Honeywell Safety and Security Forum
Together, working towards a more safe and secure future

Presentation name: Fire & GAS solutions
Topics

Overview of Honeywell’s Fire and Gas Solution.

GAS and Flame detection.

Honeywell Fire alarm detection solution

Honeywell Value added…

Optimal technical & technology solution

Deliver on schedule

Lowest cost until handover
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Honeywell F&G products & solution business

Approx. $3B F&G product and solution business, 11000 Employees (includes HPS, HBS and HLS)

- Leadership Positions in Great Industries
  - Safety Systems – TUV SIL2/3
  - Fire Panels
  - Personal Protective Equipment
  - Fire and Smoke Detection
  - Gas Detection

- A Transformed and Diversified Business
  - Global Scope
  - Building on “Life Safety” Platform
  - From Fire Alarm and Detection to include Gas Detection and Personal Protective Equipment

Expertise - Leader in Market
Honeywell solution for Industrial Fire and Gas system

- Video Smoke Detection
- Fire Detection System
- Plant Historian, Alarm and Asset management
- Gas Detection Flame Detection
- SIL PLC based F&G system for Process
- Gas & Flame Detection MCPs, Beacons
- Smoke & Heat Detection Specialty Sensors
- Other sensors like LHS, Beacons, Sounders etc.
- Emergency Communications
  - Public Address
  - Voice Alarm
  - Mass Notification
- Fire Suppression Systems
  - Inert Gas
  - Chemical Agents
- Integrated with video walls/Security Systems
- Integration with Experion System
Any Question?
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Honeywell Analytics Profile

Global Leader in Gas Detection

- Broad gas detection technology portfolio
- Market leader in Semi, Industrial, & Portables Single Gas
- Balanced LOB revenue diversity
- Direct Field Service strength
- Established channels in all Americas
- Fortune 500 customer list
- Product, Consumable and Service revenue

Products/Svc

Hi-Tech | Portables | Fixed |
---|---|---|

Services
- Product Service
- Systems Integration
- Field and Workshops
- OEM System Design
- Training Services

Customers
- Controls/Integrators, Wholesale Distributors, Value Added Resellers, OEMs, End Users & EPC’s

Offerings
Gas detection for life safety, regulatory, process yield, energy management, leak detection, and IAQ applications, in fixed and portable technologies, wired and wireless, with robust Service support capabilities.
Differentiating Technology

**SureCell™ electrochemical cells**

- Designed to operate in high temperature/high humidity and low temperature/low humidity environments

**Reflex® technology**

- Continuously monitors sensor cell condition
- Alerts user to fault status

**Point Infrared**

- Uses physical rather than chemical technique
- Less sensitive to calibration errors
- Can be used in inert atmospheres

- **Flammable gas Detection**
  - Catalytic
  - Point Infrared
  - Open path infra red
  - Cross duct infra red
  - **Toxic gas detection**
  - Electrochemical

- **Flame Detection**
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Fire Panel - Overview

- **XLS 120/80 System Features**
  - 1 Signaling Line Circuit (SLC)
  - UL Listed (XLS120) and EN (XLS80) for releasing for 10 hazard zones
  - Typ. Spec of XLS120:
    - Up to 318 intelligent points
    - 4 Notification Appliance Circuits (NAC)
  - Networkable (XLS-NET)

- **Typical applications**
  - Standalone
  - Campus small remote building

- **XLS3000 Integrated Fire, Alarm, PAVA & Fire Phone System**
  - All the above plus...
  - 1,000 logic equations
  - 1-10 Addressable Loops
  - Eclipse Protocol Compatible
  - Flashscan protocol
  - Integrated Digital Audio
  - Integrated Emergency Communications System

XLS300 from small application to huge Plant application (Modular build...
Intelligent Devices, addressable modules

Photo electric Smoke Detector
Indoor application Offices

Coptir Detector
Utilised In High Nuisance Alarm Locations server rooms room

Pinnacle Smoke Detector HSSD for inside cabinet (DCS/ESD)

Manual call Point outdoor/Indoor

Smoke Beam Detector to cover the huge hall or warehouse

DUCT SMOKE Detector For AIR DUCT for HVAC

Linear heat detector for conveyer application

Heat Detector Fixed/Rate of Rise for Kitchen/ dining rooms

Extensive Range For Every Application
XLS-NET

XLS140 or XLS140-2

XLS-NCA2 with XLS-DVC

XLS-NCA2 or XLS-NCA

XLS3000

HS-NCM-W or HS-NCM-F

200+ nodes

XLS-NET

BACNET GATEWAY

FNA
Fire Network Adaptor
P/N Q7055B1039

MODBUS GATEWAY

TCPIP

EBI/Experion

High Speed FA network in the industry……….. PAVA system massages
Mass Notification System Options

- Fire/Voice Command Center
- Remote FACP
- Pushbuttons
- Strobe lights Clear/Amber
- LED Signs
- Fire/Mass Notification Speakers
- Digital Amplifier
- Emergency Telephone
- Wide Area Voice

PAVA system full integrated
Life Safety – Extensive Range of Brands

Honeywell Fire Systems

- BARDIC by Honeywell
- Eltek by Honeywell
- Envitec by Honeywell
- Esser by Honeywell
- Fire Alarm Systems by Honeywell
- GTR by Honeywell
- GENT by Honeywell
- Honeywell by Honeywell
- Morley by Honeywell
- Notifier by Honeywell
- Silent Knight by Honeywell

Honeywell Gas Detection

- BW Technologies by Honeywell
- Honeywell Analytics

Honeywell Sensing and Devices

- City Technology
- KAC
- System Sensor

Honeywell Life Care

- Ackermann by Honeywell
- Honeywell HomMed

Honeywell Industrial Safety Products

- Fibre-Metal by Honeywell
- KCL by Honeywell
- Muck Boot Co.
- Neos by Honeywell
- North by Honeywell
- Servus by Honeywell
- XTRATUF

Honeywell Specialty Safety Group

- American Firewear by Honeywell
- Morning Pride by Honeywell
- PRO Warrington by Honeywell
- Ranger by Honeywell
- Salisbury by Honeywell
- Servus by Honeywell
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F&G SCADA System: Experion SCADA

Experion F&G ALARM DISPLAYS AND MANAGEMENT

• Total overview F&G mimic screen including:
  * Common fire and gas alarms per area
  * Overview common and general faults
  * Status of reset signal(s)
• Area F&G mimic screen including:
  * Individual F&G detectors indicating, Alarm status high and low alarms, Fault status and Inhibit status
  * Inhibit F&G detector alarm
• F&G Alarm signals integrated in total Experion alarm list
• Sequence of events (SOE) integrated in total Experion SOE

One Screen for Total overview F&G
Experion and DVM integration for Fire & Gas Process Monitoring

Display Video of alarm related camera

Start recording of alarm related camera

DVM for CCTV

Supervisory Control

Video Network

Alarm and Event

Alarm

Integrated to DVM
Integrated Control, Safety and Security solutions.

Experion PKS

Enterprise Buildings Integrator (EBI)

Open Systems

Integrated Network Infrastructure

Master Systems Integration and Service Delivery

Single system...when we put it all...
We can be your right partner.
Our regulatory compliant, fully automated Fire & Gas detection and Suppression system provides us information we need to be pro-active and mitigate / suppress fire with minimal losses:

- The “real” alarm (eliminating false alarms, Pinnacle)
- Location & type of the alarm (process/non-process area)
- Cause of the Alarm (Detector level information)
- Live video of the incident (Integrated CCTV System)
- We can view these info from anywhere we are !!

From the CCR, we are able to take pro-active decisions to ensure safe production and minimize losses when safety incidents happen.

- Integrated through automated systems with safety, fire and security operations team
- Exact location of gas leakages & fire detection
- Security issues in manned/unmanned locations.

Our Security systems gives us the holistic picture of the plant operations, which helps us ensure protection of our company's assets (people & equipments)

- Monitoring access areas, intrusion detection (PIDS, CCTV)
- Mustering, people tracking during incidents (Mustering, Access Controls)
- Continuous monitoring of mitigation actions thus reducing downtime. (CCTV)

....delivering systems meeting needs of the “real” users
We understand global & local regulatory standards & certification needs

**Standards**

Our products and solutions meet the global standards

<table>
<thead>
<tr>
<th>US Approvals</th>
<th>International Approvals</th>
</tr>
</thead>
<tbody>
<tr>
<td>FPA</td>
<td>EN54 Part 2&amp;4</td>
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<tr>
<td>UL</td>
<td>BSI-UK</td>
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<td>FM</td>
<td>CE-European</td>
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<td>MEA</td>
<td>IC/ULC-Canada</td>
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<td></td>
<td>RUS 40 Scandinavia</td>
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<td></td>
<td>RINA-Italy/Marine &amp; many</td>
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<tr>
<td></td>
<td>others</td>
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</tbody>
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**Certifications/Listing**

Our products are listed/approved by testing authorities

**Vendor list**

We are approved by global companies.
**Optimal technical and technology solution:**

We also manufacturer world class products

<table>
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<tr>
<th>Detection</th>
<th>Alarm</th>
<th>Mitigation / Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Gas Detectors</td>
<td>- Supervisory system</td>
<td>- Personal Protection Equipments</td>
</tr>
<tr>
<td>- Flame Detectors</td>
<td>- Fire Alarm systems</td>
<td>- Safety systems</td>
</tr>
<tr>
<td>- Addressable sensors</td>
<td>- Safety Systems</td>
<td>- Suppression systems</td>
</tr>
<tr>
<td>- HSSD</td>
<td>- PA/GA systems</td>
<td></td>
</tr>
</tbody>
</table>

- Style 6 / 7
- Class A / B
- UV/IR, 3 IR, Open Path
- Pinnacle detector

- Experion , EBI
- Ring networks
- Remote IOs
- Centralized Engineering

- Personal Safety equipments
- Safety link to Shutdown
- Listed Releasing module
- Common panel: Alarm/Supp

**Futuristic technology to reduce your cost of installation**
Optimal technical and technology solution:

We deliver Fire and Gas as a complete solution

Detection

Detection in hazard and non-hazard areas of the early warnings of explosive and health hazards, such as combustible, toxic gas, thermal radiation from fires, smoke, acoustic emission, etc.

Alarm

Audible and visual alarm indications that help ensure all operators and personnel are informed of the situation in a clear and unambiguous manner

Mitigation /Protection

Initiation of executive actions to minimize escalation to protect personnel, property and environment: water deluge, manipulation of HVAC equipment, process isolations, etc.

Together we ensure safe and secure startup
....delivering Integrated Fire & Gas system

- Effective Operating Environment
- Emergency Response
- Emergency Shutdown Systems
- Physical Security
- Boundary Management
- Abnormal Situation Management
- Asset Management and Detection
- Secure Process Control

Gas detectors, Manual Call Points

Experion HMI
Avoids Common Cause Faults

Sounders, Beacons

Fire & Gas System

F&G Mimic Panel

Addressable Fire Alarm Panel

Fire detectors

Fire detectors

Emergency Response

Camera Systems

Full Solution UL, NFPA... standard
Any Question?
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Value to an EPC…

Optimal technical & technology solution

Deliver on schedule

Lowest cost until handover
Deliver on-schedule

Understand your requirement & project complexity early

Since we are already engaged on other solutions on the project.... For eg...

- Engaged on DCS and Safety Systems
- Engaged on Steady state simulation and Dynamic Studies of the plant process
- UOP Process technology – in house knowledge delivering increase safety

Engaged on all systems and stages
Deliver on schedule

**We, the people……..**

- CoE for Safety and Fire & Gas in Den Bosch, NL and London, UK

- Extensive Specialized design & engineering teams globally

- Global projects and engineering execution methodology driving standardization

- **Credibility & advantageous access to approval bodies, if need be..**
  
  …. (for certification startup approvals, solution or product listing)

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Multi offices world wide dealing with local EPCs
So...Why Integrate?

• **Design Phase**
  - Consistent & common documentation using HON FDS and DDS documents
  - Common hardware for FGS & ESD
  - Common HMI for all integrated systems
  - Experion for F&G, ESD, PCS, PCCTV, etc
  - One Team – Best Coordination

• **Compliance**
  - With NFPA codes and ISA & IEC Standards

• **Project Phase**
  - Less Hardware, decrease FAT expenses
  - Reduce engineering, testing and installation costs

• **Commissioning and startup**
  - Single vendor responsibility and coordination
  - Common resources for ESD and FGS
  - Common Hardware means interchangeability – reduced spares
  - Reducing time which leads to savings to the commissioning expenses
  - Quicker Start Up
So...Why Integrate? Continue...

**Operations**
- Improved Reliability
- Fully integrated - better process visibility to Improve Safety of Process People
- Reduce training costs

**Maintenance**
- Reduced Maintenance Cost
- Easier Maintenance Procedures

**One Solution Provider**
- Reduced Cost of Procurement
- Reduce engineering, testing and installation costs
- Ease of Operations
- Enables Better Informed Decisions

Market experts and ownership to the project life cycle....
For e.g., a solution delivered by Honeywell

One PIB (or one unit)

2nd PIB (or one unit)

…nth PIB (or one unit)

......and we integrate them all as a complete system......
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Low cost until handover

- Manufacture majority of components
- Multiple 3rd party device testing / compatibility
- Global execution model
- Local installation & commissioning support

Global Engineering & Project Management

Global Presence – Seamlessly Integrated

Honeywell Equipment

3rd party bought outs

CCTV / DVM
Cameras
F&G Panels
Gas Detection
Flame / Smoke / Heat Detection
SCADA
(Operations & Maintenance)
History, HMI,
Alarms & Events

Controller
Logic Solver

Suppression Equipment

Mimic Panels
Network
Equipment

Beacons / Bells / Horns, etc.

HSSD Equipment

- Denotes Major Locations

High first party content & Global Delivery model
Low cost until handover

Optimal design to reduce material & labor

- Understand complete technical requirements & issues

- Optimal design based on standards and requirements:
  - Cable specifications & sizes, as required – follow standards
  - Optimum Network design, selection of components, Fiber Optic design
  - Modbus mapping – follow uniform standards
  - Identify opportunities for viable alternatives eg. Pinnacle v/s VESDA
  - Logics, simulated testing

- Maximize Use of existing cables & components/panels for upgrades projects, customized integrated solutions

- Engineering and testing of sub-systems like CCTV – PTZ / locations, Alarm triggered actions

- Single point contact – Kick off meeting to commissioning & warranty

F&G Solution Compliant with F&G standards: IEC 61511/61508, NFPA 72, EN 54

Upto 5% of your Installation budget
## Low cost until handover

### Our experience in various vertical segments

<table>
<thead>
<tr>
<th>Vertical Segment</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil &amp; Gas - E&amp;P, Pipelines</td>
<td>Well Deck, Mud logging room, Geologist Lab, control room, Accommodation deck and power plant, Pumps &amp; compressor skids for release of HC liquids, Jetty offloading and Gas arrival points</td>
</tr>
<tr>
<td>Oil &amp; Gas - Marine</td>
<td>Oil dewatering plant, gas compressors, accommodation blocks (air intakes), turbine / power skids, well heads, temporary refuges, cranes, shale shakers, battery rooms, bottled gas stores and water treatment areas</td>
</tr>
<tr>
<td>Refining, Petrochemical and Chemicals</td>
<td>Refining Process areas, Non-Process Buildings, Tank farms, Marine terminals, Aromatics complex, Bulk storage and Distribution Terminals</td>
</tr>
<tr>
<td>Power and other verticals like Pharma</td>
<td>Incomplete combustion of fuels, Burner monitoring (Coal, Oil and Gas) Desulphurization plant for detection of SOx/NOx gases Turbine hall using Hydrogen Lines to cool turbine Water Treatment plant for removal of H2S</td>
</tr>
</tbody>
</table>

**Most of Industries Solution**
Summary

➢ We specialize in the F&G
➢ Optimized and turned key solution, one stop shop
➢ Expertise in the international and local codes and standards to deliver a complete F&G solution.
➢ Global and local resources and facilities:
  - Approved facilities for Engineering, FAT, and technical support.
  - After sales services for maintenance and inspection.
  - Local and global resources for site surveys to achieve cost effective solution.
  - State of art training facilities to meet both the EPC’s and end user needs.
➢ Industrial Leader in F&G products and Engineered Solution.

➢ Codes and compliance experts.
  - All NFPA codes, EN54, BS5839, IEC 61511/61508 and local codes and compliance.
  - Design, Engineer according to highest standards as product and complete system meeting all requirements for the application.
  - Approvals within Aramco, KNPC, KFD, UAE CD, Qatar QP and CD,….we speak the language.

➢ Installation testing and commissioning according to NFPA chapter 14.
➢ Project Life cycle management by qualified experts.
➢ Safety is our business

We are your consultant for the F&G applications
Any Question?