Digital Forms for Hazardous Location Operations

Aegex Technologies LLC + TAAP Ltd

The Potential Client:

A U.S.-based oil refinery employs some 1,000 workers in various types of hazardous locations where combustible materials are present. The company has begun the evolution to a “digital oilfield” operation, where advanced software and big data analysis help to automate and improve the efficiency of business processes. The goal is to optimize cycle time and eliminate downtime, as well as improve decisionmaking and, ultimately, increase ROI and overall productivity.

The Challenge:

Although the facility is moving toward full digitization, there is one major problem: approximately 15% of the refinery's workforce works in zones of the plant that are classified as UL913 Class I Division 1 hazardous locations, where combustible materials are constantly present and, thus, only specially certified electronic equipment is permitted. The remaining 85% of the workforce works in zones that are classified as UL913 Class I Division 2, where combustible materials are present only in the event of a fault in equipment. However, these Division 2 areas immediately become Division 1 if a leak or rupture causes flammables to escape an enclosure. And many employees move into and out of Division 1 areas at some point during their shift.

Traditional devices, such as smartphones or tablets, cannot enter these Division 1 areas because they produce energy sufficient to cause a spark that could ignite the explosive atmosphere. Thus, workers in these zones are restricted to recording data with pen and paper and then later entering it into a desktop computer or other less-certified mobile device in a less-volatile zone of the plant. Unlike their colleagues in less dangerous areas who have replaced paper-based processes with digital reporting and communications, the Division 1 workers cannot receive nor transmit real-time information from within their work areas. The Division 2 workers who have begun to digitize their processes with corresponding certified mobile devices are limited in their mobility to only certain zones of the plant, plus they are running the risk of adding explosive potential to catastrophe should an emergency arise.

The Wish List:

Ideally, the Division 1 hazardous location workers would like to:

- Collect data and input it directly into their ERP system
- Send and receive emails via Microsoft Outlook, which is the company's standard
- Access online company manuals and instructions via Microsoft Azure cloud
- Send photos and video to document inspections
- Communicate in real time with colleagues via an "augmented reality" solution, such as Skype for Business
- Open and close work orders
- Create timestamps and audit trails
- Generate Microsoft Word reports to share with teams
- Track inventory and order parts and materials easily and quickly

The Proposed Solution:

The proposed technology solution for this oil refinery is two-fold:

1: Hardware - Aegex10 Intrinsically Safe Tablet

2 : Software : TAAP

Although the plant is Wi-Fi equipped, all of the activities of Division 1 workers must be done by hand and then digitized later when they are outside of the hazardous location. Their technology disconnect causes a delay in action, creating lag time in decision making, which, in turn, leads to increased downtime and, hence, decreased productivity. making, which, in turn, leads to increased downtime and, hence, decreased productivity. making, which, in turn, leads to increased downtime and, hence, decrease productivity.

1. Hardware – aegex10™ Intrinsically Safe Tablet

The Aegex10 Intrinsically Safe Tablet is the ideal mobile device for this situation because it can be used by any worker in the facility, including those in the most explosive Division 1 areas, those who may enter into a Division 1 area on occasion, and everyone in the plant who will suddenly be in Division 1 in the event of an emergency.

Certified for UL913 Class I Division 1 hazardous locations, as well as equivalent areas in Europe (ATEX Zone 1) and internationally (IECEx Zone 1), the Aegex10 operates on Wi-Fi or 4G LTE from any hazardous location around the globe on a unified platform.

The 10.1-inch Windows-based tablet is rated IP65 rugged for industrial use, yet is lightweight and priced as low as non-certified devices. It's Windows 10 operating system gives users uniform access to the Microsoft cloud, plus apps and services, including custom-designed software built by TAAP Limited.

Oil & Gas | Chemical | Public Safety | Mining | Utilities | Pharmaceutical

Purpose Built

- **Rugged IP 65**
- **UL913 5th edition:** C I, II, III Div 1 Gr A-G T4, Tamb= -10° C...+50° C; Cl Zo Gr IIC T4 IP65, Tamb= -10° C...+50° C
- **CSA 22.2 part 157 IECEx 60079:** Ex ib IIC T6 Gb, Ex ib IIIC T85° C Db IP6X, Tamb= -10° C...+50° C
- **ATEX:** II 2G Ex ib IIC T6 Gb, II 2D Ex ib IIIC T85° C Db IP6X, Tamb= -10° C...+50° C

ATEX Zone 1

IECEx Zone 1

Class I, II, III Division 1

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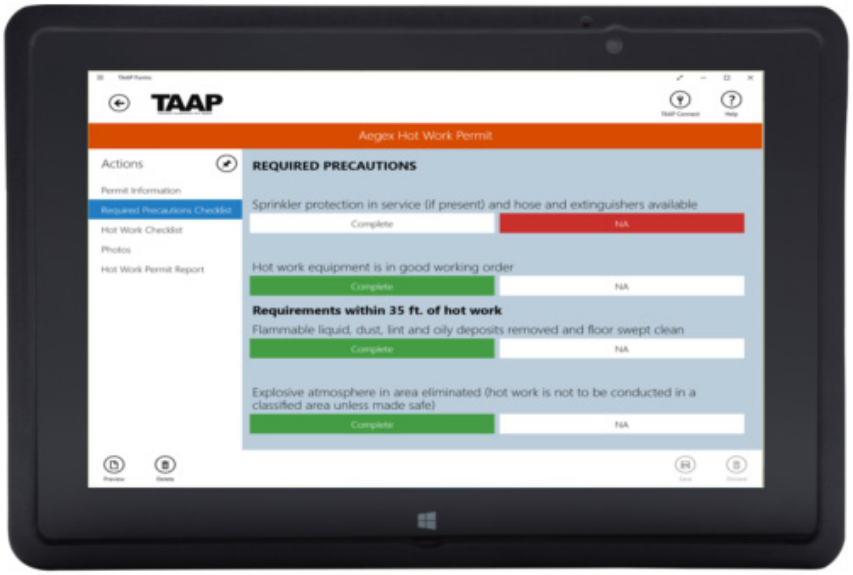
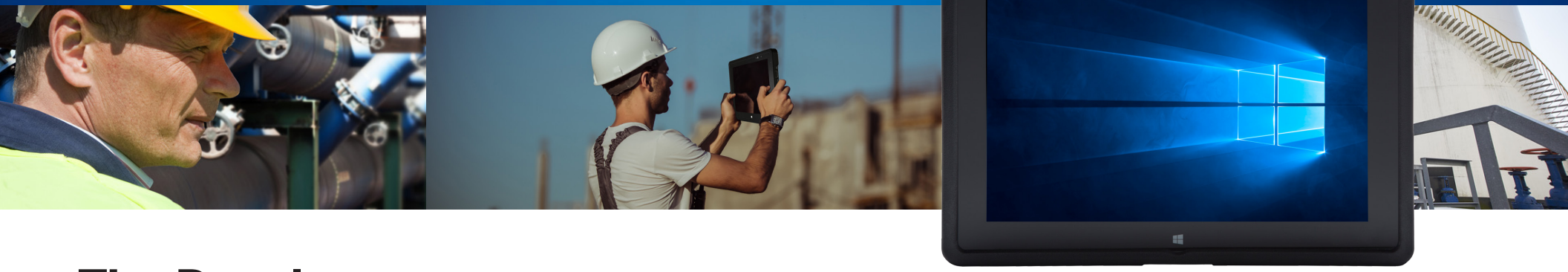
2. Software – TAAP Ltd.



TAAP can create custom applications for the refinery to help streamline business processes. The Aegex10 tablets can bring those apps directly into the areas where Division 1 workers need to use them.

TAAP can build a cloud-based solution on Windows Azure and digitize all of the company's forms – work permits, work orders, maintenance records, etc. – to make them accessible to workers in any zone via the Aegex10 tablets.

Using various TAAP apps on the Aegex tablets, workers monitoring Division 1 hazardous areas could take photos and videos, sign documents and annotate information with textbased descriptions. TAAPs reports can be generated directly from the Aegex10 as either Microsoft Word documents or PDF files and then emailed or saved. TAAP could create custom report templates with company branding and make each report specific to each project



The Results:

By implementing the electronic reporting solution proposed by Aegex and TAAP, the refinery would be able to:

- **Visually and verbally share information** from within Division 1 areas: Using Skype for Business or photos of inspection points taken and shared electronically, inspectors could collaborate in real time directly from Division 1 hazardous areas.
- **Produce branded and advanced reports** from complex data.
- **Reduce time converting inspection data** into written reports: Electronic reports could be created with a TAAP app and immediately converted into Microsoft Word documents to be edited in Word or Word Online on the Aegex tablets.
- **Immediately share data, reports and ideas:** Employees could use the same Microsoft tools as their rest of their organization worldwide, including Outlook, Yammer and other communications services to collaborate and share information. Data could be sent directly to other workers, into a secure web portal using Microsoft Azure, or into existing back-office databases.
- **Access reports and other information offline**. If the plant did not have Wi-Fi, the Aegex/TAAP solution could operate on 4G LTE. Or if no cloud connection was possible, all data captured by TAAP apps could be stored on the Aegex tablet for later transmission.
- **Utilize secure storage and control access to reports:** All reports and supporting audiovisual data could be stored in a Microsoft cloud portal hosted by Windows Azure to be accessible to authorized viewers.
- **Backup and store** large quantities of data with Azure.
- ***Integrate TAAP electronics*** reporting tools into existing workflow management system.
- **Have access** to TAAP customization, training and software support.
- **Access Microsoft** training and support.
- **Download pre-configured forms** from the Microsoft Store.

Contact Aegex or **TAAP** to **learn more.**

TAAP
means business for apps

About TAAP

TAAP supplies mobile solutions for all major industries. They can be tailored to your needs and available in weeks, with a range of payment options. Our mobile workforce software is suitable for all industries, across a range of devices including tablets, smartphones, and PDAs.

www.ontaap.com

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About Aegex: A technology engineering and design company that provides intrinsically safe Industrial Internet of Things (IIoT) and mobile solutions for hazardous industries. Our globally certified intrinsically safe Windows 10 tablet, sensors and partner monitoring systems, form an IoT platform that manages big data to improve efficiency, safety and productivity in hazardous industrial environments in oil & gas, chemical, pharmaceutical, utilities, public safety, defense and other industries with potentially explosive atmospheres.

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