The method of claim 2 wherein the oxygenate conversion reaction pressure is in a range of at least 300 kPa absolute to 450 kPa absolute.

~~4. The method of claim 1 wherein, prior to the reaction of at least a portion of the oxygenate conversion product stream heavy olefins, the method additionally comprises at least partially separating the light olefins from the heavy olefins of the oxygenate conversion product stream.~~

~~5~~4. The method of claim ~~4~~ 1 wherein the reaction of at least a portion of the oxygenate conversion product stream heavy olefins comprises cracking at least a portion of the separated heavy olefins to form a cracked olefin effluent comprising C_2 and C_3 olefins.

~~6~~5. The method of claim 1 wherein the light olefins of the oxygenate conversion product stream comprise a quantity of C_2 olefins and the heavy olefins of the oxygenate conversion product stream comprise a quantity of C_4 olefins and wherein the reaction of at least a portion of the oxygenate conversion product stream heavy olefins comprises contacting at least a portion of the C_4 olefins with at least a portion of the C_2 olefins in a metathesis section at effective conditions to produce a metathesis effluent comprising C_3 olefins.

~~7~~6. The method of claim ~~6~~ 5 wherein C_2 and C_4 olefins are introduced into the metathesis section in a molar ratio of 2 to 3 moles of C_2 olefins per mole of C_4 olefins.

~~8~~7. The method of claim 1 wherein the contacting of the methanol-containing feedstock in the methanol conversion reactor zone with a catalyst and at reaction conditions effective to produce a methanol conversion reactor zone effluent comprising dimethyl ether and water and the removing of at least a portion of the water from the methanol conversion reactor zone effluent to form a first process stream comprising dimethyl ether and having a reduced water content occurs concurrently in a single reaction with distillation zone.

~~9~~8. A system for producing light olefins, said system comprising:

a methanol conversion reactor zone for contacting a methanol-containing feedstock with a catalyst and at reaction conditions effective to produce a methanol conversion reactor zone effluent comprising dimethyl ether and water;

a first separator effective to separate at least a portion of the water from the methanol conversion reactor zone effluent to form a first process stream comprising dimethyl ether and having a reduced water content;

an oxygenate conversion reactor zone for contacting a feed comprising at least a portion of the first process stream dimethyl ether with an oxygenate conversion catalyst and at reaction conditions including a reaction pressure of at least 240 kPa

absolute effective to convert at least a portion of the feed to an oxygenate conversion product stream comprising light olefins and heavy olefins;

a heavy olefins conversion zone effective to convert oxygenate conversion product stream heavy olefins to form a heavy olefins conversion zone effluent stream comprising additional light olefins; and

a recovery zone for recovering at least a portion of the additional light olefins from the heavy olefins conversion zone effluent stream.