

CLAIMS:

1. A hydroprocessing process comprising:
providing a hydrocarbon feed stream comprising a biorenewable feedstock;
hydroprocessing said hydrocarbon feed stream in a hydroprocessing reactor in the
5 presence of a hydrogen stream to provide a hydroprocessed stream;
separating said hydroprocessed stream to provide a gaseous stream comprising
hydrogen and carbon monoxide and a liquid hydroprocessed stream;
methanating said gaseous stream over a methanating catalyst to hydrogenate carbon
monoxide to water and methane to provide a methanated gaseous stream; and
10 providing said hydrogen stream from said methanated gaseous stream.
2. The process of claim 1 further comprising scrubbing acid gases from said gaseous
stream.
3. The process of claim 1 further comprising compressing said gaseous stream.
4. The process of claim 1 where said hydrocarbon feed stream comprises at least 5
15 wt% biorenewable feedstock.
5. The process of claim 1 wherein said separation step includes stripping light gases
from said hydroprocessed stream to provide a stripping overhead gaseous stream and a
stripped liquid hydroprocessed stream.
6. The process of claim 5 further comprising removing methane from the process in
20 said stripping overhead gaseous stream.
7. The process of claim 5 further comprising hydroisomerizing said stripped liquid
hydroprocessed stream to provide a hydroisomerized stream.
8. The process of claim 7 further comprising separating said hydroisomerized stream
and stripping gases from a liquid hydroisomerized stream.
- 25 9. The process of claim 1 further comprising recycling said methanated gaseous
stream to a hydroisomerization reactor and hydroisomerizing said liquid hydroprocessed
stream in said hydroisomerization reactor.
10. A hydroprocessing apparatus comprising:
a hydroprocessing reactor;
30 a separator in downstream communication with said hydroprocessing reactor;
an overhead line extending from an overhead of said separator;
a methanator reactor in downstream communication with said overhead line; and

said hydroprocessing reactor being in downstream communication with said methanator reactor.