- ◎ 中文核心期刊
- ◎ 中国科技核心期刊
- ◎ 中国期刊全文数据库收录期刊
- ◎ 中国石油文献数据库收录期刊
- ◎ 美国《化学文摘》(CA)收录期刊
- ◎ 俄罗斯《文摘杂志》(AJ) 收录期刊

ISSN 1000-8241 CN 13-1093/TE CODEN YOCHEP

2015.09 第34卷 **09** 

# 油气储运





### Oil & Gas Storage and Transportation





# YOUQI CHUYUN

2015年9月第34卷第9期 (月刊·1977年创刊 总第 321 期)

主编: 艾慕阳 副主编: 关中原

主管单位 中国石油天然气集团公司

主办单位 中国石油天然气股份有限公司

管道分公司

编辑出版《油气储运》杂志社

通信地址 (065000)河北省廊坊市金光道 51号

编辑部 0316-2177193 2177197

2176753

广告部 0316-2177392

出版部 0316-2177392

发行部 0316-2177392

传 真 0316-2177392

址 yqcy.paperopen.com

发行范围 公开发行

国内发行 河北省廊坊市邮政局

国外发行 中国出版对外贸易总公司

(100011)北京 782 信箱

ED 刷 廊坊市恒泰印务有限公司

出版日期 2015年9月25日

中国标准连续出版物号

ISSN 1000-8241

CN 13-1093/TE

国际期刊 CODEN 码 YOCHEP

邮发代号 18-89

广告经营许可证号 1310004000002

国内定价 25.00 元/册

国外定价 25.00 美元/册

责任编辑 刘朝阳

装帧设计 曹立立

封面题字 启 功

封面摄影 荣 波

### 目 次

#### 前瞻与综述

0913 中国石油油气管道设备国产化现状和展望

谭东杰,李柏松,杨晓峥,等

0919 国内外输气管廊带的建设与运行

张监,王勋,李哲,等

0924 泄漏油品在地下水中的迁移转化规律及模型 杨永健,侯军,王德云

#### 完整性与可靠性

0934 油气管道典型地质灾害危险性评价

钟威,高剑锋

0939 基于 IAHP 法覆土储油罐区滑坡综合性风险评估

黄海亮,焦光伟,甄翔,等

#### 输送与储存

0945 盐穴储气库单腔长期注采运行分析及注采压力区间优化——以金坛

盐穴储气库西2井腔体为例

杨海军,郭凯,李建君

0951油品汽车装卸作业中管路的水力计算 尚兴彬,张建宾,茆天琪,等

#### 投产与运行

0955 基于复合作业量的天然气管输定价模型试验研究——以西气东输

二线为例

李志学,魏莎莎

0961 加气站 LNG 低温储罐液位计比选及优化方案

何才宁

0966 大容量径向偏差测量机器人装置的研制与应用

刘瑛,陈贤雷,郝华东,等

0973 压气站区域性阴极保护技术

郭生华,郭超,秦丰高

0978 CFRP 用于钢质管道管体缺陷修复的适用性评价

周祥,李勇,郑晓春,等

0983 含 CO<sub>2</sub> 油水混输管道内腐蚀仿真研究 崔铭伟, 俞天军, 封子艳, 等

0988 基于 HPPP 法的 Pigsar 天然气流量计检定站工艺

王勇,王晓霖,张松伟

### Oil & Gas Storage and Transportation

#### 设计与施工

0993 大型储罐底圈罐壁轴向应力的计算

吴龙平,王成,杜亮坡,等

0997 基于 Android 的管道建设录入终端开发与实现

魏瑄,张世伟,陈元,等

1000 西气东输三线电驱站冷却水系统设计与优化

李洪涛,史玉峰,郝庆,等

1005 地下水封储油库围岩间距的 FLAC3D 数值分析

胡谋鹏、陈雪见、梁久正、等

1010 油气管道斜拉索跨越设计

左雷彬,马红昕,铁明亮,等

#### **海管**与船运

1015 海底管道临时管跨允许最大跨长的计算

闫宏生,王铿,李怀亮,等

#### 一线报道

1019 压缩机进气滤芯反吹除霜方法的优化

张轩,陈子鑫,刘国豪,等

1023 浙江 LNG 接收站外输计量控制要点

牛斌. 吕俊

#### 《油气储运》杂志 第九届编委会

主任:姚伟

副主任: 李伟林 赵丑民 艾慕阳

顾 问(以汉语拼音为序):

李鹤林 罗平亚 严大凡 杨祖佩

委 员(以汉语拼音为序):

陈健峰 陈开彬 陈世一 陈向新

崔 涛 樊栓狮 冯耀荣 高发连

高庭禹 宮 敬 郭揆常 韩忠晨

何利民 敬加强 李长俊 李利民

梁成浩 刘 扬 路民旭 孟繁春

闵希华 钱建华 沈本贤 石永春

孙春良 谭羽非 仝兴华 王力戎

王寿喜 王树立 王卫国 王小平

吴长春 吴 明 徐昌学 贠军贤

张成伟 张劲军 张来斌 张 伟

张伟明 张文伟 张秀杰 章泽华

赵堂玉 赵宗昌 钟太贤 朱天升

秘书长: 姜宝良

副秘书长: 关中原(兼)

**簡訊** 本刊链接(0933) 下期要目(0944)

期刊基本参数: CN 13-1093/TE\*1977\*m\*A4\*114\*zh+en\*P\*¥25.00\*3500\*22\*2015-09\*n



### Oil & Gas Storage and Transportation

Monthly, Started in 1977

Editor-in-chief: AI Muyang

General Director: GUAN Zhongyuan

Oil & Gas Storage and Transportation

Journal Agency

No.51, Jinguang Rd., Langfang City, Hebei

Province, 065000, PRC

Tel: +86(316)2176173

Fax: +86(316)2177392

CODEN: YOCHEP

ISSN 1000-8241 CN 13-1093/TE

yqcy.paperopen.com

Managing Editor: LIU Zhaoyang

English Editor: LIU Chunyang

LIU Bo

Technical Editor: CAO Lili

Cover Inscription: QI Gong

Cover Photographer: RONG Bo

Publishing Date: September 25, 2015

**Annual Subscription Rates:** 

China RMB ¥300

Overseas US \$ 300

#### Overseas Distributor:

China Publisher External Trading

Corporation

PC Box 782, Beijing, 100011, PRC

### CONTENTS

#### **FORWARD-LOOKING & OVERVIEW**

0913 Development and prospect of PetroChina's pipeline equipment localization

TAN Dongjie, LI Baisong, YANG Xiaozheng, et al

0919 Construction and operation of gas pipeline corridor worldwide

ZHANG Jian, WANG Xun, LI Zhe, et al

0924 Migration and transformation pattern and model of leaked oil in underground water

YANG Yongjian, HOU Jun, WANG Deyun

#### **INTEGRITY & RELIABILITY**

0934 Hazard assessment of typical geological disasters along oil and gas pipeline ZHONG Wei, GAO Jianfeng

0939 Comprehensive risk assessment on landslide in buried oil storage tank zone based on IAHP

HUANG Hailiang, JIAO Guangwei, ZHEN Xiang, et al

#### **TRANSPORTATION & STORAGE**

0945 Analysis on long-term operation and interval optimization of pressure for single cavity injection/production in underground salt cavern gas storage – Taking the cavity of Well Xi-2 in salt cavern gas storage in Jintan as an example

YANG Haijun, GUO Kai, LI Jianjun

0951 Hydraulic calculation of pipe in oil loading and unloading of road tanker

SHANG Xingbin, ZHANG Jianbin, MAO Tianqi, et al

#### **COMMISSIONING & OPERATION**

0955 Experiment of pricing model for pipeline transmission of natural gas based on composite throughput – A case study on the 2nd West-to-East Gas Pipeline

LI Zhixue, WEI Shasha

0961 Comparison and optimal scheme of level gauge for low-temperature

LNG tank in gas filling station

HE Caining

0966 Development and application of high-capacity radial deviation metering robot LIU Ying, CHEN Xianlei, HAO Huadong, et al

0973 Regional cathodic protection technique for gas compressor station

GUO Shenghua, GUO Chao, QIN Fenggao

0978 Applicability of CFRP for repairing the defects of steel pipe

ZHOU Xiang, LI Yong, ZHENG Xiaochun, et al

0983 Pipeline internal corrosion simulation for CO<sub>2</sub>-containing oil-water mixed transportation

CUI Mingwei, YU Tianjun, FENG Ziyan, et al

### Oil & Gas Storage and Transportation

0988 HPPP-based Pigsar gas flowmeter calibration facility

WANG Yong, WANG Xiaolin, ZHANG Songwei

#### **DESIGN & CONSTRUCTION**

0993 Calculation of axial stress for the bottom shell of large-scale storage tank

WU Longping, WANG Cheng, DU Liangpo, et al

0997 Development and realization of Android-based entry terminal of pipeline construction database

WEI Xuan, ZHANG Shiwei, CHEN Yuan, et al

1000 Design and optimization of cooling water system in electric-driven compressor station of the 3rd West-to-East Gas Pipeline

LI Hongtao, SHI Yufeng, HAO Qing, et al

1005 Numerical analysis for the surrounding rock spacing of underground water-sealed oil storage based on FLAC3D

HU Moupeng, CHEN Xuejian, LIANG Jiuzheng, et al

1010 Design of cable-stayed aerial crossing for oil and gas pipeline

ZUO Leibin, MA Hongxin, TIE Mingliang, et al

#### **SUBSEA PIPELINE & SHIPPING**

1015 Calculation of the allowable maximum span of temporarilysuspended submarine pipeline section

YAN Hongsheng, WANG Keng, LI Huailiang, et al

#### **APPLICATION REPORT**

1019 Optimization of back flushing technique for defrosting of gas intake filters in compressors ZHANG Xuan, CHEN Zixin, LIU Guohao, et al

1023 Key points for control over sendout metering in Zhejiang LNG

Terminal NIU Bin, LYU Jun

#### INTRODUCTION

Since its commencement in 1977, the exclusive Oil & Gas Storage and Transportation (OGST) Journal is dedicated to disseminating the latest scientific and technological accomplishments and advancements in oil and gas storage and transportation field. OGST is sponsored by PetroChina Pipeline Company. The main columns include forward-looking & overview, observation & focus, integrity & reliability, transportation & storage, commissioning & operation, design & construction, subsea pipeline & shipping, application report, etc.

In recent years, OGST has achieved many significant milestones, which include expanding its contents and improving its format, establishing a world-class domain website (http://yqcy.paperopen.com), realizing automatic treatment processes of contributions, accelerating the processing of contributions and shortening the publication time. It has been indexed by Scopus of Holand, CA and Ulrich PD of the USA, and AJ of Russia. In a joint effort with Chinese National Knowledge Infrastructure (CNKI), OGST has also implemented digital publication to expand the dissemination of excellent papers to a wider readership.

Maintaining a high standard of scientific journal publication has always been the unswerving goal of OGST. OGST will continue to strive towards excellence in reporting and transmission of scientific accomplishments and information, promoting the innovation in theory and practice, and contribute to the transfer of scientific accomplishments to productivity and development of oil and gas pipeline industry in its unique way.

## KCDN<sup>®</sup>四川精控阀门制造有限公司

国家能源局和中石油批准的旋塞阀国产化承担者 第一家通过国家级鉴定的旋塞阀制造商 唯一一家已通过中石油工业性试验的旋塞阀供应商 已在中石化和中石油油气管线上批量使用的旋塞阀制造商



### 专注于油气管线阀门的研发和制造

ISO9001,ISO14001,OHSAS18001,APIQ1,API6D,CE/PED,API607/6FA,ATEX,TS认证企业

网站: www. kconvalve. com 电话: 0838-6839920

邮箱: sales@kconvalve.com 传真: 0838-6839880