### Abstract:

Dimethly ether (DME) is a clean fuel that does not produce toxic gases or particulate matter (PM) at burning. JFE Group develops a direct synthesis process of

## 3.2.3 Establishment of formation technology for synthesis gas suitable for JFE Process

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$$2CH_4 + O_2 + CO_2 \rightarrow 3CO + 3H_2 + H_2O$$

# **4. History of Technical Development of JFE Process**

A . e be . . . f . e 1990c, . e f . e NKK befie e e e e cea e JFE G, , .. e on ean of e Pof. F. ... That as ... e De a . e . f S . e . c C e . . ( f . e . . e), Fac-, if E  $\cdot$  ee  $\cdot$  , U  $\cdot$  e  $\cdot$  if T  $\cdot$  i, de ei ed a DME d ec c . ecca a c . . . e a . . f effec ; e b - d ced ar. eree . r. T. r ar .e. re . . . de ea . e . T. e eafe, be . -1994, erea c a d de es e e e ca ed r ar al-cae 50. /d be c la raled. . e ec · A ereac ce e · f f e NKK, a d . e banc eq. . . . f.e DME d eq. . . enc. . cent ar er abar, ed. T. e, e a 5 ea e a d fa 1997, a 5 /d a e-cae be c a acoc ced. e e sees fie Tales GaM G, Ld. (fie e) , K ( , , , H . . a d . . . . . e Ce e f Ga U ... a , Ja a . Recea c a d de e . -Le ee a led, a die ele e ec . A ler f . e JFE Pa cerr ar a .a.e, c.d. .er .er.r ar e e a . . e . . e e o . . e ed. Be . . . 2002, a 100 /d de  $\bullet$  r a  $\bullet$  . a  $\bullet$  . ec arca . ed · fi.e · reifec.ca de ei e i e .e c.a. a. f. e JFE P. cerr ar a f ded ..ec f .eAecf Na a Rea ceradEe .

#### 5. 100 t/d Demonstration Plant Project



Photo 1 Over view of DME 100 t/d plant

Table 1 Master plan of test operation

Ter	. be	Pe • d	D a . ( )	Ma • b.ec e
R	100	Dec. 2003 Ja . 2004	1.5	O ea. a a eas
R	200	J e 2004 J 2004	2	100% Load .a .gea.
R	300	Se . 2004 Dec. 2004	2.5	E . ee . da e fi (ca e
R	400	J e 2005 Se . 2005	3	G
R	500	Oc . 2005 Dec. 2005	2	Pa eas ef
R	600	J e 2006 A . 2006	2.5	Add a ad a ced e ee da a

. . e de ex . e . f . e JFE P. cent a e a . c. a -DME De exe G., Ld., a d f ... e deces frebace a receasinade ...e den /o c c a la a e e a d o le a , a e bee e a ed • e a • a erea c . I A . 2002, JFE E , ee , , a d  $N_{\rm c}$  , Sa , G , ece, ed , e, de fice a decrea de confice for DME De e-• e G., Ld. a d be a o c c · · · S · a-.a-c, H. .ad . Se .f. era e ea. De a ed dec. ada c c. f.ee ..e eeca.ed de le e e a c e la f JFE E lee l ...eo. ea. f.eJFEG. .G c. f afe and endification. A e eagle of e 100 /d de • (a. a. a. c. • Photo 1. O. e a. a. e.a. acca ed. f. Dec. f. e a e ea . . Ja . 2004. Acra ed . e . ace . a Table 1, d . . e e . d f . . . ca ea 2004 • 2006, e. ca • f. e ec • • ... be ca ed bodc 50 . · ( f23. · . c eac, a dja no condente o ee o da a oo be o oecedifierabara e i fie ec in infirca. -• a • . . e c. a. . a .

## 5.1 Outline of 100 t/d Demonstration Plant Equipment

A compa da a f. e 100 /d de caa a compa Fig. 1. The de ca a a a ar bee den ed ca a de ca a en fi a a a e feeder c. The feeder c. a a a a c. c -

• • f · e JFE P• cerr · · · be ca · ed• · · aco da ce · · · · e• · · · a · · · ec · · a · T e reo d er (R

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### 7. Conclusion

Done et et e (DME) of a le fle local de ec ed a leac accasa a coa a local a le ea fle e.

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DME a done done con effect (JFE Palcerr) local e JFE

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