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22467

## UNIDO project MP/CPR/97/078

Phasing out ODS at the refrigerator plant of  
Hefei Meiling Co. Ltd. China

### Final Report


Final Report according to § 3.23 f) of the UNIDO contract No. 97/245 covering the work performed after starting mass production and covering the Post-Contract activities.

#### Content:

1. TÜV report
2. List of activities to be done by Meiling based on the TÜV report
3. Various attempts to contact and visit Meiling
4. Second submission of the TÜV report

Annex

Scharfenstein, 18.01.2000

  
H. V. Lang  
President



**Point 1: TÜV report**

The TÜV engineers have visited Meiling on March 20<sup>th</sup> 2000 for inspection of the equipment for the assembly lines delivered, installed and commissioned in this UNIDO project.

During the inspection the replacement of the equipment and the adjustment in the installation especially the isobutane pipes have been found out.

The detailed report please find attached.

**Point 2: List of activities to be done by Meiling based on the TÜV report**

As Meiling has carried out many adjustments with the equipment installation after the commissioning by the contractor and without any information about this the TÜV engineers have found out lacks which should be eliminated by Meiling.

The split of work are described in the point 9 of the attached TÜV report.

dkk is responsible for the equipment of the isobutane supply, charging and safety systems.

Meiling is responsible for the isobutane storage rooms, pipelines and repair places.

The lacks which should be eliminated by Meiling are contained in the attached TÜV report in the points 6 and 7.

This lacks are related to the construction of the isobutane storage rooms, installation of the isobutane pipes and repair places and the ventilation ducts.

**Point 3: Various attempts to contact and visit Meiling**

For the control of the elimination of the lacks listed in the TÜV report dkk has tried to contact Meiling several times also in order to complete the project smoothly.

Unfortunately dkk has not received any reply from Meiling.

The relevant documents please find attached.



**Point 4: Second submission of the TÜV report**

After the meeting with UNIDO in which dkk was informed about the missing TÜV documents at Meiling dkk has sent again the TÜV report to Meiling by courier.

The letter and the shipping document please find attached.

Annex





## Annex



# TÜV Report

REPORT ON A SAFETY TECHNICAL PLANT INSPECTION  
Project: Isobutane-Charging Plants in Hefei Meiling Company  
- UNIDO-Project -

Bau und  
Betrieb

<u>Plants:</u>	Isobutane-Charging Plants for the production of refrigerators
<u>Plants Location:</u>	Hefei Meiling Company Limited Hefei P.R. China
<u>Engineering and Manufactures of the Plants:</u>	1. dkk GEP mbH Group for Engineering and Projectmanagement Co. Ltd. 2. A'GRAMKOW, Denmark 3. Hefei Meiling Company, P.R. China
<u>Check type:</u>	First check before putting the plant into operation
<u>TÜV-Experts:</u>	Dipl.-Ing. Richardt, TÜV Süddeutschland Branch Ulm, Dep. NDD  Dipl.-Ing. (FH) E. Mack, TÜV Süddeutschland Branch Ulm, Dep. NEG
<u>Dates:</u>	20 <sup>th</sup> March 2000 - plant check on location 26 <sup>th</sup> May 2000 - completion of the TÜV-report
<u>Participants on location:</u>	- Mr. Winfried Reh - dkk - Technicians of Hefei Meiling Company

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## 1. Preliminary remark

The Hefei Meiling company plans to use in future Isobutane as cooling agent for the production of refrigerators.

As Isobutane is a flammable liquid gas safety technical measures against a possible fire- and explosion danger have to be regarded and realized when this gas is used.

The dkk company engaged TÜV Süddeutschland, branch Ulm, to carry out a safety technical evaluation and check of the Isobutane Charging Plants at the Hefei Meiling Company.

The whole TÜV-check of the Isobutane Charging Plants has been carried out divided into the following partial checks:

– 1<sup>st</sup> Partial Check:

- Safety technical evaluation of the documentation of the Isobutane Charging Station made by A'Gramkow.
- The result of this evaluation is contained on the „TÜV safety Report on Technical Evaluation of Documentation of a HC Charging Station“, File No.: 990 338 173, date Nov. 16<sup>th</sup>, 1999.

– 2<sup>nd</sup> Partial Check:

- Coordination and fixing of solutions of problems with the dkk company, which have been assessed in the 1<sup>st</sup> partial check.
- The result is contained in the „TÜV Comment on a technical state of affairs“, File No.: 990 338 173/-01-, Date February 13<sup>th</sup>, 2000.

– 3<sup>rd</sup> Partial Check:

- The TÜV-check, which has been carried out on location now, contains all the Isobutane (HC)-Charging-Plants consisting of HC-Storaging, HC-Charging Stations, safety-technical evaluation of the plant-peripherals and evaluation of safety relevant aspects of an organizational kind.
- Other technical equipment not being on any safety-relevance to the HC-plants are not part of this check.
- The result is contained in the „TÜV Report on a safety-technical plant-check“ (being at hand!)  
File No.: 990 338 173/-02-, Date: May 26<sup>th</sup>, 2000

The TÜV-report at hand is first of all valid specifically for the HC-plants at Hefei Meiling.

As the HC-plants are similar to those of the dkk-projects of Huari and Xiling in regard of planning and realized design, this report can also be used as guideline for Huari and Xiling.



## 2. Checking principles

### 2.1 Applicable regulations

- EG directive 94/9/EG (Atex 100 a)
- EN 1127-1 Explosion protection, Fundamentals and Methods
- Druckbehälterverordnung: Germany DruckbehV  
(decree for pressure vessels)
- Electrotechnical regulations: International: IEC / European: EN / National: DIN VDE  
e.g.  
IEC 60073, IEC 439-1/A2, IEC 204-1, IEC 1210-2, EN 50054, EN 50054, EN 50013,  
EN 50020, EN 50081, EN 60529, pr. EN 1050, DIN VDE 0165, EN 349, EN 418, EN  
294, EN 954-1
- Fundamental safety aspects to be considered for measurement and control equip-  
ment: - Germany: DIN V 19250
- Safety requirements for automated manufacturing systems:  
Germany VDI 2854
- Personal protection regulations / accidents prevention  
European: EN...EC / Germany: UVV/ZH, e.g.  
VBG 1, VBG 5, VBG 20, VBG 21, VBG 61, ZH 1/200, ZH 1/255, ZH 1/8, ZH 1/10, ZH  
1/134, ZH 1/455
- Technical regulations for combustible liquids and for gases: Germany TRF / TRG e.g.  
TRF 1996 / TRG 280
- Technical regulations for ventilators in ex-zones: Ex-proof / spark-proof for ventilators:  
Germany VDMA 23169 Part 1
- Homologation of technical plant and equipment - European: conformity certificates  
(e.g. PTB, Cesi)
- EN 378, Refrigerating systems and heat pumps, Safety and environmental require-  
ments
- EG machine directive (89/392/EEG, revised edition 91/368/EEC)
- IEC 79-10/EN 60079-10/VDE 0165 Part 101: Electrical apparatus for explosive gas  
atmospheres - classification of hazardous areas
- IEC/EN/DIN VDE Standards: especially DIN 31000 / VDE 1000, DIN VDE 0116, DIN  
57 165 / VDE 0165, EN DIN 50014 / VDE 0170/0171.

## 2.2 Applicable documentation

Basis for the report at hand is the following documentation:

- a) TÜV-„Safety Report on Technical Evaluation of Documentation of a HC Charging Station“  
File-No. 990 338 173, Date Nov. 16<sup>th</sup>, 1999.
- b) TÜV-„Comment on a technical state of affairs“  
File-No. 990 338 173/-01-, Date February 13<sup>th</sup>, 2000
- c) TÜV Süddeutschland, branch Ulm, has received the following technical documents after the TÜV-inspection in Hefei Meiling Company:
  1. Documentation of liquid gas storage tank made by Atogen Morgenstern Ltd. which includes:
    - operating description
    - overhead liquid gas storage tank
    - liquid phase pipelines
    - appendix 1: flow diagram
    - appendix 2: operation instructions
    - appendix 3: alarm plan
    - appendix 4: danger warning plan
    - appendix 5: measures during fires
    - appendix 6: inspection tests reports and certifications
    - appendix 7: tank documents
    - appendix 8: installation instructions

### 3. Check extent

#### 3.1 In general

The TÜV-check, that has been carried out, contains the checking and evaluation of the safety-relevant requirements to secure the safety-measurements against fire- and explosion danger.

Those are in detail:

- Pressure-technical and electrotechnical checks and measurements on the plants for HC-storing and HC-charging.
- Check and evaluation of general safety technical measures on the plants for HC-storing and HC-charging.
- Check and evaluation of the safety relevant surrounding of HC-storing and HC-charging.
- Evaluation of safety-relevant organizational measures.
- The check of all safety-relevant aspects in accordance with the requirement of chap. 8 of TÜV - Safety Report - File No.: 990 338 173, Date Nov. 16<sup>th</sup>, 1999.

#### 3.2 Plant-specific check extent

Following plants, respectively plant-sections are part of this TÜV-check:

- a. Workshop 3, line 1 - Refrigerators  
consisting of:  
Isobutane storing, Isobutane charging station,  
repair place for refrigerators with Isobutane
- b. Workshop 3, line 2 - Refrigerators  
consisting of:  
Isobutane storing, Isobutane charging station,  
repair place for refrigerators with Isobutane.

#### 3.3 Not part of the TÜV-check

Following checks and evaluations are not part of this TÜV-check:

- the refrigerators in regard of suitability for Isobutane
- the modifications in using refrigerators with Isobutane as cooling-agent.  
(e.g. operator manual, requirements for repairs).

#### 4. Short description of the HC-plants

##### 4.1 Plant Workshop 3, Line 1 - Refrigerators

###### a) HC-storaging / HC-supply:

The storaging of Isobutane takes place in a tank above ground with a contents of 4.850 l.

This tank is coupled with an Isobutane pump-station by which the HC-charging station on the assembly line 1 is supplied with HC.

The Isobutane-tank and the Isobutane pump-station are located in a separate room bordering on the outer wall of workshop 3.

The Isobutane-supply of the HC-charging station is carried out starting at the pump-station via a pipe.

Data:	HC-pump-station
Product:	A'Gramkow
Series no.:	182 000 29 - 74 982
Manufactured:	98-04-22
Refrigerant supply:	R 600a

Working pressure: 19 bar, design pressure: 21 bar

b) HC-charging station

On the refrigerator line 1 there is a HC-charging station, product A'Gramkow.

The cooling-circuits of the refrigerators are evacuated by this charging station and filled with Isobutane.

After the HC-charging process the cooling circuits are closed by an ultrasonic-system.

The HC-charging station and the HC-charging place are equipped with a technical ventilation system and an automatic gas-detector-system.

Data:	HC-charging station
Product:	A'Gramkow, Typ Max 95
Series no.:	172 000 92 - 74 981

c) Repair place for refrigerators with HC

According to dkk the repair place isn't contained in the project.

Nevertheless, for safety reasons a basical evaluation has been carried out by TÜV.

On the presently planned repair place a technical ventilation (suction) is installed.

Further equipment isn't existing.

4.2 Plant workshop 3, Line 2 - Refrigerators

a) Annotation:

According to dkk this HC-plant was designed and engineered for freezer-workshop-line 3.

The change for workshop 3, line 2-Refrigerator has not been carried out under the responsibility of dkk.

b) HC-storaging / HC-supply:

Presently an Isobutane-storaging-container (bottles, tank) isn't existing.

The plant-design provides, that the storaging-container is coupled with the installed Isobutane-pump-station and that the HC-charging-station on assembly line 2 is supplied with HC by the Isobutane-pump-station.



A separate room bordering on the outer wall of workshop 3 is planned for the HC-storing-container and the HC-pump-station.

The Isobutane-supply of the HC-charging-station is carried out starting at the pump-station via a pipe.

Data: HC-Pump-Station  
Product: A'Gramkow  
Series no.: 182 000 28 - 74 982

c) HC-charging station

- annotation: the HC-charging station is not put into operation yet.
- the construction basically corresponds to the description according to chap. 4.1/b above.

Data: HC-charging station  
Product: A'Gramkow, Typ Max 95  
Series no.: 1720 0093 - 74 981

d) Repair place for refrigerators with HC

The repair place is according to dkk not contained in the project.

Nevertheless, for safety reasons a basical evaluation has been carried out by TÜV.

On the presently planned repair place a technical ventilation (suction) is installed.

Further equipment isn't existing.

## 5. Inspection

### - Measurements and function tests -

	Plant-components/ Measurement / Function test	Result of measurement	Function conform- ing to safety strat- egy		Remarks
			yes	no	
1.	HC-plant Line 1 refrigerator				
1.1	<u>HC-storaging / HC-supply</u>				
	a. Function-coupling with safety monitoring panel			x	- function coupling isn't realised (terminals are bridged) - see chap. 6
	b. Emergency push button		x		- use of the emergency push button of the control panel; a key for the room door must be deposited in front of the door (key box).
	c. Monitoring of ventilation			x	- the ventilation system isn't monitored - see chap. 6
	d. Measurement				
	- electrical resistance of the floor	≤ 10 k ohm	x		
	- resistance of grounding and potential equalisation	general ≤ 0,3 ohm partly > 0,3 ohm	x	x	- see chap. 6
	- effectiveness of ventilation (test fog)	o.K.	x		
1.2	<u>HC-charging area</u>				
	a. Emergency push button			x	- the emergency push button is missing - see chap. 6



Plant-components/ Measurement / Function test	Result of measurement	Function conform- ing to safety strat- egy		Remarks
		yes	no	
b) Gas monitoring				
– pre-alarm (15% LEL)		x		
– alarm (30 ½ LEL)		-	-	– the modification in accordance with TÜV-comment (File No. 990 338 173/-01-) has to be realised - see chap. 6
– fault		x		
c) Ventilation system				
– effectiveness of ventila- tion (test fog)	O.K.	x		
– monitoring of suction		-	-	– the modification in accordance with TÜV-comment (File No. 990 338 173/-01-) has to be realised - see chap. 6
– air speed	6 m/s	x		
d) Pressure switch		x		
e) Measurement				
– electrical resistance of the floor	≤ 10 k ohm	x		
– electrical resistance of grounding and equalisa- tion	≤ 0,3 ohm	x		
– effectiveness of ventila- tion (test fog)	O.K.	x		

	Plant-components/ Measurement / Function test	Result of measurement	Function conform- ing to safety strat- egy		Remarks
			yes	no	
2.	HC-plant Line 2 - refrigerator				
2.1	<u>HC-storage / HC-supply</u>				
	a. Function-coupling with safety monitoring panel			x	- function coupling isn't realised (terminals are bridged) - see chap. 7
	b. Emergency push button		x		- use of the emergency push button of the control panel; a key for the room door must be deposited in front of the door (key box)
	c. Monitoring of ventilation			x	- the ventilation system isn't monitored - see chap. 7
	d. Measurement				
	- electrical resistance of the floor	≤ 10 k ohm	x		
	- resistance of grounding and potential equalisation	general ≤ 0,3 ohm partly > 0,3 ohm	x	x	- see chap. 7
	- effectiveness of ventilation (test fog)	O.K.	x		



	Plant-components/ Measurement / Function test	Result of measurement	Function conform- ing to safety strat- egy		Remarks
			yes	no	
2.2	<u>HC-charging area</u>				
	a. Emergency push button			x	- the emergency push button is missing - see chap. 7
	b) Gas monitoring				
	- pre-alarm (15% LEL)		x		
	- alarm (30 % LEL)		-	-	- the modification in accordance with TÜV-comment (File No. 990 338 173/-01-) has to be realised - see chap. 7
	- fault		x		
	c) Ventilation system				
	- effectiveness of ventilation (test fog)	O.K.	x		
	- monitoring of suction		-	-	- the modification in accordance with TÜV-comment (File No. 990 338 173/-01-) has to be realised - see chap. 7
	- air speed	6 m/s			
	d) Pressure switch		x		

6. Result and required measures  
- HC plant Line 1 -

6.1 HC storage / HC-supply

6.1.1 HC-Storage room

- a. The room is not fire-retardant built, because the roof of this room consists of polyurethan panels (see the requirements in the documentation - appendix 8 chap. 1 also).  
Another solution for this roof is necessary or in the surrounding of 5.0 m of the storage room all openings and windows in the wall of the workshop must be closed with a fire retardance for 90 minutes.
- b. The openings in the wall to the neighbouring room with the room heater must be closed.  
The technical equipment in this room isn't suitable for Ex-Zone 1 or Ex-Zone 2.  
If the HC-storage room needs a heater, a suitable equipment must be installed in the storage room.
- c. The opening for the ventilation, which is on the bottom of the wall of the storage room near the water drain, can not be accepted in this position.  
In case of a gas-leakage in the storage room, gas can escape into the water drain system.
- d. The HC-gas-cylinders, which are used presently in the storage room, must be secured against fall-over.

6.1.2 Technical equipment for storage room

a. Technical ventilation:

- 1. A proof of the suitability of the fan for Ex-Zone 2 is necessary (e.g. „non spark“ declaration).
- 2. The ventilation system isn't monitored automatically.
- 3. The compensatory (vibration dumber) between the ventilation channel must be bridged by a ground wire.

Responsible	
dkk	Meiling



- b. Potential equalisation:  
Following parts of the equipment must be integrated with the potential equalisation:  
HC-tank, HC-pipes, ventilation-channel, HC-supply pump.
  - c. Explosion proof lamps:  
For the electrical connection of the Ex-d lamps (Chinese type) cables must be used instead of wires.
  - d. Electrical control panel in the neighbouring room:
    - 1. The function coupling with the „Safe 5“ panel is missing. The terminals, foreseen for this function, are bridged presently. In case of a gas alarm from the HC-charging area the automatic valve (shut off valve) in the HC-supply pipe doesn't close.
    - 2. The ground connection to the enclosure of the panel is missing.
  - e) Emergency push button:  
The emergency push button on the control panel can be used, if the entrance to the room with this panel is always possible (key box next to the door).
- 6.1.3 HC-pipes in the storage room
- a. The soldered joint of the relief pipe must be improved.
  - b. The flexible pipe of the gas drain connection is plastic. The suitability could not be proved. The normal flexible metal pipe must be used.
  - c. The soldered joints from the first joint behind the wall to the shut off valve must be made professionally.
  - d. The N<sub>2</sub>-pipe must not be brown because this colour is used for pentane.

Responsible	
dkk	Meiling



6.1.4 HC-pipe to the charging station

- a. The HC-pipe is fixed on a green water pipe. The better way is to use separate supports as required in the documentation (see documentation No. 1, annex 8, chap. 5.6)
- b. The pipe along the way must get separate supports at least each 1,25 m.
- c. The pipe is partly fixed at the ventilation tube. This is very risky. Therefore a separate trace for the pipe is necessary (see documentation No. 1)
- d. The pipe behind the second safety relief valve is not fixed. This must be done and the relief pipe of the safety relief valve must be led over the roof.
- e. Where the pipe changed the diameter, the right fittings must be used.
- f. The pipe must be marked.
- g. After the pipe is renewed a new pressure and tightness test is required and must be proved.

6.2 HC-charging place

6.2.1 HC-charging station / Safe 5 control panel

The modifications listed up in the TÜV „Comment on a technical state of affairs“ (File No. 990 338 173/-01-, Date February 13<sup>th</sup>, 2000) have to be realised.

Responsible	
dkk	Meiling



Responsible

dkk

Meiling

6.2.2 Bubble Memory (V = 30 l, p = 360 bar):

For the bubble memory made by A'Gramkow following safety requirements have to be realised:

- a. In front of the bubble memory a protection against mechanical stress is necessary. One pipe on this vessel is deformed seriously yet.
- b. The surrounding of the bubble memory must be monitored by a gas sensor and by technical ventilation.  
This can be realised by enclosing of the bubble memory and a ventilation connection to the basin at the charging place.

6.2.3 Ventilation

- a. The flexible hose for the ventilation of the HC-charging unit is electrostatically chargeable and therefore unsuitable.
- b. The compensator (vibration dumber) between the ventilation channel must be bridged by a ground wire.
- c. The ventilation channel outside the building must be connected with the lightning protection system.
- d. The ventilation channel must end outside the building at least 1.00 m over the roof or the end must be in a good naturally ventilated area far from openings in the building (roof, walls, windows).

6.2.4 The gas sensors have still to be fixed in the final position (basin and HC-charging device).



- 6.2.5 HC-charging gun („Hansen“-coupling):  
The electrical resistance of the ground connection at the end of the charging gun is too high (measured > 10 k Ohm, standard value 0.3 Ohm).
- 6.2.6 Electrical control panel (made by Licht + Kraft):
  - a. The main cable from the change over panel (power generator) has to be powered (fuses are missing).
  - b. The cables must be introduced into the panel in a professional way.
  - c. The cables for the connections of the air flow sensors must be approved for 230 V. The data sheet therefore this is necessary.

Responsible	
dkk	Meiling

**7. Result and required measures  
- HC-plant Line 2 -**

**7.1 HC-storage / HC-supply-room**

**7.1.1 Design of the room:**

- a. The room with the HC-storage and HC-supply equipment must be classified as explosion zone 2.  
The electrical control panel and the electrical fuse panel which are installed in this room, aren't suitable for the Ex-Zone 2.  
A conception (plan) of the safety must be designed and has to be realised after the change of this plant from freezer factory line 3 to the refrigerator factory.
- b. The holes in the wall must be closed gas tight.

Responsible	
dkk	Meiling



7.1.2 Technical equipment for storage room

a. Technical ventilation:

1. The requirements listed up in chap. 6.1.2a are valid also here.
2. The ventilation channel ends below the roof. The end of the channel must be lied over the roof or at least in the free air flow on the edge of the building.

b) Potential equalisation:

The requirements listed up on chap. 6.1.2b are valid also here.

c) Explosion proof lamps:

The requirements listed up on chap. 6.1.2c are valid also here

d) Electrical control panel:

The function coupling with the „Safe 5“ panel is missing. The terminals which are foreseen for this function are bridged presently.

In case of a gas alarm from the HC-charging area the automatic valve (shut off valve) in the HC-supply pipe doesn't close.

e) Emergency push button:

The requirements listed up on chap. 6.1.2e are valid also here.

7.1.3 HC-pipes in the storage room

a) Relief pipe:

The end of the relief pipe must be higher than the roof or the end must be at least in the free air flow (e.g. on the edge of the building in direction to the street).

Responsible	
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7.1.4 HC-pipe to the charging station:

- a) The line must be marked very clearly as a line for liquid gas.
- b) All soldered joints must be checked again. Where the false fittings have been used they must be changed.
- c) The supports must be installed as mentioned above in the plant documentation No. 1.  
The pipe must be fixed directly on the steel construction of the building and not on other parts like pipes or tubes.
- d) Between the shut off valves (ground floor and 1<sup>st</sup> floor) the safety relief valve is missing.

7.2 HC-charging place

7.2.1 HC-charging station / Safe 5 control panel

The requirements listed up on chap. 6.2.1 are valid also here.

7.2.2 Bubble Memory

The requirements listed up on chap. 6.2.2 are valid also here.

7.2.3 Ventilation

The requirements listed up on chap. 6.2.3 are valid also here.

7.2.4 Gassensors

- a) The gas sensor for the charging station has a failure and has to be removed therefore.
- b) For the basin under the charging place a connection with the gas sensor is necessary (e.g. connection via a channel).

7.2.5 Electrical control panel (made by Licht + Kraft)

- a) The requirements listed up on chap. 6.2.6 are valid also here.

Responsible	
dkk	Meiling

b) For the main ground a green-yellow wire must be used instead of the black one.

Responsible	
dkk	Meiling

## 8. Further measures

### 8.1 Repair places for HC-refrigerators

a) The repair places were not equipped completely.  
A design and description for the whole safety aspects is necessary.

Following aspects must be considered thereby:

- procedure for discharging (operator instruction)
- use of a suitable equipment for discharging (e.g. explosion proof vacuum pump according EN 1012-2; flexible hoses; ground connection)
- suitability of the ventilation system for Ex Zone 2
- monitoring of the ventilation system
- warning signs and definition of a dangerous area depending on the ventilation and gas monitoring
- equipment for fire fighting

b) After the completion of the repair places a safety inspection must be carried out by an expert.

Responsible	
dkk	Meiling

## 9. Summary

According to the statements of the participants the planning and engineering of HC-plants is generally divided into

- HC-storage, HC-pipelines, repair places  
⇒ responsibility: Hefei/Meiling (local works)
- HC-supply, HC-charging, HC-safety equipment  
⇒ responsibility: dkk

### Responsibility dkk

The measures still to be realized by dkk are basically listed in TÜV „Comment on a technical state of affairs“ (File No.: 990 338 173/-01-) and agreed upon with the TÜV experts.

After carrying out these measures this part of the plant can be regarded as o. k.

### Responsibility Hefei/Meiling

The measures still to be realized by Hefei/Meiling are listed in the TÜV-report at hand.

Carrying out these measures is regarded as necessary before the HC-plants are put into operation.

Having done away with the assessed deficiencies and after the required measures have been realized the HC-plants are in a safety technically correct condition.

The Experts

  
E. Mack

  
K.-J. Richardt

## **Attempts to contact Meiling**

- fax dated March 21<sup>st</sup> 2000
- submission of the TÜV report dated June 8<sup>th</sup> 2000
- information about the next visit dated June 27<sup>th</sup> 2000
- second transmission of the fax
- fax from Hangzhou dated July 7<sup>th</sup> 2000



Meiling Company Ltd.

Mr. Li Zuo - Director

Fax: 0551 2885689

Subj: UNIDO project M/ICPR/47/1078

Hangzhou, 21.03.00

Dear Mr. Li Zuo!

As I have already informed Mr. Wang De Gui yesterday, Meiling will get a list of necessary actions to be done after the TÜV-inspection carried out on March 20<sup>th</sup>.

Three points have to be realised immediately:

- 1.) Meiling should protect the pipe connection to the accumulator at Line 1 with a strong frame to avoid any movement of the pipe by the feet of the worker.
- 2.) As Meiling has adjusted the isobutane pipe after the installation last year, our pressure test is not more valid. We hope, that Meiling has done a pressure test again according to the handed over documentation before filling the pipe with isobutane. (This is valid for both assembly lines.)

3.) For the Line II in the work shop no. 3  
we strongly recommend to fill not  
the pipe with isobutane.

The tank room built by Meiling and the  
pipe installation is fully outside the  
safety requirements

Please consider this three points as very  
important.

Meiling will get the results from the  
TÜV-inspection as soon ~~like~~ ~~has~~ has got  
the report from TÜV.

Kind regards

W. Reli

Project Engineer.





**dkk GEP mbH**

**Group for Engineering  
and Projectmanagement Co. Ltd.**

dkk GEP mbH • August-Bebel-Street 22 A • D-09435 Scharfenstein

Meiling Company Ltd.  
Mr Li Zuo - Director

Fax: 0086 551 2885689

August-Bebel-Street 22 A  
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Phone +49 3725 7076-0  
Fax +49 3725 7076-21  
E-Mail [dkkgep@t-online.de](mailto:dkkgep@t-online.de)  
Internet: <http://www.dkk.de>

Subj.: UNIDO project MP/CPR/97/078 – TÜV report

Scharfenstein, 08.06.2000

Dear Mr. Li Zuo!

Please find attached the TÜV report containing the results from the TÜV inspection carried out at Meiling on March 20<sup>th</sup> 2000.

We want to point out again that Meiling is responsible for the elimination of the lacks regarding the isobutane storage room, isobutane pipe and repair places listed in the attached TÜV report and the fax dated March 21<sup>st</sup> 2000.

Kind regards

W. Reh  
Project Engineer

Attachment

President: Harald Volkmar Lang  
Office Frankfurt: Phone +49 6174 931715  
Fax +49 6174 931717  
E-Mail: [havo.lang@t-online.de](mailto:havo.lang@t-online.de)

Banking account:  
Commerzbank AG, Branch Chemnitz  
Account No. 1006014  
Bank code 87040000

VAT Reg.-No.  
DE 165172603

ok.



**dkk GEP mbH**  

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**Group for Engineering  
and Projectmanagement Co. Ltd.**

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dkk GEP mbH • August-Bebel-Street 22 A • D-09435 Scharfenstein

Meiling Company Ltd.  
Mr Li Zuo - Director  
  
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Phone +49 3725 7076-0  
Fax +49 3725 7076-21  
E-Mail dkkgep@t-online.de  
Internet: http://www.dkk.de

**Subj.: UNIDO project MP/CPR/97/078 – next visit**

Scharfenstein, 27.06.2000

Dear Mr. Li Zuo!

As we have foreseen to visit China for several projects in week 28 we kindly ask you, if the installation of the electronic parts which we have sent to you can be carried out by an electrician from Meiling under supervision from dkk on July 8<sup>th</sup> 2000 (arrival July 7<sup>th</sup> evening)  
As we are organising the flight please confirm by return fax as soon as possible.

Kind regards

W. Reh  
Project Engineer

President: Harald Volkmar Lang  
Office Frankfurt: Phone +49 6174 931715  
Fax +49 6174 931717  
E-Mail: havo.lang@t-online.de

Banking account:  
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Account No. 1006014  
Bank code 87040000

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dkk



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Mr Li Zuo - Director

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E-Mail dkkgep@t-online.de

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Dear Mr. Li Zuo!

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As we are organising the flight please confirm by return fax as soon as possible.

Kind regards

W. Reh  
Project Engineer

*As we have not received any answer  
we kindly ask again for confirmation  
also for booking the flight.*

*Kind regards*

*W. Reh*

President: Harald Volkmar Lang  
Office Frankfurt: Phone +49 6174 931715  
Fax +49 6174 931717  
E-Mail: [havo.lang@t-online.de](mailto:havo.lang@t-online.de)

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Bank code 87040000

VAT Reg.-No.  
DE 165172603



HANGZHOU  
海华大酒店

GUEST NAME 客人姓名 REH

ROOM No. 房间号码 788 DATE 日期 7.7.00

FAX TO. 收件人 Mr. Li Zuo - Director

CITY 城市 \_\_\_\_\_

COMPANY 公司名称 Meiling Company Ltd.

TIME 时间 \_\_\_\_\_

FAX NO. 传真号码 05572885689

RE 关于 \_\_\_\_\_

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MESSAGE 留言

Dear Mr. Li Zuo!

As we have asked you already for the installation of the electronic ports and we didn't get any answer we kindly ask you again for this visit confirmation. The installation can be carried out from July 73<sup>th</sup> - 74<sup>th</sup>.

Please confirm to this hotel.

Kind regards

W. Reh

Project Engineer

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中国杭州庆春路298号, 邮编 310006, 电话: (86 571)7215888, 传真 (86 571)7215108



## Letter and shipping documents



**dkk GEP mbH**

**Group for Engineering  
and Projectmanagement Co. Ltd.**

dkk GEP mbH • August-Bebel-Street 22 A • D-09435 Scharfenstein

Meiling Company Ltd.  
Mr Li Zuo - Director

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Fax +49 3725 70 76-21  
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Internet: <http://www.dkk.de>

Subj.: UNIDO project MP/CPR/97/078 – TÜV report

Scharfenstein, 11.01.2001

Dear Mr. Li Zuo!

As we did not get any reply to our faxes dated June 27<sup>th</sup>, June 29<sup>th</sup> and July 7<sup>th</sup> 2000 we contacted Mr. Malayeri.

He informed us that you have not received the TÜV report which we have sent to you on June 8<sup>th</sup> last year.

We therefore send again the report plus the copies of the various attempts to contact you via fax and also via DHL.

Kind regards

W. Reh  
Project Engineer

Attachment



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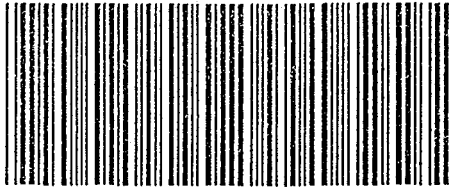
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