

ApplyIT White Paper



Building a Business Case  
for  
IntelliPERMIT™

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## Business context

There is a high price to pay for unsafe operations and a company's safety performance can have as much impact on sustainability as their financial performance.

Today's business environment demands that mining and manufacturing companies are accountable to shareholders, customers, employees and communities for ensuring sustainable and responsible operations. Highly publicised accidents and fatality rates, and the response from the relevant publics, have shown that there is a high price to pay for unsafe operations and a company's safety performance can have as much impact on sustainability as their financial performance.

Most mining and manufacturing companies embrace a commitment to sustainable operation and share a fundamental belief that accidents can be prevented. They recognise that organisational culture plays a significant role in ensuring that safety becomes the responsibility of all personnel working in hazardous environments.

Responsible companies are accountable to a number of stakeholders to report on their sustainability. For example the Global Reporting Initiative (GRI) sets sustainability reporting guidelines and provides a widely accepted set of indicators relating to the elements of sustainable development. The indicators are classed into vision/strategy, profile, governance structures and management systems, economic performance indicators, environmental performance indicators and social performance indicators. While not every company will compile a sustainability report, the principles nevertheless apply to organisations of all sizes.

*The business drivers related to a responsible EHS strategy include inter-alia reputation, human capital retention, differentiated products, your position as a preferred supplier, increased access to capital, reduction of risk and operational efficiency.*

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An increasing number of companies are recognising the important role that technology can play in creating the right disciplines around safe operations

While many organisations have established risk management systems that include documented procedures, training programs, regular auditing and corrective actions, these systems are often reactive at best and have limited capacity to prevent accidents and influence people's behaviour in an effective and sustainable way.

An increasing number of companies are recognising the important role that technology can play in creating the right disciplines around safe operations. These companies are realising significant benefits from investing in Operational Safety Management systems, such as IntelliPERMIT™, that have the power to proactively improve safety in hazardous environments.

This white paper provides an introduction to IntelliPERMIT™, examines the business benefits associated with acquisition and implementation of the software and provides guidelines for building a sound business case or Return-on-Investment (ROI) model to demonstrate these benefits.

IntelliPERMIT™ focuses on enhancing the safety of operations by improving the integrity of and management control over the Permit to Work process.

## Introduction to IntelliPERMIT™

In hazardous operating environments, a company's Permit to Work system is a pivotal system in which production, maintenance, contractor management and HSE issues coincide. Failures or inefficiencies in this system often have severe consequences, including:

- Injuries or fatalities
- Damage to plant and equipment
- Loss of production time
- Increased maintenance costs
- Negative impacts on morale and productivity
- Poor publicity

Ultimately these factors negatively impact on the companies' licence to operate and can lead to loss of shareholder value.

ApplyIT's IntelliPERMIT™ focuses on enhancing the safety of operations by improving the integrity of and management control over the Permit to Work process. It caters for all the formal procedures and rules surrounding hazardous materials, safety equipment, isolations and protective equipment ensuring that safety regulations required by legislation, corporate policy, risk assessments and specific plant requirements are adhered to.

In addition IntelliPERMIT™ streamlines the process of preparing, authorising, accepting and signing off permits and tracks the work performed by both employees and contractors ensuring that all work is authorised and carried out by trained and competent personnel.

IntelliPERMIT™ focuses on the critical point in any risk management system – when people actually enter hazardous environments to perform their jobs, as this is when accidents are most likely to occur. The system aims to turn an organisation's safety procedures into active controls on the preparation, authorisation and execution of hazardous tasks.

IntelliPERMIT™ provides a range of tangible and intangible benefits in the areas of risk reduction, operations management, contractor management, compliance & governance

## IntelliPERMIT™ Benefits

When considering investments in the area of health, safety & environment (HSE), companies need to assess their impact in terms of the business drivers and returns.

Some of these returns are readily quantified and can be translated into financial terms (**tangible benefits**), while others such as reputation and staff morale, while being equally or even more important in some cases are perhaps more difficult to quantify (**intangible benefits**).

The purpose of this document is to highlight the benefits offered by IntelliPERMIT™ and then go on to provide guidelines on building a sound business case for IntelliPERMIT™ in your company.

The following sections highlight the benefits that IntelliPERMIT™ offers companies in four main areas:

1. Risk Reduction
2. Operations Management
3. Third Party (Contractor) Management
4. Compliance and Governance

## ***Risk Reduction Benefits***

As discussed already, IntelliPERMIT™ provides substantial benefits by reducing the risk of incidents / accidents in hazardous environments. These benefits are essentially derived from its ability to provide complete visibility and control over work performed in these environments, thereby improving operational safety and reducing the likelihood of accidents.

Traditional Permit to Work systems often suffer from the following deficiencies:

- Incomplete, illegible permits certificates
- Inadequate control over authorisation process
- Hazards not correctly identified
- Inadequate communication between permit issuers and acceptors
  - The integrity of paper permits can be compromised - copies can be altered or go missing
  - Lack of audit trails and traceability

IntelliPERMIT™ addresses these deficiencies and improves the management of operational risks by:

- Prompting and encouraging permit issuers to consider the hazards and safety requirements of each individual task
  - Providing controls to proactively enforce safety procedures
  - Ensuring that workers are fully informed of hazards before commencing work
    - Reducing the margin for human error
    - Ensuring that equipment is correctly isolated and locked-out
    - Ensuring that all permits are authorized and issued in compliance with designated levels of authority
      - IntelliPERMIT™ is self-auditing and provides complete visibility and traceability of the permit process

In terms of risk management, IntelliPERMIT™ can provide the following benefits:

### ***Intangible benefits***

- Increased awareness of safety matters
- Safeguard company reputation
- Improved labour relations
- Boost employee morale

### ***Tangible benefits***

- Reduced number of incidents and near-misses
- Reduced cost of incidents
- Improved employee productivity
- Reduce staff turnover
- Improve staff retention - reduce cost of recruiting and retraining staff
- Increased shareholder value

IntelliPERMIT™ addresses the deficiencies in traditional permit to work systems

In terms of Risk Management the benefits of IntelliPERMIT™ are essentially derived from its ability to provide complete visibility and control over work performed in hazardous environments, thereby improving operational safety and reducing the likelihood of accidents

IntelliPERMIT™ provides a range of features to improve day-to-day management of the Permit process

IntelliPERMIT™ was designed to:

- streamline the permit process
- enhance management control over hazardous tasks
- provide visibility of work on the plant
- promote safe, efficient operations

## **Operations Management Benefits**

Despite the many sound principles underlying traditional permit systems, in many companies this crucial link in the safety chain is seen as no more than unnecessary paperwork. Rather than enhancing communication between production and maintenance staff regarding critical safety issues, it is an area where the objectives of different departments often come into conflict.

In response to the many problems encountered in managing Permits to Work, IntelliPERMIT™ was designed to streamline the permit process, enhance management control over hazardous tasks, provide visibility of work on the plant and promote safe, efficient operations.

IntelliPERMIT™ provides a range of features to improve day-to-day management of the Permit process:

- Operations personnel receive constant coaching/ reminders about safety procedures thus reducing training requirements
- Production managers have complete visibility of work in progress on site and can be made aware of non-conformances in real-time
- The time taken to fill out permits can be reduced by only prompting users with information/questions relevant to the task/hazards in question
- Template permits can be defined to streamline routine maintenance tasks
- Integration with a Computerised Maintenance Management System ensures that information regarding the equipment and task to be performed is correctly recorded on the permit
- The system allows for tracking of locking devices used in the field

In terms of operations management, IntelliPERMIT™ can provide the following benefits:

### **Intangible benefits**

- Enhanced control and visibility of plant processes
- Improved communication between maintenance staff, operations personnel and contractors
- Reduced requirements for classroom safety training

### **Tangible benefits**

- Improved production efficiency
- Improved efficiency in issuing permits
- Increased productivity (employees and contractors)
- Reduced downtime
- Reduced training costs

### **Third Party (Contractor) Management Benefits**

Third party contractors are a feature of most large manufacturing sites. Larger sites often mean more contractors with higher associated costs and increased importance of managing contractors.

However managing contractor processes can be a complex task. Contract negotiations are typically undertaken by the buying department, site access by security, training and induction by the safety department, supervision of work by maintenance and operations and final payment by creditors. These complex relationships often introduce a significant margin for error which can translate into substantial costs to the company.

Below is an outline of typical problems encountered in managing large contractor populations and how these can be addressed using IntelliPERMIT™:

Contractor Management Problems/Challenges	IntelliPERMIT™ Solution
Contractors working without appropriate competences to perform work in a particular area or of a specified nature	When a permit is issued using IntelliPERMIT, competencies of the contractor are checked before the permit is issued to them.
Poor control over expiry of contractor inductions and training	IntelliPERMIT™ provides an early warning system notifying the contractor and the company if the individual requires re-training or their certification is due to expire.
Time spent on contractor training and inductions	Reduces unnecessary training time through more efficient scheduling.
Difficulty determining what tasks contractors have been engaged in while on site - can result in incorrect billing and inefficient use of resources	IntelliPERMIT™ provides information on where contractors were working and for what period of time. This information can be cross-referenced to contractor timesheets to expose duplication and errors. Time spent on site can be compared with productive time spent on the task itself.
Control of contractor work teams is often difficult with highly qualified resources being substituted with cheaper resources once on site.	With IntelliPERMIT™, a permit is issued to a contractor or team for a specific job and the system can control the composition of that team. The system can also be setup to require contractors to sign off from one permit before they can work on another, reducing the likelihood of double billing for time on site.
Contractors may leave site without signing off outstanding permits. This compromises safety as there is no way of knowing who is still working on the plant. The problem is compounded when the task involves isolations that may not be removed without the permit being signed off.	Integration of IntelliPERMIT™ with the site access control system can actively prevent persons from leaving site without having signed off their permits.

Companies need to have contractor management systems in place that ensure that contracted work takes place safely as well as ensuring the necessary financial and other controls associated with the outsourced services

IntelliPERMIT™ addresses a number of common problems including:

- Managing contractor training/induction
- Ensuring only competent contractors perform work on site
- Track work performed by contractors
- Ensure accurate billing

In terms of legislation, the employer is responsible for the safety of each and every contractor working in hazardous conditions on its premises

In addition to the problems outlined above, in terms of legislation, the employer is responsible for the safety of each and every contractor working in hazardous conditions on its premises. Due to the non routine nature of the work undertaken by contractors, and the fact that these individuals are usually the least informed or trained about the hazards in a particular process, companies need to have contractor management systems in place that ensure that contracted work takes place safely as well as ensuring the necessary financial and other controls associated with the outsourced services.

In terms of contractor management, IntelliPERMIT™ can provide the following benefits:

***Intangible benefits***

- Improved visibility and control of contractor activities
- Improved contractor safety
- Improved communication between contractors and internal maintenance/operations personnel

***Tangible benefits***

- Ensure fulfilment of legal health and safety obligations towards contractors
- Ensure competence of contractors working on site
- Reduced contractor costs
  - prevent double billing
  - identify inefficient use of contracted resources
  - reduced waiting time for permits...etc
- Reduced cost of incidents involving contractors
- Improved management of contractor training, induction and medicals
- Reduced training costs

## **Compliance and Governance Benefits**

Under South African legislation, the key requirements relating to the Permit to Work system are contained in the Occupational Health and Safety (OHS) Act of 1992:

The following extracts from the OHS Act highlight the duty of the employer with regards to Permit to Work:

### **Section 13**

*“as far as is reasonably practicable, cause every employee to be made conversant with the hazards to his health and safety attached to any work which he has to perform, any article or substance...and any plant or machinery which he is required or permitted to use, as well as with the precautionary measures which should be taken and observed with respect to those hazards”*

### **Section 8**

*“ensuring that work is performed and that plant or machinery is used under the general supervision of a person trained to understand the hazards associated with it and who have the authority to ensure that precautionary measures taken by the employer are implemented”*

IntelliPERMIT™ features a unique, patented Rules Engine that ensures hazards are correctly recorded on all Permits to Work and that the appropriate precautions are taken with respect to these hazards. Furthermore, IntelliPERMIT™ prevents unauthorised persons from signing permits ensuring work is authorised and undertaken by trained and qualified personnel.

In this way, IntelliPERMIT™ assists companies to meet their obligations under the OHS Act and ensures that essential safety information is communicated to employees and contractors before work is undertaken in hazardous environments.

In terms of legal compliance, IntelliPERMIT™ can provide the following benefits:

### **Intangible benefits**

- Ensure compliance to Occupational Health & Safety legislation
- Fulfil legal obligations towards employees and contractors
- Protect company against litigation
- Improved reputation

### **Tangible benefits**

- Reduced legal costs
- Reduced compensation costs

IntelliPERMIT™ assists companies to meet their obligations under the OHS Act

IntelliPERMIT™ features a unique, patented Rules Engine that ensures hazards are correctly recorded on all Permits to Work and that the appropriate precautions are taken with respect to these hazards

## **Optional Features and associated benefits**

Further benefits can be realised through the use of a number of additional features as well as through integration of IntelliPERMIT™ with existing plant/business systems. Optional features and possible integration points are outlined below together with possible benefits.

IntelliPERMIT™ includes optional Biometric functionality that allows the secure signing of permits using fingerprint scanners as a means of identification.

### **Biometric Identification**

IntelliPERMIT™ includes optional Biometric functionality that allows the secure signing of permits using fingerprint scanners as a means of identification. This can offer the following benefits:

- A completely secure method of signing permits
- Streamlines the process of authorising and issuing permits

### **Integration to Computerised Maintenance Management System**

IntelliPERMIT™ features complete integration with Computerised Maintenance Management Systems such as SAP Plant Maintenance. This allows the relevant details of maintenance tasks (such as notification number, job description and functional location) to be transferred directly onto the permit, offering the following benefits:

- Streamlines the filling out of permits
- Ensures task information is accurately recorded on the permit
- Enhances communication between maintenance and operations

IntelliPERMIT™ features complete integration with Computerised Maintenance Management Systems such as SAP Plant Maintenance.

### **Integration to Access Control System**

IntelliPERMIT™ can also be integrated with site access control to achieve the following benefits:

- Prevent people from entering high risk areas (e.g. substations) without a valid permits
- Prevent people from leaving site without signing off permits
- Use of existing access cards to sign permits as an alternative to biometric identification
- Use of the access control user database to maintain lists of employees and contractors in IntelliPERMIT™

IntelliPERMIT™ can also be integrated with site access control

### **Integration to Human Resources System**

IntelliPERMIT™ can also be integrated with an existing human resources system to achieve the following benefits:

- Maintain employee master records
- Synchronise training records
- Warn users training that is about to expire

### **Integration to Mobile Devices**

By making use of mobile barcode scanners and bar-coded functional locations, IntelliPERMIT™ can ensure that those responsible for inspecting the work site or performing physical isolations have physically been to the site and that positive identification of the item has occurred.

Understand your specific requirements and create benefit expectations that are in line with your project goals and resources

## Return on Investment – Building your Business Case for IntelliPERMIT™

Armed with a good understanding of the range of benefits associated with IntelliPERMIT™, you can now begin compiling a business case for your company.

Each company will have a different set of KPI's pertaining to HSE performance. In addition, each company will have different emphasis on the relative importance of financial and other KPI's. These weightings need to be taken into account and the measures important for your business need to be prioritised.

To align the benefits with the proposed solution, it is useful to refer to your company's HSE reporting to identify which KPI's and benefits are measured.

In stating the benefit, it is important to understand the present situation and identify those particular problems that will be solved when implementing the solution.

The table below is an example of how a company may begin to identify relevant KPI's; and link these to benefits from implementing the IntelliPERMIT™ system. When compiling this table, some of the benefits will need to be substantiated through reference to historical statistics, audit reports etc.

Note that the tangible benefits can be readily translated into project justification metrics in the form required by your company.

Below are some basic guidelines to follow when compiling your business case:

- Have a list of the HSE and other relevant key performance indicators in your business
  - Understand the status of your current operations and any specific deficiencies in the Permit to Work system
  - Identify your specific areas of priority – this is usually stated in your company's HSE reports or annual reports
    - Be aware of the many benefits that have been achieved by other companies – arrange site visits.
    - Identify the tangible and intangible benefits that you would like to achieve in your key areas.
    - Link the benefits to your own KPI's.
    - Create benefit expectations that are in line with your project goals and resources - Estimate higher returns on those issues that are of highest priority and will be a focus of the implementation. Estimate conservative returns on those that are of least importance and will not have as many resources devoted to them
      - Remember that some of the benefits represent a one-time savings, while others represent a continual stream of benefits that are extended over the life of the software
      - Extend the analysis over five or more years to accurately reflect the lifetime of the software.

**Examples of Tangible Benefits:**

Key Performance Indicator	Company Target	Current problems experienced	IntelliPERMIT™ benefit	Potential benefit directly attributed to IntelliPERMIT™
Recordable Case Rate (RCR)	RCR must be reduced to 0.4 before March 2008	Current PTW paper processes severely flawed as revealed by Audit team	Improved integrity of PTW – fewer errors Ensures competent persons do work Ensure employees informed of hazards – raised awareness	Reduction of 0.1 Based on historic costs per recordable case this equates to a savings of R549,000 per annum
EHS Audit Scores	Achieve 90%	Presently 75%. 8% of the non-conformances are attributed to defects in PTW system	Improved management and control of permits ensures 100% audit compliance	Improve from 75% to 83%
Production Downtime	Online time should be increased from 8000 to 8500 hrs/annum	Currently constrained by severe bottlenecks around contractor permit issues during shutdowns. Average wait time for permit currently 90 minutes.	Reduced shutdown time – more efficient permit issue process Reduced unplanned shutdowns – fewer incidents Improved communication between operations and maintenance during shutdowns	Increase OLT by 3% = 240hrs per annum. This accounts for increased production contribution of R850,000 per annum
Improved Maintenance Productivity	Wait time for permits to be reduced to 15 minutes	Present wait times for maintenance staff is 45-90 minutes depending on the presence of contractors.	Reduced wait time to 15 minutes represents a savings of 30 minutes per day per employee and contractor	30 minutes per day equates to 8% of productive time – savings of R325,000 per month (based on payroll)
Skills Development	Reduce unnecessary retraining by 50%	Competences not linked to jobs in hazardous areas.	Competence register and training reminders handled and scheduled by the IntelliPERMIT™ system	Reduce training costs by 25%. This equates to R175,000 per annum per plant.
Accuracy of contractor billing	Reduce overbilling errors by 50%	Contractors overcharge through multiple simultaneous invoicing and utilising cheaper skills than the billed amount indicates	IntelliPERMIT™ enforces correct skills per job and can correlate through to contractor invoices and reduce errors.	Reduce invoice errors by 50% equates to a estimated reduction in overcharging of R325,000 per annum
Serious Incidents	Reduce serious incidents by 25% in the next 3 years	Currently have 6 serious incidents per year at Plant A. 2 were found to be a result of inadequate permit to work	Improved controls over permits can reduce the incident rate.	1 fewer incident per year (17% reduction)

### Example of Financial ROI Calculation

<b>Total tangible benefits from above analysis:</b>	
Safety related cost reduction:	R 549,000
Additional production contribution:	R 850,000
Human resources related cost reduction:	<u>R 825,000</u>
<b>TOTAL:</b>	<b>R2,224,000</b>
Moderation Factor:	80%
Expected contribution pa:	R1,779,200
<b>Initial Investment:</b>	
Software Licences:	R1,500,000
Implementation:	R 650,000
<b>Ongoing Costs:</b>	
Software Maintenance:	R 270,000
Additional services:	R 300,000
<b>Payback:</b>	Year 2
<b>Project NPV over 5 years at 15%:</b>	<b>R5,509,665</b>

### Examples of Intangible Benefits

Benefit	Current Situation	Benefit directly attributed to IntelliPERMIT™
Safety Attitudes and Behaviours	Found to be deficient by external audits.	Reference visits to plants where IP has been implemented have all reported a marked improvement in safety attitude and culture.
Reputation	Not quantified	High visibility of actual safety initiatives such as the implementation of a computerised PTW system leads to increased credibility with staff and external parties.
Contractor safety attitudes	Poor – contractors ignore site safety instructions	IntelliPERMIT™ enforces contractor compliance. Result at reference sites has been increased awareness and improved attitudes as a result of safe working conditions.

## Conclusion

Based on each company's objectives, resources, and priorities the benefits outlined in this document can be used to derive your own business case.

Following these guidelines, project teams will be able to present an accurate benefit analysis, and when coupled with the estimated costs of the solution and implementation, can provide an in-depth analysis into the software's return on investment.

ApplyIT has a network of experienced consultants who can assist you with this process within your own business.

If you would like more information regarding benefit analysis of your Permit to Work needs, or are interested in learning more about IntelliPERMIT™, please visit our website at [www.applyit.com](http://www.applyit.com) or contact us at +27 31 275 8080

