

FEASIBILITY STUDY

Prepared November 2016

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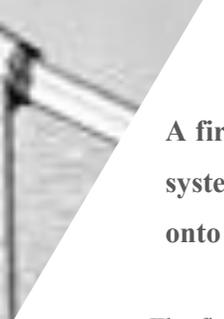
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The History of Fire Protection System



A fire sprinkler system is an active fire protection measure, consisting of a water supply system, providing adequate pressure and flow rate to a water distribution piping system, onto which fire sprinklers are connected.

The fire prevention system is a better deal order than you might think. In 1806 Englishman John Carey developed the idea of a heat-operated device that would distribute water through a system of perforated pipes to extinguish a fire. It is generally accepted that the world's first sprinkler system was installed in the Theatre Royal, Drury Lane in the United Kingdom in 1812. The system was designed by Sir William Congreve, 2nd Baronet was covered in a patent dated the same year. The system consisted of a cylindrical airtight reservoir of water, fed by a 10 inch water main which branched to all parts of the theatre. A series of smaller pipes feed from the distribution pipe were pierced with a series of 1/2 inches holes that poured water onto the fire.

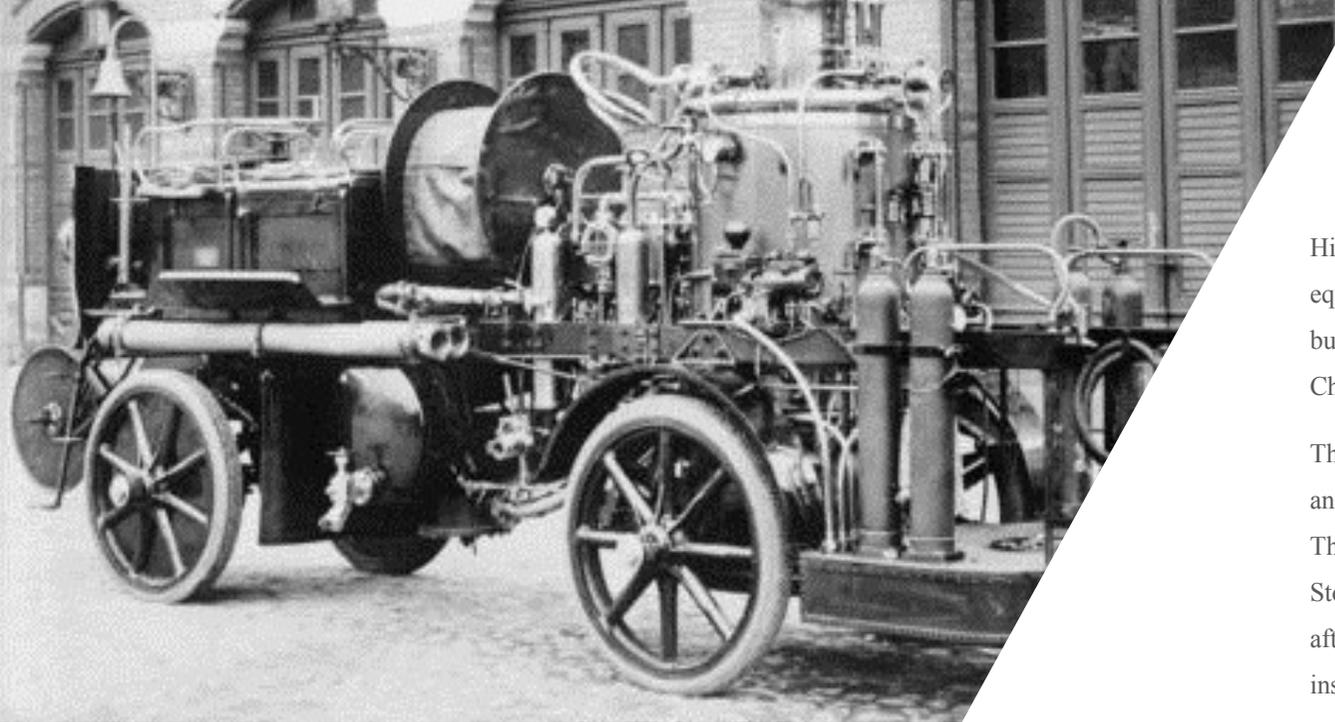
By 1852, that's before the Civil War, perforated pipe systems were commonly used in various industry buildings for fire protection in the United States. These early systems relied on manual interaction and did not automatically turn on when a fire was detected. It wasn't the best system, but it was better than nothing.

Many early inventors began investing time and effort to improve these systems from the time they were initially used, but after 1860 the interest of an automated system began to rise. Barnabas Wood of Nashville, Tennessee patented the first basic sprinkler. His design included a eutectic fusible solder link, which is the foundation for all modern-day sprinklers.

In 1864 Major Stewart Harrison of the 1st Engineer Volunteers of London England, gave to the world the first Automatic Sprinkler Head. Working off these overseas ideas, Philip Pratt of Abington Massachusetts developed his own version and patented the first automated sprinkler system in 1872 in the United States. Two years later Henry Parmelee of New Haven Connecticut improved on Pratt's design and created the first practical automatic sprinkler head. The first system using this concept was installed in his own piano factory in 1874.

In 1878, a Providence, Rhode Island man, Frederick Grinnell developed his own patented design and entered into a business arrangement with Parmelee to manufacture the "Parmelee" Sprinkler.

Grinnell also designed and erected the piping installations in which the "Parmelee" Heads were fitted into buildings. Interest in the Parmelee Sprinkler grew throughout New England. Taking advantage of this interest Parmelee and Grinnell organized a test and a demonstration of a sprinkler system. The Wholesale Market Square of Bolton was erected. It was a shed 20ft x 30ft and was fitted with 6 Parmelee sprinklers. The shed contained wood chips, shavings, tallow, barrels and other such products and storage canisters one might find in the average industry building of the time. Paraffin oil was also added to the combustible material and set ablaze in 3 places by the Bolton Fire Brigade Superintendent. Immediately flames erupted to such size and intensity that spectators were driven back from the blaze. In 1minute and 20seconds later the first Sprinkler opened, followed by the remaining system. Within a short time the fire was reported suppressed.



Parmelee took the reports of these tests and began selling the value of Automatic Sprinkler systems to Insurance companies. His sales pitch outlined not only the protection of life, but of equipment and product as well. He won over one of Bolton's largest business owners, Cotton Spinner Major Hesketh, who was also Chairman of the Bolton Cotton Trades Mutual Insurance Company. The Directors of this Company took note of these early experiments, and gave Parmelee his first order for the Sprinkler Installations. These systems were installed in the Cotton Spinning Mills of John Stones & Co., at Astley Bridge, Bolton, to be followed soon afterwards by the Alexandra Mills belonging to John Butler.

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Later, in 1881, Grinnell who was the chief mechanical engineer and general manager of the Jersey City Locomotive Works patented the first "sensitive" automatic sprinkler. The design was unique in the field of hydraulics and revolutionized the concepts of fire protection and suppression. Not long after, Grinnell entered into a business agreement with Sir William Mather of England who put Grinnell on the map as the most influential man in the fire prevention industry. Mather acquired the rights of the Grinnell sprinkler for the eastern hemisphere, along with Australia and India.

Legislation for setting fire prevention, suppression and installation of fire protection systems began to appear in 1885. Some of the first rules applied in the sprinkler industry were penned by John Wormald, an Englishman who began his career with Parmelee.

In 1896 the National Fire Protection association (NFPA) was founded. It was the first time anyone had set and implemented standards for the installation of automatic fire sprinklers. His venture proved to be greatly successful and the NFPA standards became the uniformed installation requirements for the United States and Canada.

But how effective were these early standards? A landmark study conducted in 1913 reported that over the 38-year period since sprinkler systems were used, only 5 people had been killed in fires that included a sprinkler system. After these results were published, NFPA established the formal Life Safety Code.

Grinnell's own corporation continued improving sprinkler supplies and equipment. The Grinnell Corporation developed the quick opening device in 1920. In 1921, the company released the first Quartzoid sprinkler.

With each passing year, Grinnell and the NFPA became the recognized leaders in fire prevention safety. That reputation made it easy for the NFPA to issue its first guide to fire departments regarding the use of fire sprinkler systems in 1933. Then followed that up with the issuance of the Care and Maintenance of Sprinkler systems in 1939, taking the industry to the next level of fire protection.

Even with all these accepted standards and recognized benefits, sprinkler systems were still only used in industrial business. It wasn't until the late 1940s when installation into hospitals, schools, hotels and other public buildings became a mandatory practice.

The NFPA continued its influence over the industry through the NFPA Quarterly magazine. In 1950 the periodical reported that sprinklers had been over 96% effective in recorded incidents of fire. A justification to the standards, equipment and oversight that NFPA put into place earlier in the century. But there was still room for growth.



Henry Parmelee



Frederic Grinnell



Parmelee Sprinkler , 1874



John Wormald



John Carey

Hazardous Information Guide

HEALTH HAZARD

- 4 EXTREME** - Highly toxic - May be fatal on short-term exposure.
- 3 SERIOUS** - Toxic - Full protective suit and breathing apparatus should be worn.
- 2 MODERATE** - Breathing apparatus and face mask must be worn.
- 1 SLIGHT** - Breathing apparatus may be worn.
- 0 MINIMAL** - No precautions necessary.

FLAMMABILITY HAZARD

- 4 EXTREME** - Extremely flammable gas or liquid. Flash Point below 73° F.
- 3 SERIOUS** - Flammable. Flash Point 73° F to 100° F.
- 2 MODERATE** - Combustible. Requires moderate heating to ignite. Flash Point below 200° F.
- 1 SLIGHT** - Slightly combustible. Requires strong heating to ignite.
- 0 MINIMAL** - Will not burn under normal conditions.

SPECIFIC HAZARD

OXIDIZER	OXY
ACID	ACID
ALKALI	ALK
CORROSIVE	COR
Use NO WATER	W
5 RADIATION	

INSTABILITY HAZARD

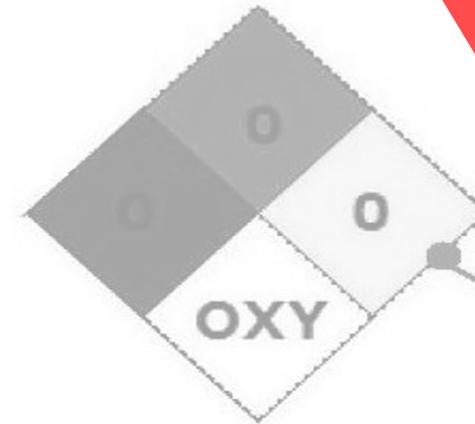
- 4 EXTREME** - Explosive at room temperature.
- 3 SERIOUS** - May detonate if shocked or heated under confinement or mixed with water.
- 2 MODERATE** - Unstable. May react with water.
- 1 SLIGHT** - May react if heated or mixed with water.
- 0 MINIMAL** - Normally stable. Does not react with water.

NFPA LABEL ELEMENTS

Chemical Name

CAS Number

SODIUM CHLORIDE 17-5369-3
DO NOT REMOVE THIS TAG.



DANGER

Consult MSDS for further information

HAZARD MATERIAL Communicator. <http://www.spmc.com>
Email: Info@SPMCpk.com
Tel: +92(0) 332 355 8091 +92(0) 300 352

Personal Protective Equipment - Required



Apron



Face Shield



Gloves



Boots

International Laws and Standards

There is very little Federal legislation regarding sprinkler system design and installation. Building codes are generally left to local jurisdictions and that includes the specifications for sprinkler systems. The Federal government has used its funding and monetary clout to strongly encourage fire safety standards.

Even with all the improvements and desires to protect life through fire prevention and suppression systems, nothing impacts the process more than catastrophe. The MGM Grand Hotel fire in Las Vegas in 1980 was such an event. 85 guests and workers died during the fire captured on TV by local, national and even worldwide news agencies. The tragedy resulted in one of the nation's first fire sprinkler retrofit ordinances for high-rise buildings.

Many see this fire as the event that set off some of the first federal legislation for building safety. In 1990, the US Congress passed PL-101-391, better known as “The Hotel and Motel Safety Act (of 1990)”. This law requires that any hotel, meeting hall, or similar institution that receives federal funds (i.e. for a government traveler’s overnight stay, or a conference, etc.), must meet fire and other safety requirements. Included in these conditions is the implementation of working sprinklers.

Today fire sprinkler application and installation guidelines, and overall fire sprinkler system design guidelines, are provided by the standards set in several NFPA sections.

NFPA has developed and published more than 300 consensus codes and standards intended to eliminate death, injury, property and economic loss due to fire, electrical, and related hazards. NFPA codes and standards, administered by more than 250 Technical Committees comprising nearly 9,000 volunteer committee member seats, are adopted and used throughout the world. The most common standards are found in NFPA 13, NFPA 13D, and NFPA 13R, NFPA 14, NFPA 20 and NFPA 24. These specifications define the accepted minimum requirements for building codes that are set by local jurisdictions in the United States. Many local jurisdictions add on to these requirements and various state jurisdictions include additional requirements within state wide building codes.

Market Drivers

-  Rising Incidents of Fire Breakouts & Increasing Regulations
-  Growing Awareness on Public Safety & Security
-  Focus on Implementing Proactive Measures to Reduce Damages from Fire
-  Increasing Adoption of Water-based Intumescent Coatings
-  Recovery in the Construction Sector
-  Rapid Urbanization in Developing Countries

Key Players

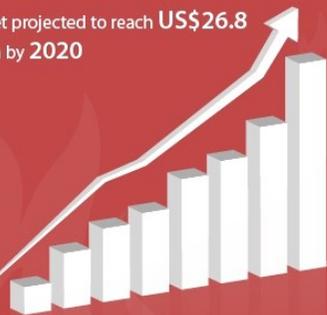


Global Market Outlook

Top Three High

Market projected to reach **US\$26.8** billion by 2020

The **United States**: The Largest Market



Climate changes and environmental influence have led for some years to a higher increase of the growth in fire protection markets. The markets for fire protection have gained importance in the last years. The death toll of fire accidents is about 12,000 in the USA, 7,000 in Europe and more than 50,000 in Asia per year. The loss of assets is about €70 Billion per year with an increasing tendency. The total world markets show growth, but very different developments in different segments and countries.

The market worldwide shows growth rate of over 10% from 2009 to 2010. There are 500 companies holding more than 40 percent of the world markets and several thousands for the rest. This market is more and more a competition active market.

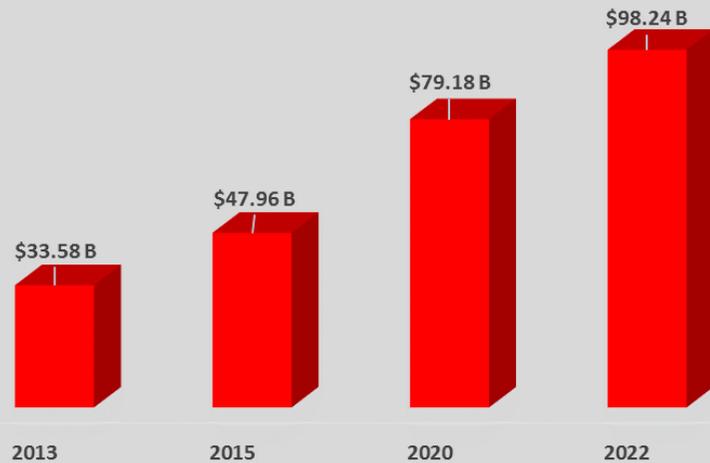
it's a new market too, and new technologies and processes will bring new chances for the companies to market their products worldwide.

According to a new market research report "Fire Protection Systems Market by Technology (Active & Passive), Products (Fire Detectors, Sprinklers, Extinguishers, Alarms), Services, Verticals (Oil, Gas and Mining, Manufacturing), and Geography - Analysis and Forecast to 2013 - 2020", the total market is expected to reach \$79.18 Billion by 2020, at a CAGR of 11.53 %.

Emerging passive fire protection technologies have been foreshadowing the growth of FPS market with the higher safety regulations being implemented by the government in the different regions across the globe, especially in the European countries, followed by the growth in the Asia-pacific countries. The active FPS is already being implemented rigorously in all the sectors. The fire analysis products of FPS are highly growing with the higher usage and benefits from the fire mapping and simulation software for analyzing the fire protection systems being used in various verticals.

Fire Protection Market

THE SIZE OF FPS MARKET IN THE WORLD



The global FPS market is certainly a fragmented one with local players dominating the market, for FPS process has found use in these major fields - consumer goods and retail; energy and power; government; healthcare; manufacturing; oil; gas and mining; transportation and logistics; and others. The manufacturing field offers a huge potential for the fire protection systems market to grow, especially due to advanced & suitable features offered by FPS technologies in different manufacturing facilities. Oil, Gas and Mining is the primary field responsible for commercial birth of fire protection systems in a large scale, while consumer goods and retail field is still an emerging market offering lots of space for FPS technologies to penetrate.

The fire protection systems (FPS) market revenue market is expected to grow from \$33.58 Billion in 2013 to \$79.18 Billion in 2020 at a CAGR of 11.53%. The global fire protection systems market exhibits a lucrative growth potential for the next six years. The growth of the market is propelled by the government mandates and political support, increased fire protection expenditure from the enterprise segment, and technological innovations in equipment and networking. The lack of integrity in system interfaces and higher initial investments for the fire protection systems' installation are restraining the growth of fire protection systems globally.

Some interesting predictions are as follows:

- **The fire protection systems market size is expected to grow from USD 47.96 Billion in 2015 to USD 98.24 Billion by 2022, at a CAGR of 10.1% between 2016 and 2022.**
- **Passive fire protection systems market is expected to grow at the highest CAGR during the forecasted period**
- **Fire management systems held the largest market share of the fire protection systems market based on products in 2015 and are expected to dominate the market till 2022.**
- **Commercial vertical is expected to hold the largest market share by 2022.**
- **Fire protection systems market for the oil, gas, and mining vertical is expected to grow at the highest rate between 2016 and 2022.**

Top Countries and Companies



North America held the largest share of the FPS market in 2015. Certain verticals in the region such as oil & gas, mining, and energy & power have shown a positive outlook for the growth of the fire protection systems market. This is a result of the necessity to adhere to the stringent corporate compliance and regulation requirements for these sectors, in which applications of FPS account for a major share of the North American market.

However, the high installation and maintenance costs of fire protection systems restrain the growth of the fire protection systems market. In addition, integrating user interfaces, when multiple solutions are used in a control mechanism, act as a restraint in the growth of the fire protection systems market.

Over the years, the HMI component technology has undergone major changes to serve the increasingly specialized needs of industrial, transportation, oil & gas, energy & power, public access/security, and lifting/moving applications. This is a major area of opportunity for further growth of FPS in the near future. Also, one of the huge opportunities in the fire protection market is wireless sensor networks (WSNs), which consist of spatially distributed independent sensors that monitor fire conditions and cooperatively pass their data through the network to a main location.

In 2014, the global fire protection systems market was led by Honeywell International Inc. (New Jersey, U.S.), Johnson Controls (Wisconsin, U.S.), Siemens AG (Munich, Germany), Tyco International Plc (Cork, Ireland), and United Technologies Corporation (Connecticut, U.S.).

The other major players in the fire protection systems market include Gentex Corporation (Michigan, U.S.), Halma Plc. (Buckinghamshire, U.K.), Hochiki Corp. (Tokyo, Japan), Robert Bosch GmbH (Stuttgart, Germany), and VTMAK (Virginia, U.S.).

These players have adopted various strategies such as partnerships, agreements, contracts, mergers & acquisitions, and new product developments to achieve growth in the global fire protection systems market.

Ranking of Leading Companies in Fortune and Forbes

Item	Name	Rank	Location	Revenues	Profits	Employees	Site
1	Honeywell International	256	New Jersey, U.S.	\$38,581(m)	\$4,768(m)	129,000	fortune
2	Johnson Controls	242	Wisconsin, U.S.	\$40,204(m)	\$1,563(m)	139,000	fortune
3	Siemens	71	Munich, Germany	\$87,660(m)	\$8,338(m)	348,000	fortune
4	Tyco International	898	Cork, Ireland	\$9,800 (m)	\$494 (m)	57,000	forbes
5	United Technologies Corporation	136	Connecticut, U.S.	\$61,047(m)	\$7,608(m)	197,200	fortune
6	Robert Bosch	87	Stuttgart, Germany	\$78,323(m)	\$3,542(m)	374,778	fortune



The Middle East Fire Safety Systems

Fire safety systems, also known as fire protection systems, play an important role in the detection and prevention of fires in several sectors, including manufacturing, oil and gas, infrastructure development and mining. The global fire safety systems market is expected to exhibit a double-digit CAGR in the next 3 years and reach a valuation of around US\$ 70 Billion by 2018. On similar lines, the Middle East fire safety systems market is also expected to expand at a high double-digit CAGR. Increased regulations from the governments, innovations in fire safety technology and increased awareness about fire safety will play a major role in the growth of fire safety systems market in the Middle East.

- **Government Regulations and Innovations in Fire Safety Systems**

Home to the world's largest oil and natural gas resources, most nations in the Middle East are dependent on the export of oil. Oil exploration, production, transportation and storage sites and activities are vulnerable to fire hazards, making fire safety systems a necessity to guard against the loss of life and property.

The Middle East countries have benefitted tremendously from the revenue earned by oil exportation and this has spurred infrastructural growth, especially in the cities, such as Dubai, Abu Dhabi, Riyadh and Doha. This has also contributed to the growth of The Middle East fire safety systems market, as builders have to abide by the government's regulations on having fire safety systems in place. Hence, government regulations and innovations in fire safety technology are the main drivers for the growth of the fire safety systems market in the Middle East.

- **Civil Defence Authorities Playing Active Role in Implementing Fire Safety Mandates**

Civil Defence Authorities in the Middle East have played a notable role in promoting and implementing fire safety. The authorities have played an active role in promoting interactions between fire safety system providers and dignitaries from industries such as oil and gas, construction, manufacturing and financial services.

Regular industry events have contributed a fair share to the heightened awareness about fire safety systems in the Middle East.

The Annual Middle East Fire Safe event, whose 5th edition was hosted in Dubai, UAE, in October 2014, focused on integrated approaches to fire code regulations, hazard management and life safety for the public. The Middle East Fire Safe Conference is held every year and is supported by the United Arab Emirates' Ministry of Interior and Directorate General of Civil Defence – Dubai. Here is an overview of the key region-wise developments in the Middle East fire safety systems market:

In Dubai, Civil Defence has made it mandatory for all new villas and apartments to have fire alert systems in place.

Kuwait has also taken the lead in introducing fire safety reforms. The Kuwait Fire Safety Directorate (KFSD) has partnered with private petrochemical companies to raise awareness on how fire safety systems can reduce the risk of loss of life and property.

Qatar too has taken initiatives to improve fire safety and has collaborated with a leading technology company to establish a centralized alarm monitoring system.



Innovation in fire safety technology has given impetus to the global fire safety systems market, and the situation is no different in the Middle East. Awareness about the benefits of replacing old fire safety systems with new ones has also contributed to the growth of the fire safety systems market in the Middle East.

- **Digitization and Intelligent Integration is the Way Ahead for Fire Safety Systems**

Advanced fire alarm and notification systems that work on digitized voice technology are highly sought-after in the market, as they relay quick information to occupants during a fire emergency.

Fire safety systems installed in hospitals and schools are also being replaced by ‘pre-action’ systems that offer both a sprinkler system and a smoke detection system. The innovation in wireless sensor networks has also contributed to the growth of the fire safety systems market. These sensors do not need any power cabling, thus providing greater flexibility to be used in spaces where no power is available.

The innovation in human machine interfaces (HMI) and their effectiveness in detecting fires has also given an impetus to the fire safety systems market. HMIs are linked to a acquisition SCADA system which provides accurate data to control units, thereby helping in effective management of fire safety systems.

The technological innovation in fire suppression systems is also driving the growth of the fire safety systems market in the Middle East. Notable among the new fire suppression systems are the early suppression fast response (ESFR) sprinklers. These sprinklers are being increasingly preferred over traditional sprinklers as these spray a greater amount of water and help suppress high-challenge fire scenarios.

The high initial cost of installing fire safety systems is a major challenge for the growth of this market in the Middle East. Many organizations do not have the budget to install all the required fire safety systems and this is a major challenge for the growth of this market.

The fire safety systems market is also segmented on the basis of end-users. Floating production storage and offloading (FPSO), floating liquefied natural gas (FLNG), offshore rigs and fixed platforms. Owing to the fact that the Middle East region is home to the world's largest oil and gas reserves, the demand from offshore rigs is going to be the major growth factor for fire safety systems market here.

Key players in the Middle East fire safety systems market are **Gentex Corporation** (U.S.), **Consilium Middle East** (Sweden), **REDA Fire & Safety** (Saudi Arabia), **Tyco International Ltd.** (Switzerland), **Hochiki Corporation** (Japan), **Marioff Corporation** (Finland), **United Technologies Corporation** (U.S.), **Deluge Fire Protection** (SEA) Pte Ltd. (Singapore) and **Minimax GmbH & Co. KG** (Germany).





Importance of Iran in the Middle East FPS Market

Iran's key role in the Middle East is undeniable, and this great and central position in the region is due to Iran's specific geopolitical situation that is very rare. Iran is located in the strategic region of the Middle East and as a bridge has connected Asia, Europe and Africa continents.

According to official statistics, Iran's fire safety systems market was worth \$500 million in 2015. There are a number of reasons why Iran might play a crucial role in the Fire Protection System (FPS) market in the Middle East.

These factors include: area, population, Oil and gas reserves, high economic growth, high capacity for electricity production, bordering all the northern coast of the Persian Gulf and all the southern coast of the Caspian Sea, potential in the areas of tourism and health tourism, and increasing development project.

- **Area**

Iran's area is 1,629,807 square kilometers, making it the world's eighteenth largest country.

This figure is greater than the combined area of six European countries (Germany, France, England, Italy, the Netherlands and Belgium). It's the second largest country in West Asia after Saudi Arabia. Iran is three and a half times and two and a half times larger than Iraq and Afghanistan respectively, and it is approximately also as big as the total sum of areas of Pakistan and Turkey.

- **Population**

The Middle East has a population of about 410 million and the average population growth rate is %2.1 in this region.

Based on the latest official statistics provided by the Statistical Center of Iran in December 2015, Iran is the Middle East's second populous country after Egypt with 78.8 million inhabitants, while some countries such as Bahrain, Qatar and Kuwait have a population of less than a million and most countries like Oman, United Arab Emirates, Lebanon, Jordan, Syria, Yemen, Saudi Arabia and Iraq have a population between one and ten million.

- **Oil and Gas Reserves**

The third reason that makes Iran important in the FPS market is the existence of oil and gas reserves in this country and their global and vital importance. British Petroleum CO, one of the world's leading integrated oil and gas companies, has released its sixty-fifth report called "Statistical review of World Energy 2016". BP's reports are one of the most important reports in the field of energy in the world which has been published yearly since 1960.

Based on the latest estimates of this English company, Iran's oil reserves have been estimated about 157/3 billion barrels, ie 3.9% of the world's reserves.

Hence, Iran takes the fourth place in the world and the second place after Saudi Arabia in the Middle East in terms of oil reserves. Iran also has the biggest gas reserves in the world with having 18/2 % of the world's gas reserves (34 trillion cubic meters). It should also be mentioned that Iran has the largest total sum oil and gas reserves.

The Islamic Republic of Iran has 17 oil and gas refineries and 72 petrochemical complexes, and considering having abundant reserves of oil and gas it is building 7 oil refineries and 70 petrochemical complexes. On the other hand regarding potential oil reserves in the Caspian Sea the importance of Iran in FPS market increases.

- **High Economic Growth**

In its June 2016 Global Economic Prospects report, the World Bank (WB) has suggested that Iran's GDP would stand at 4.9 in 2017 and 4.4 in 2016. In the Islamic Republic of Iran, the combination of low oil prices and uncertainty surrounding the timeline for the lifting of sanctions slowed growth significantly, the report suggested.

According to the report, growth in the Middle East and North Africa was an estimated 2.6 percent in 2015, slightly down from 2.9 percent in 2014 and broadly in line with January estimates. The report further added that the easing of sanctions has opened Iran to international trade and investment.

- **High Capacity for Electricity Production**

Iran generating 72.000 MW electricity stands first in the Middle East and 14th in the world in terms of producing electricity. Currently, there are 91 fossil-fuel power plants, 52 hydroelectric power plants, 1 geothermal power plant, 3 nuclear power plants, and 5 solar thermal power plants. 20 fossil-fuel power plants, 8 hydroelectric power plants and 1 solar thermal power plant are under construction and 27 hydroelectric power plants were proposed.

It should be noted that Iran plans to build more than 800 power plants in the next 20 years in an attempt to increase the country's current installed power capacity from 75,000 megawatts to 100,000 megawatts.



- **Bordering All the Northern Coast of the Persian Gulf and All the Southern Coast of the Caspian Sea**

Iran has a 630 kilometer long sea border in the north at the Caspian, the world's largest lake, and another 1880 kilometer long sea border in the south at the Persian Gulf and the Sea of Oman. Actually, Iran has the longest common water border with the Persian Gulf. In other words, Iran's south borders, from Khoramshahr city to the Straits of Hormuz (1290 kilometers), stretch all the northern coast of the Persian Gulf. This proximity always has advantages for Iran and this point has created a top and strategic position for Iran. Very special geographical location, commercial and cruising waterways, oil reserves are the most important Persian Gulf's advantages. Currently, there are 11 ports, four of which have development projects that are running.

- **Potential Tourism**

In the tourism sector, Iran has the potential and the necessary capacity of being one of the top countries worldwide. Iran with regard to having more than 10000 years of history and civilization has plenty of sites, monuments, and historic and cultural places, so it can be claimed that it's a great museum that attracts many numbers of visitors and tourists from all over the world. Iran is also one of the few countries in the world in which you can see the four seasons at the same time.

Based on Mohammad Ali Najafi, the head of Cultural Heritage Organization in 1392, Iran is the tenth country in terms of the potential cultural tourism and the fifth country in terms of potential nature tourism in the world.

Due to the formation of a new phase of tourism relations between Iran and Europe, European countries are taking the opportunity to invest in Iran's tourism market. Therefore, it is predicted that a massive investment will be made over the next few years in tourism infrastructure such as airports, hotels etc. Iran already has 105 airports and 5 new airports are under construction. It should be noted that the study plan of one airport is being undertaking.

on average, the number of foreign tourists in the first six months of this year has increased 35% compared to the same period last year, and the number of Europeans who have come to Iran with a tour has increased 205% compared to the same period last year. It seems that this is the result of the government's new approach to international relationships. In Iran, there are 1261 hotels, of which only 107 ones are Four- and Five-star. Iran is going to triple the number of Four- and Five-star hotels by next 10 years, and therefore 25 to 30 new hotels per year should be built.

- **Potential Health Tourism**

Health tourism is rapidly becoming worldwide. Iran has a high potential for this industry.

As it turns Iran has been assembling the various factor inputs necessary for thriving medical tourism cluster. Such factors can be broadly classified as: suitable infrastructure, nice environment, people and culture, and government's key policy. In this regard, Iran is building 100 new hospitals, of which 40 ones are going to be completed by 2017.

According to the World Health Organization (WHO), as of 2000, Iran ranks 58 in health care and 93 in health-system performance. As we know it today, Iran was known as a destination for treatment of Muslims, attracting thousands of visitors from the Persian Gulf countries.

Although the exact number of foreign patients treated in Iran is not available, it seems that approximately 40,000 tourists from Muslim countries such as Iraq, Azerbaijan, Turkmenistan and Arab states of the Persian Gulf, Oman, Afghanistan, etc., travel to Iran in order to be treated while our country has the capacity to accept 100,000 health tourists per year.

- **Increasing Development Projects**

Iran has been under a lot of sanctions for many years. Fortunately most of those sanctions were lift, and Iran's economic conditions have improved in the last couple of years, so it has been noticed some improvement in the construction industry in Iran. Currently, there are 156 ongoing big projects in the fields of sport, education and health care in Iran and it is anticipated that this figure will increased substantially in the coming years. Furthermore about 50,000 building permits has been issued for 4-story or more buildings in the past one and a half years. Considering the transition from recession to growth in the construction industry, it is expected that about 100,000 building permits will be issued for 4-story or more buildings in the next one and a half years.

One of the significant issues is that lifting international sanctions has enabled foreign investors to gain entry into Iran's markets. Undoubtedly, achieving sustained and long term economic growth in each country is possible with the sources of funding optimal mobilization in the country's economy.



one of the ways to mobilize resources is also the use of foreign investment, and using these resources we can achieve economic growth and development during an appropriate and systematic planning. Foreign direct investment could provide economic growth through transferring

Iran's target markets in the field of FPS

Item	Target Markets	In service	Under construction or proposed	Description
1	refineries	17	7	-
2	petrochemical complex	72	70	-
3	Power plants	152	56	Building more than 800 power plants in the next 20 years.
4	ports	11	0	Having 4 development projects in ports.
5	airports	105	6	-
6	hotels	1261	unavailable	Building at least 250 Four- and Five-star hotels in the next ten years.
7	hospitals	907	100	-
8	4-story or more buildings	-	50000	Building 100000 four stories or more buildings in the next one and a half years





BARANA Group - Your Partner in Fire Protection System

BARANA TAJHIZ HOOSHMAND is a new company established by fire engineering consultants & fire safety experts in Tehran, Iran. This company is an independent engineering company active in the field of Fire Protection comprised of highly qualified registered professional engineers.

The company is organized into two major business units: Fire Protection Engineering and Services. The Fire Protection Engineering business unit is mainly involved in turnkey projects involving fire detection and suppression systems for the oil & gas, petrochemical, power generation, transportation, government, healthcare, manufacturing, academia, commercial, and residential sectors. The systems delivered include: F&G, foam, dry chemical, water spray, automatic monitors, inert gases and water mist.

The second BU concentrates on maintenance services offering on site assistance and long term service agreements. BARANA has developed a wide range of supporting services aimed at maximizing efficiency, safety and operational lifetime of its fire suppression systems & equipment. Clients who have joined BARANA service programs protect their assets, extend their system warranty, monitor and keep their investment running securely while reducing downtime and production losses. Service engineers are dispatched rapidly within the whole Iran. Skilled engineers cover all the required fire suppression and F&G detection systems with skill and expertise in order to deliver to our customers a full service coverage.



Our Principles

“BARANA Group ensures an answer. A great ally for a safety that lasts”

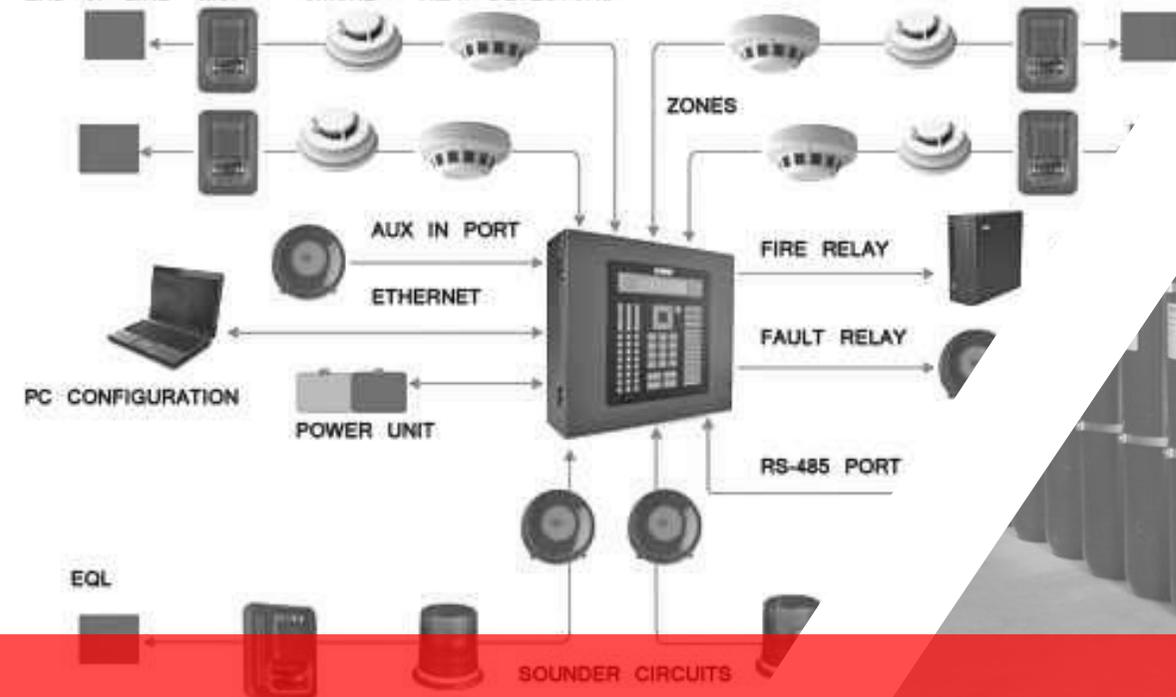
- We are working to offer expertise and products which realize safe, reliable and competitive-priced systems
- We seek the highest standard of performance by means of latest science and technology
- Innovation is presently the turn-key which drives BARANA to help its customers to meet their needs of fire protection for tomorrow.



Our Vision

We desire to act with the clear aim to become a leading company in our field in the Middle East, pursuing continuous improvement to satisfy the highest expectations of our customers in terms of Quality and Reliability.

Our customers can rely on our tailor-made solutions and on our growing dynamism which allows us to quickly adapt methods and rhythms to new market trends.

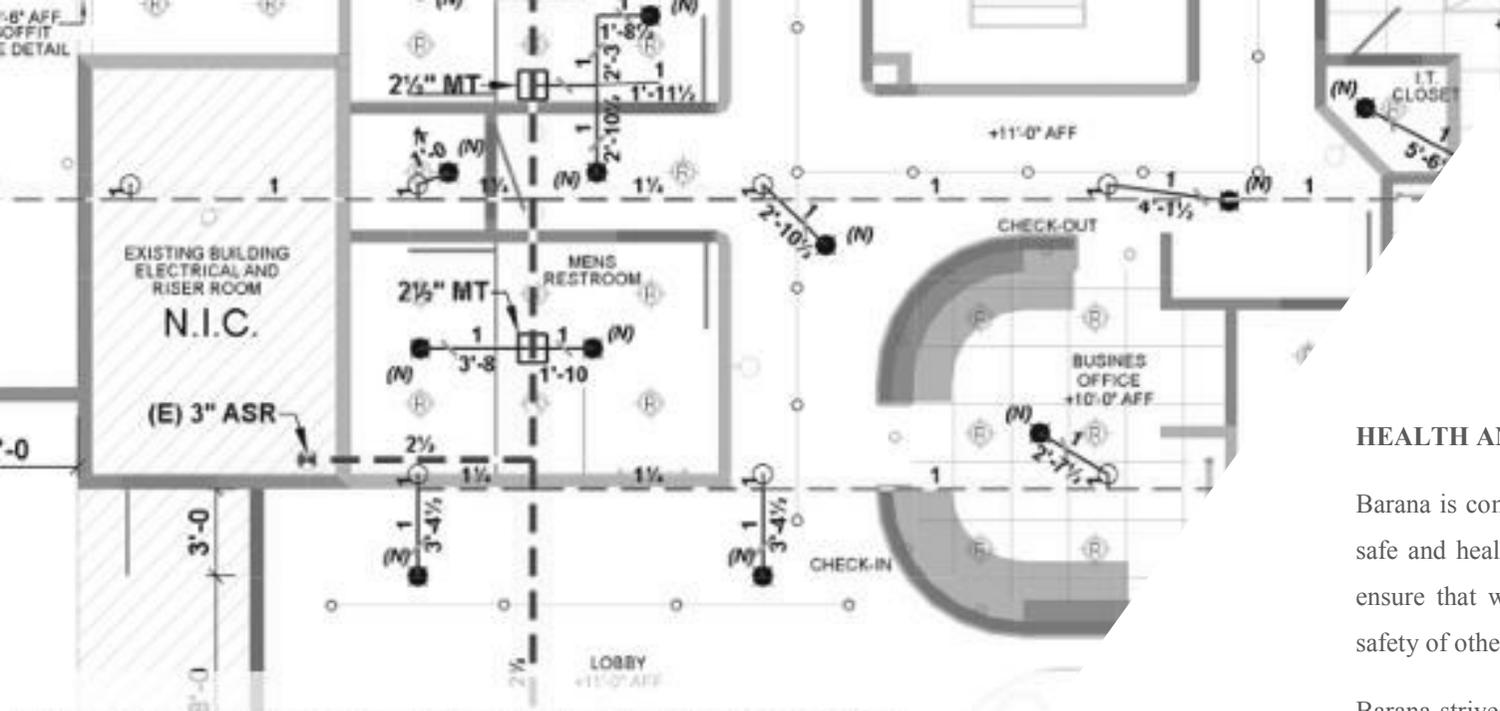


Strategy

Sustainability

Our business strategy is based on sound economic values:

- To deliver projects on time and on budget.
 - To provide a cost effective after sales / maintenance service.
 - To conduct business in a fair and balanced manner with equality in mind.
 - To develop more creative solutions through innovation.
 - To meet or exceed our customers' expectations consistently.
- BARANA TAJHIZ HOSHMAND is committed to continuing sustainable development of its business activities by ensuring it meets the needs of clients, legislation, regulation and society in general with the use of responsible business policies, legal compliance, operational systems and accreditations.
 - We endeavor to provide world-class quality products and offer first-class client services, system design, installation, servicing and maintenance.
 - We work to the basic rule of ethical business conduct and as such, are committed to high ethical standards in our business dealings to ensure the integrity of our employees and our organization is maintained at all times.



HEALTH AND SAFETY POLICY

Barana is committed to prevent injury and ill health by providing safe and healthy working conditions for all its employees and to ensure that work done does not affect adversely the health and safety of others.

Barana strives for continual improvement in Occupational Health and Safety (OH&S) management and performance through consultation and participation of employees.

To achieve this, the following work policy is hereby issued:

- Provide adequate control of the Health and Safety risks arising from our work activities.
- Consult with our workers and volunteers on matters affecting their Health and Safety, including work related stress.
- Provide and maintain safe plant and equipment.
- Ensure safe handling and use of substances.
- Provide training, information, instruction and supervision for workers to ensure that they are aware of their individual OH&S obligations.

Health, Safety and the Environment (HSE)

All work will be carried out in accordance with the requirements of relevant Health & Safety laws, Acts, Regulations, Codes of Practice and Guidance Notes and ensure compliance to applicable laws where the company subscribes to.

Management and supervisory staff have the responsibility for implementing this policy throughout the company and must ensure that health and safety are always given priority in planning day-to-day supervision of work.

ENVIRONMENTAL POLICY

We, at Barana, are committed to provide quality products and services in a manner that ensures a safe and healthy workplace for our employees and minimizes our potential impact on the environment. We are committed to continually improve our environmental performance using the following measure:

- The control of emissions and discharges consequential upon our operations to ensure these have minimal detrimental effect upon the environment.

- The control of odour, noise and litter to eliminate or minimize the effects on surrounding areas.
- Compliance with environmental legislation and regulations.
- To take into account the concerns of interested parties such as regulators, shareholders, suppliers, employees and the public.
- To communicate this policy to all members of the organization and ensure all are trained in their respective environmental responsibilities.
- To make this Environmental Policy available to customers and the public on demand.

The introduction and implementation of this Policy is a commitment of Barana Management and a shared responsibility of all our employees.

Our Capabilities

- The ability to obtain licenses from Ministry of Labor and Social Affairs for new products
- The ability to obtain licenses from Fire Department for new products
- Being in touch with the FPS market since 2000
- Being in contact with IRAN GREEN BUILDING COUNCIL (GBC)
- Having a relationship with Construction Engineering Organization, Municipality, Ministry of Labor and Social Affairs and Fire Department
- Having relationship with consumer society
- Cooperation with experts and accessing professors in the fields of fire engineering, electrical engineering and mechanical engineering.



B.B.A.

Our Services

- **Planning and System Design**

System designs are supported experienced System Sales and Design Engineers, providing practical and highly cost effective value engineered solutions to meet specific client requirements.

- **Equipment Supply**

Many of the products we offer are available for direct dispatch from our storage facility here in Tehran. Our dedicated sales engineers and support teams have the desire and flexibility to respond to your often time critical projects.

- **Installation and Project Management**

BARANA's Projects Department is responsible for the installation and project management of BARANA Fire and Security disciplines. Works are controlled by skilled engineering teams at site level with support from our office.

- **Upgrading Solutions**

The upgrading solution is a service offered to those clients who wish to make variations, modify or improve an existing fire & gas or fire suppression system. BARANA offers consultancy in the risk analysis, basic and detail design of the modification, including responsibility transfer for the modified system.

- **Field Services**

Field service available with BARANA is mainly related to regular service and inspection of fire detection and firefighting systems, erection supervision or commissioning.

- **Repairs**

Troubleshooting and repair are also a service that BARANA make available on demand dispatching specialist engineers to restore the malfunctioning systems. Regular industry events have contributed a fair share to the heightened awareness about fire safety systems in the Middle East.

- **Testing**

Fire protection systems such as foam, Carbon Dioxide, Inert & Halocarbons gases, and Water Spray require some specialist testing. BARANA offers a wide range of specialist testing

- **Export**

BARANA's extensive range of fire safety related systems are currently distributed to some countries around Asia. Our export business continues to grow and we still seek experienced fire safety solution providers in a number of countries.



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