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太阳能与热泵技术在原油加热系统的应用
管道气象与地质灾害预警技术及其应用



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241 油气管道机械损伤的完整性研究进展

赵忠刚, 张卿蕊, 冯斌, 等

PCFStat 模型屈服强度和极限抗拉强度参数的正态分布以及长度的对数正态分布均基于经验估计进行假设, 其置信程度有待更多数据支持

254 含蜡原油触变性测试方法

贾邦龙, 张劲军

利用较高剪切率测试方法的实验数据拟合的触变参数, 对较低剪切率加载条件下的应力进行预测时, 结构参数不会出现负值, 亦不会出现预测失败的情况

/ 实验研究 /

246 LNG分层翻滚事故可预测性与盐水模拟实验

王海蓉, 梁栋

通过盐水模拟实验测定分层翻滚临界条件, 并利用事故的温度时间序列样本确定事故的可预测性和最大可预测时间

250 稠油-水两相流乳化条件的实验模拟

田茂昌, 敬加强, 万捷, 等

在同一温度和搅拌条件下, 特稠油完全乳化所需的搅拌时间比普通稠油长得多, 说明特稠油较普通稠油不易乳化

260 一种新的胶凝原油管流启动屈服应力测算方法

肖文涛, 张国忠, 兰浩, 等

将恒定的启动温度和启动流量下, 测量管长无限短时对应的管壁处凝油的最大剪应力定义为胶凝原油的启动屈服应力

263 油库罐区危险化学品的泄漏扩散实验

周宁, 潘东, 冷明, 等

当罐组中心的罐发生泄漏时, 气体容易在罐区聚集, 扩散速度较慢, 而当罐组边缘的罐发生泄漏时, 气体的扩散速度较快, 影响范围大



OVERVIEW / EXPERIMENT & RESEARCH

/OVERVIEW/

241 Progress in the integrity research of mechanical damage of oil and gas pipelines

Zhao Zhonggang, Zhang Qingrui, Feng Bin, et al

Normal distribution of PCFStat model's yield strength and ultimate tensile strength parameters and logarithmic normal distribution of length are all assumed based on empirical estimation, of which confidence needs to be supported by more data.

/EXPERIMENT & RESEARCH/

246 Predictability of LNG stratification rollover and salt water modeling experiment

Wang Hairong and Liang Dong

Stratification rollover critical condition is determined by the salt water modeling experiment, and the predictability and maximum predictable time of rollover are determined by the temperature time series sample of the rollover.

250 Experimental simulation of emulsification condition of heavy oil/water two-phase flow

Tian Maochang, Jing Jiaqiang, Wan Jie, et al

Under the same temperature and mixing condition, the mixing time required for complete emulsification of extra heavy oil is far more than that of common heavy

oil, which indicates that the extra heavy oil is not easily emulsified compared with common heavy oil.

254 Thixotropy test method of waxy crude oil

Jia Banglong and Zhang Jinjun

When the thixotropy parameters from fitting of test data obtained by the use of test method with the higher shear rate is used to predict stress under the loading condition with the lower shear rate, the structural parameters will not be negative or prediction failure will not occur.

260 A new calculation method of start-up yield stress for gelled crude oil pipe flow

Xiao Wentao, Zhang Guozhong, Lan Hao, et al

Under the constant start-up temperature and flowrate, the maximum shear stress of gelled oil at the corresponding position of pipe wall where the measuring pipe is unlimitedly short is defined as the start-up yield stress of gelled crude oil.

263 Leakage and diffusion experiment of hazardous materials in oil tankfarm

Zhou Ning, Pan Dong, Leng Ming, et al

When the tank in the center of tank group suffers from leakage, the gas is easily accumulated in the tankfarm and the diffusion rate is lower; when the tank at the edge of tank group suffers from leakage, the gas diffusion rate is higher with a large influence area.



输送工艺 / 设计计算 / 防腐保温

/ 输送工艺 /

267 涩宁兰输气管道水合物事故及其预防

李大全, 艾慕阳, 王玉彬, 等

采用测量天然气含水量预测水合物的生成条件, 并对管道运行参数进行监控, 可以防止输气管道中生成水合物

279 海上漂浮输油软管拉伸与弯曲力学特性

徐慧, 张彩莹, 罗延生, 等

在弯矩载荷作用下, 管道受拉侧与受压侧各层应力分布比率不同: 在受拉侧, 帘线—橡胶复合材料承担载荷较多, 在受压侧, 螺旋钢筋承压较多

/ 设计计算 /

270 基于贝叶斯网络的城市燃气管道安全失效概率

郝永梅, 邢志祥, 沈明, 等

利用 BN 软件对造成燃气管道失效的自然因素和腐蚀因素分别进行单因素和双因素修正, 可提高修正后的管道贝叶斯网络模型的实用性

274 埋地管道应力分析方法

刘仕鳌, 蒲红宇, 刘书文, 等

模型建立后, 分别对管道在操作荷载、持续荷载、热膨胀荷载下进行应力分析, 运用 ASME B31.8 进行校正

/ 防腐保温 /

283 能源公共走廊内管道交流干扰腐蚀判断准则

郝宏娜, 李自力, 衣华磊, 等

对于交流干扰腐蚀现象以及有效判别、减缓、控制交流干扰腐蚀的方法等方面仍存在很大的认知空白, 需要开展深入研究, 使相关标准具有理论依据



TRANSPORTATION PROCESS / DESIGN & CALCULATION / CORROSION CONTROL & INSULATION

/TRANSPORTATION PROCESS/

267 Hydrate accident and prevention in Sebei-Xining-Lanzhou Gas Pipeline

Li Daquan, Ai Muyang, Wang Yubin, et al

Measuring the water cut of gas to predict the formation conditions of hydrate and monitoring pipeline operating parameters can prevent hydrate formation in the gas pipeline.

/DESIGN & CALCULATION/

270 Calculate the failure probability of urban gas pipeline based on Bayesian network model

Hao Yongmei, Xing Zhixiang, Shen Ming, et al

BN software is respectively used to make single-factor and two-factor correction on the natural factor and corrosion factor that cause gas pipeline failure, which can improve the practical applicability of amended Bayesian network model for pipeline.

274 Stress analysis method of buried pipeline

Liu Shi'ao, Pu Hongyu, Liu Shuwen, et al

After the establishment of model, the stress analysis for pipeline at operation load, continuous load and thermal expansion load is carried out, respectively, and then the correction is made with ASME B31.8.

279 Analysis of tensile and bending mechanical properties of offshore floating oil hose

Xu Hui, Zhang Caiying, Luo Yansheng, et al

Under bending moment loads, stress distribution ratios of layers on the tension side and compression side of hose are different, and on the tension side, the cord thread-rubber composites bear more loads, and on the compression side, spiral reinforcements bear more pressures.

/CORROSION CONTROL & INSULATION/

283 Criterion for pipeline AC interference corrosion in the public energy corridor

Hao Hongna, Li Zili, Yi Hualei, et al

There are still many cognitive gaps in the knowledge of AC interference corrosion, including effective methods in identifying, mitigating and controlling the AC interference corrosion, for which in-depth research should be carried out to make relevant standards a theoretical basis.



经验交流 / 节能环保 / 工程经济

/ 经验交流 /

289 太阳能与热泵技术在原油加热系统的应用

裴峻峰, 陈广敏

与传统的燃油、燃气供热系统相比, 利用太阳能和高温热泵联合供热系统为油田集输原油加热, 经济效益显著

292 天然气长输管道冰堵的防治与应急处理

吴锡合, 张德庆, 张争伟

在形成水合物的输气管段, 利用特设支管暂时将部分天然气放空, 以降低输气管道的压力和温度

/ 节能环保 /

294 基于云模型的节能项目综合评价方法

张旭东, 蒋方美, 刘桂范

根据正态云发生器算法中的步骤2, 参考统计学知识, 99.7%的云滴都将落在 $(E_x - 3E_n, E_x + 3E_n)$ 范围内。

297 油田加热炉节能运行的综合评价系统开发

刘扬, 成庆林, 李秀娟

各评价指标对加热炉运行的影响程度不同, 其重要程度排序依次为: 排烟温度、炉体外表面温度、空气系数、热效率

301 水力马力能耗指标在管道能耗分析中的应用

左丽丽, 刘冰, 吴长春, 等

对于输气管道, 可以通过改变平均输气压力改变管段消耗的能量; 对于热油管道, 可以通过改变出站温度或者清蜡等手段改变管段消耗的能量

/ 工程经济 /

304 管道建设中的资金优化

蒲红宇, 刘书文

当在管道初始设计时考虑管道建设完成后的操作运营费用时, 会使管道建设的总投资更为节省。



EXPERIENCE EXCHANGE / ENERGY SAVING & ENVIRONMENT PROTECTION / ENGINEERING ECONOMY

/EXPERIENCE EXCHANGE/

289 Application of solar energy and heat pump technology in oil heating system

Pei Junfeng, Chen Guangmin

Compared with the traditional oil or gas-fired heating systems, solar energy and high-temperature heat pump joint heating systems used to heat the crude oil of gathering system in oilfield can produce significant economic benefits.

292 Ice plug control and emergency treatment for long-distance gas pipeline

Wu Xihe, Zhang Deqing, Zhang Zhengwei

In the gas pipe section with hydrate, specified branch pipe are used to temporarily vent some natural gas to reduce the pressure and temperature of the gas pipeline.

/ENERGY SAVING & ENVIRONMENT PROTECTION/

294 Comprehensive evaluation method of energy saving project based on cloud model

Zhang Xudong, Jiang Fangmei, Liu Guifan

According to the Step 2 in the normal cloud generator algorithm and with reference to statistics knowledge, 99.7% of the cloud droplets will fall in the range of $(E_x - 3E_n, E_x + 3E_n)$.

297 Development of a comprehensive evaluation system for energy-saving operation of oilfield heaters

Liu Yang, Cheng Qinglin, Li Xiujuan

Different evaluation indicators have different influences on the energy saving rate of heater, and the priority sequence of which is exhaust gas temperature, outside surface temperature of heater, air coefficient and thermal efficiency.

301 Application of energy consumption indicators based on hydraulic horsepower in the analysis of energy consumption of oil and gas pipeline

Zuo Lili, Liu Bing, Wu Changchun, et al

For gas pipeline, the energy consumed by pipe sections can be changed by changing the average gas transmission pressure; for hot oil pipeline, that can be changed by changing the outlet temperature or wax pigging.

/ENGINEERING ECONOMY/

304 Capital optimization in the construction of pipeline

Pu Hongyu, Liu Shuwen

Putting the later-stage running costs into the initial design of pipeline can save the overall investments in the construction and operation of pipeline.



安全消防 / 问题讨论 / 实践天地

/ 安全消防 /

307 管道气象与地质灾害预警技术及其应用

付立武, 贾韶辉, 郭磊

2011年进入汛期后,气象与地质灾害预警平台总计接收气象灾害信息11 264条,地质灾害信息793条,共发出19 173次气象和灾害预警信息

/ 问题讨论 /

310 用定积分方法求解倾斜偏转卧式储油罐容积

赵小伟, 徐刚, 刘冀

实际储油罐变位后其球冠封头内的含油体积,在直角坐标系下积分比较复杂,为使计算简便,可对球缺形封头内的贮油体积进行近似计算

/ 实践天地 /

314 输气站场自控系统夜间无人值守功能的实现

赵廉斌, 田家兴, 王海峰, 等

阀门的开关动作不能超过阀门设置的最大、最小开度值,防止开度过大造成气流击穿流量计或开度过小增大计量误差

318 长输天然气管道冬季冻堵防治实例

丁乙, 刘骁

对确定的冻堵节流点,采用缠绕3根100 m长50 kW电伴热带的方法加热管壁,并进行外部保温,溶解管壁冰层



SAFETY & FIRE CONTROL / QUESTION & DISCUSSION / APPLICATION REPORT

/SAFETY & FIRE CONTROL/

307 Meteorological and geological disaster warning technology and its application in pipelines

Fu Liwu, Jia Shaohui, Guo Lei

In the flood season in 2011, the meteorological and geological disaster warning platform received a total of 11,264 meteorological disaster messages and 793 geological disaster messages, and sent a total of 19,173 meteorological and geological disaster warning messages.

/QUESTION & DISCUSSION/

310 Definite integral to solve the volume of tilted and deflected horizontal tank

Zhao Xiaowei, Xu Gang, Liu Ji

After the actual displacement, the integral of oil volume in the spherical head is relatively complicated under rectangular coordinate system. Therefore, the approximate algorithm can be applied for the calculation convenience.

/APPLICATION REPORT/

314 Application of unattended station functions at night in West-to-East Gas Pipeline

Zhao Lianbin, Tian Jiaxing, Wang Haifeng, et al

Opening or closing of valves cannot be made beyond their maximum and minimum limits designed to avoid either penetrating flowmeter by gas flow with over-limit opening or increasing measuring error with under-limit opening.

318 Capital optimization in the construction of pipeline

Ding Yi and Liu Xiao

For the conformed throttling points of ice blockage, 3 electric heating belts with 100 m-long/50 kW in winded form was used to heat the pipe wall, and meanwhile external insulation was made to melt the ice layer of pipe wall.