

Příloha A.3 - Aspen report - model rovnovážného reaktoru

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ASPEN PLUS CALCULATION REPORT

ASPEN PLUS IS A TRADEMARK OF
ASPEN TECHNOLOGY, INC.
781/221-6400

HOTLINE:
U.S.A. 888/996-7100
EUROPE (44) 1189-226555

PLATFORM: WINDOWS
VERSION: 36.0 Build 249
INSTALLATION:

JUNE 21, 2020
SUNDAY
4:44:26 P.M.

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RUN CONTROL SECTION

RUN CONTROL INFORMATION

THIS COPY OF ASPEN PLUS LICENSED TO CZECH TECHNICAL UNIVERSI

TYPE OF RUN: EDIT

INPUT FILE NAME: _4032zom.inm

INPUT PROBLEM DATA FILE NAME : _4032zom

OUTPUT PROBLEM DATA FILE NAME: _4104dsw

LOCATED IN:

PDF SIZE USED FOR INPUT TRANSLATION:

NUMBER OF FILE RECORDS (PSIZE) =	0
NUMBER OF IN-CORE RECORDS =	256
PSIZE NEEDED FOR SIMULATION =	1

CALLING PROGRAM NAME: apmain

LOCATED IN: C:\Program Files (x86)\AspenTech\Aspen Plus V10.0\Engine\XeQ

SIMULATION REQUESTED FOR ENTIRE FLOWSHEET

FLWSHEET SECTION

FLWSHEET CONNECTIVITY BY STREAMS

STREAM	SOURCE	DEST	STREAM	SOURCE	DEST
IN	----	EQREAC	OUT	EQREAC	----

FLWSHEET CONNECTIVITY BY BLOCKS

BLOCK	INLETS	OUTLETS
EQREAC	IN	OUT

COMPUTATIONAL SEQUENCE

SEQUENCE USED WAS:

EQREAC

OVERALL FLWSHEET BALANCE

	*** MASS AND ENERGY BALANCE ***			
	IN	OUT	GENERATION	RELATIVE DIFF.
CONVENTIONAL COMPONENTS				
(KMOL/HR)				
METHA-01	0.00000	0.195650	0.195650	0.00000
CARBO-01	0.199718	0.406400E-02	-0.195654	-0.564580E-16
WATER	0.00000	0.391305	0.391305	0.00000
HYDRO-01	0.798874	0.162686E-01	-0.782605	0.125945E-15
CARBO-02	0.00000	0.421791E-05	0.421791E-05	0.00000
TOTAL BALANCE				
MOLE (KMOL/HR)	0.998592	0.607292	-0.391300	0.00000
MASS (KG/HR)	10.4000	10.4000		0.512411E-14
ENTHALPY (CAL/SEC)	-4633.75	-6948.98		0.333176

*** CO2 EQUIVALENT SUMMARY ***		
FEED STREAMS CO2E	8.78957	KG/HR
PRODUCT STREAMS CO2E	78.6481	KG/HR
NET STREAMS CO2E PRODUCTION	69.8585	KG/HR
UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	69.8585	KG/HR

PHYSICAL PROPERTIES SECTION

COMPONENTS

ID	TYPE	ALIAS	NAME
METHA-01	C	CH4	METHANE
CARBO-01	C	CO2	CARBON-DIOXIDE
WATER	C	H2O	WATER
HYDRO-01	C	H2	HYDROGEN
CARBO-02	C	CO	CARBON-MONOXIDE

U-O-S BLOCK SECTION

BLOCK: EQREAC MODEL: RGIBBS

INLET STREAM: IN
 OUTLET STREAM: OUT
 PROPERTY OPTION SET: RKSMHV2 RKS-MHV2 EQUATION OF STATE

*** MASS AND ENERGY BALANCE ***				
	IN	OUT	GENERATION	RELATIVE DIFF.
TOTAL BALANCE				
MOLE (KMOL/HR)	0.998592	0.607292	-0.391300	0.00000
MASS (KG/HR)	10.4000	10.4000		0.512411E-14
ENTHALPY (CAL/SEC)	-4633.75	-6948.98		0.333176

*** CO2 EQUIVALENT SUMMARY ***		
FEED STREAMS CO2E	8.78957	KG/HR
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UTILITIES CO2E PRODUCTION	0.00000	KG/HR
TOTAL CO2E PRODUCTION	69.8585	KG/HR

*** INPUT DATA ***

EQUILIBRIUM SPECIFICATIONS:

ONLY CHEMICAL EQUILIBRIUM IS CONSIDERED, THE FLUID PHASE IS VAPOR
 SYSTEM TEMPERATURE C 300.00
 TEMPERATURE FOR FREE ENERGY EVALUATION C 300.00
 SYSTEM PRESSURE BAR 10.000

FLUID PHASE SPECIES IN PRODUCT LIST:

METHA-01 CARBO-01 WATER HYDRO-01 CARBO-02

ATOM MATRIX:

ELEMENT	H	C	O
METHA-01	4.00	1.00	0.00
CARBO-01	0.00	1.00	2.00
WATER	2.00	0.00	1.00
HYDRO-01	2.00	0.00	0.00
CARBO-02	0.00	1.00	1.00

*** RESULTS ***		
TEMPERATURE	C	300.00
PRESSURE	BAR	10.000
HEAT DUTY	CAL/SEC	-2315.2
VAPOR FRACTION		1.0000
NUMBER OF FLUID PHASES		1

U-O-S BLOCK SECTION

BLOCK: EQREAC MODEL: RGIBBS (CONTINUED)

FLUID PHASE MOLE FRACTIONS:

PHASE	VAPOR
OF TYPE	VAPOR
PHASE FRACTION	1.000000
PLACED IN STREAM	OUT
METHA-01	0.3221684
CARBO-01	0.6692005E-02
HYDRO-01	0.2678885E-01
CARBO-02	0.6945441E-05
WATER	0.6443438
KMOL/HR	0.6072916

STREAM SECTION

CO2 H2 IN OUT

STREAM ID	CO2	H2	IN	OUT
FROM :	----	----	----	EQREAC
TO :	----	----	EQREAC	----
SUBSTREAM: MIXED				
PHASE:	VAPOR	VAPOR	VAPOR	VAPOR
COMPONENTS: KMOL/HR				
METHA-01	0.0	0.0	0.0	0.1957
CARBO-01	0.1000	0.0	0.1997	4.0640-03
WATER	0.0	0.0	0.0	0.3913
HYDRO-01	0.0	0.4000	0.7989	1.6269-02
CARBO-02	0.0	0.0	0.0	4.2179-06
TOTAL FLOW:				
KMOL/HR	0.1000	0.4000	0.9986	0.6073
KG/HR	4.4010	0.8064	10.4000	10.4000
L/MIN	21.4616	85.8304	79.5563	47.6571
STATE VARIABLES:				
TEMP C	500.0000	500.0000	300.0000	300.0000
PRES BAR	5.0000	5.0000	10.0000	10.0000
VFRAC	1.0000	1.0000	1.0000	1.0000
LFRAC	0.0	0.0	0.0	0.0
SFRAC	0.0	0.0	0.0	0.0
ENTHALPY:				
CAL/MOL	-8.8871+04	3323.1509	-1.6705+04	-4.1193+04
CAL/GM	-2019.3382	1648.4865	-1603.9904	-2405.4169
CAL/SEC	-2468.6298	369.2390	-4633.7499	-6948.9822
ENTROPY:				
CAL/MOL-K	7.5482	3.4830	1.5332	-10.3609
CAL/GM-K	0.1715	1.7278	0.1472	-0.6050
DENSITY:				
MOL/CC	7.7658-05	7.7673-05	2.0920-04	2.1238-04
GM/CC	3.4177-03	1.5658-04	2.1788-03	3.6371-03
AVG MW	44.0098	2.0159	10.4147	17.1252

PROBLEM STATUS SECTION

BLOCK STATUS

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* Calculations were completed normally
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* All Unit Operation blocks were completed normally
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* All streams were flashed normally
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