



GAS CYLINDER IN CARS FUEL CASTING IN THE PROCESS SECURITY PROVIDE FOR INTELLIGENT MONITORING SYSTEM WORKING EXIT

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Abstract: *This in the article gas cylinder cars car gas filling compressor in their branches exploitation to do and fuel casting in the process to the surface arrival possible was fire the risk in advance determination issue research In vehicles with gas cylinders compressed natural of gas high pressure under storage , fuel casting on time pressure and temperature of parameters variability , technological connection elements hermeticity high demand and human factor noticeable impact this the process high dangerous technological to the stage The work purpose In AGNKS gas cylinder to cars fuel casting in the process fire the risk early detection , danger level assessment and the operator in advance warning providing radar sensors and artificial intellect based on intelligent monitoring system scientific and technical the basics working from the exit consists of . Research in the process danger factors systematized , controlled for priority parameters selected and radar observation and artificial intellect algorithms to integrate based functional model proposal was made . Proposal done system in the AGNKS area of the car location , dangerous to the zone convergence , unconventional movement , connection in the process disorders and probable before the accident real -time status updates in mode to determine service does . Research results gas cylinder cars safe exploitation to do , AGNKS technological processes reliability increase and fire the risk reduce*

according to scientific and practical recommendations working exit for basis creates.

Key words: *gas cylinder car , AGNKS, compressed natural gas , fire danger , radar sensor, artificial intelligence , monitoring system , security , diagnostics , exploitation.*

Introduction

Current vehicles at the time ecological in terms of optimization , energy from resources reasonable use and exploitative expenses reduce issues important scientific and practical from directions one This view is from the point of view compressed natural from gas used gas cylinder of cars application scope increasing [1], [2] .

However gas cylinder cars exploitation to do process , especially car gas filling compressor in their branches fuel casting stage , high danger with This is explained by the compressed of gas high pressure under storage , fuel casting on time pressure and temperature of parameters dynamic change , gas supply elements hermeticity high demand and human factor noticeable [3], [4].

In AGNKS gas cylinder to cars fuel casting during dangerous situations different in appearance manifestation to be possible. In particular, the car wrong location , connection device hose malfunction wrong connection , dangerous to the distance unauthorized entrance , gas leak output possibility , technological of the regime violation and operator errors these [5]. In practice traditional control tools often dangerous situation to the surface since it arrived then gives a signal. Modern exploitation under the circumstances and the danger in advance detection, pre-accident situations assessment and early warning priority task is [6].

This attitude with radar sensors, sensor technologies and artificial intellect algorithms based intelligent monitoring systems working exit current importance profession Such systems dangerous in the area objects movement without contacts observation , situation parameters continuous assessment , anomalies recognizing to take and to the operator fast warning transmission opportunity gives [7], [8].

This of the article purpose gas cylinder cars In AGNKS exploitation to do and fuel casting in the process fire the risk in advance determination for radar sensors and artificial intellect based on intelligent monitoring system structural-functional model working from the exit consists of .

Gas cylinder cars In AGNKS exploitation to do danger factors analysis

Gas cylinder cars In AGNKS exploitation to do process one how many from stages consists of : car station to the territory input , fuel casting to the place location , connection of deeds execution , fuel pouring , connection disconnect and from the area exit . This stages every in one of danger appearance to be sources there is .

First in stages of the car wrong trajectory according to movement , dispenser very close or wrong corner under location , other vehicles or to employees dangerous at the level approach probability is observed . The second in stages connect device wrong connection , mechanical damaged hose or from fittings use , connection in place gap appearance to be possible . Directly fuel casting during and pressure out of the norm increase , malfunction fittings , connection at the point hermeticity violation or emergency action danger level increases [3], [5].

Danger factors to the content according to technical , operational , external and human to the factor related to groups Technical to factors cylinder , valves , reducer , hose , coupling device , dispenser and compressor equipment status includes . Operational factors in a row of the car location , fuel casting order , operator practical movements and traffic flow organization to be External factors meteorological conditions , view limited lighting level and stranger objects movement with related . Human to the factor and employees qualification , discipline and security to the rules compliance to be able enters .

So , in AGNKS dangerous situation often one reason as a result not , maybe one how many of factors one at the time to the surface arrival as a result Therefore , the monitoring system many factorial information again work to the feature has to be need .

Radar sensors monitoring based on opportunities

Radar sensors dangerous in facilities contactless observation take to go opportunity with separated They are illumination level decreased , dust or complicated meteorological relatively even under the circumstances stable performance with is significant [7]. In the context of AGNCS radar observation following tasks to do possible : of the car fuel casting to the post relatively location detection ; dangerous to the zone input-output record speed of movement of an object and direction assessment ; unauthorized convergence or suddenly the movement determine ; stop of the situation stability control to do

This information fire danger with directly related was one row situations early determination opportunity For example , a car to the dispenser relatively normative in case not settled if , connect in the process mechanic tension appearance to be and connection point hermeticity violation probability increases . Just like also fuel casting during of the car shift or stranger of the object dangerous to the area entrance before the accident situation as evaluation possible .

Radar sensors using taken parameters on its own final conclusion They don't give them . the situation analysis doer intellectual module with tie necessary . Then the monitoring system simple observation from the tool smart diagnostic to the complex turns .

Artificial intellect based on the danger assessment algorithm

Artificial intellect from technologies use Monitoring system in AGNKS functional opportunities noticeable expands . Simple regular control methods only in advance designated borderline conditions It will give a signal when it is done . Artificial intellect and many parametric information together analysis to do , complicated situations classification and hidden laws determination opportunity gives [8].

Offer being done to the approach according to the monitoring system artificial The intelligence module is as follows: in sequence works : from sensors coming raw information collection and synchronization ; signals initial processing to give and noises reduce ; important the signs separate take ; condition vector shaping ;

classifying situations into “normal”, “ requiring caution ” and “ dangerous ” situations to the separation ; operator warning transmission .

Danger indicator conditional accordingly following expression with description possible :

$$R = f(L, V, T, S, H, P)$$

this on the ground **L** — object dangerous to the zone was distance , **V** — speed of movement , **T** — position duration , **S** — connection process stability symbol , **H** — historical danger cases with similarity level , **P** — technological process parameters .

This expression theoretical to the character has is , in practice it is clear algorithm and with a trained model is filled . So , artificial intelligence module radar sensors through taken information semantic in terms of interpretation does and real time in mode decision acceptance to do opportunity creates .

Intelligent monitoring system structural-functional model

Offer being done system following main from blocks organization finds .

First block — **sensors block** . This block radar sensors , additional accordingly video surveillance modules and technological signals own inside takes .

Second block — **data collection and transmission block** . It is one of the sensors incoming signals central calculation to the module transmits .

Third block — **initial again work block** . In it filtering , synchronization , coordinates adaptation and features separate to take deeds is done .

Fourth block — **artificial intelligence module** . This module situation classifies , danger indicator counts and forecast the result shapes .

Fifth block — **warning and management block** . It is connected to the operator panel visual and transmits a sound signal and necessary in case emergency protection system with integrates .

Sixth block — **data base** . This block situations history saves the model again teaching and next analyses for information sums up .

This of the system important aspect is that it is only there is situation record not enough , maybe danger development probable It also evaluates the direction . This is fire the risk passive from observation active prevent to take to the stage transition opportunity gives .

Conclusion

Gas cylinder cars In AGNKS exploitation to do and to them fuel casting process high pressurized gas with performance , technological of parameters dynamic change and human factor noticeable impact because of high dangerous process is considered . This in process fire the risk traditional control tools using only happened since it was then record to grow enough it's not .

In the article, under the conditions of AGNKS dangerous situations early determination for radar sensors and artificial intellect based on intelligent monitoring system working exit necessity based on given . Danger factors classified , control of parameters composition formed and sensor data smart again to work based structural-functional model proposal was done .

Offer done solution gas cylinder cars exploitation to do safety increase , in AGNKS before the accident situations in advance determination and fire the risk reduce according to promising scientific and practical direction as will be evaluated . In the future this the system experiment under the circumstances verification , algorithm with real data based on teaching and efficiency criteria numerically assessment to the goal is appropriate .

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