Nobel fire systems

Nobel K- Series Kitchen Fire Suppression System

Directly built into new extractor hoods, but can also be installed afterwards by our own installation teams.

Key Advantages

YAENA Solutions BV

Yaena Solutions B.V.
Noordeindseweg 308d, 2651 LM Berkel en Rodenrijs

info@yaena-solutions.nl
www.yaena-solutions.nl
Phone: +31 (0) 10 514818

Introduction.

Over the last 15 years Nobel have constantly developed our kitchen fire suppression system to not only be financially competitive but also offer some distinct technical, operational, safety and aesthetic advantages over the other fire systems to be found in commercial kitchens. Following are a brief overview of those key advantages, which we believe place the Nobel K-Series fire suppression system at the forefront of technology and the number one choice for specifiers.

Operational advantages.

Gas Generator Technology

Within the whole of the system there are no mechanical moving parts to be found. All of the components are electrically operated. This provides some distinct advantages over our rival systems that rely on mechanical bracketry, pulley wheels, cables spring plungers, stored pressure or high pressure cartridges.

At the heart of our system is defence technology devised equipment – The Gas Generator provides a constant stream of expellant gas from a solid compound. We are surrounded by similar lifesaving technology in our daily lives. Jump into your car and this technology is employed to protect you in the event of a crash. Airbags and seatbelt pretensioners all use energetics technology to quickly, efficiently and ultra-reliably to deploy safety measures through the rapid production of controlled quantities of gas. The Nobel System is at the forefront of this technology utilising the same technology to provide the expellant gas that pressurises our system on demand from a fire condition.

Gas Generator key advantages.

a) The design ensures that there is no potential for the loss of pressure at any point.
b) The fire system remains at Zero pressure at all times until activated.
c) The unit is fully monitorable for its working condition enabling controls to constantly check its operability every second of its field life.
d) When actuated the generators provide a highly controlled constant discharge of gas without the need of regulators providing reliable, repeatable exact measures of gas to pressurise the cylinders to optimum nozzle performance pressures.
e) Constructed of 316L Stainless steel to provide a 10year field life and complete corrosion and rugged environment resistance.
f) Designed to be a very simple plug and play technology for rapid recharge in minutes.
g) IP67 DIN connection provides world recognised connection security and simplicity.
h) Actuated by a defence technology military actuator there are no moving parts to break, vibrate loose or seize. The actuator is constantly monitored for its integrity and in the very unlikely event that it does develop an issue the control panel provides both a visual via flashing LED and full text read out describing the issue coupled to audible warnings.

Cylinders

Simplicity, cleanliness and longevity are the key to the Nobel system storage cylinders. Again manufactured from Stainless steel these provide complete resistance to corrosion and provide extended service life in the field. There are four cylinders in the family from 2ltr, 5, 15 and 30ltr capacity. All are high quality brush finished to provide an easy clean surface that compliments and enhances the appearance in the kitchen environment.

As a result of the efficiency of the gas generator our preferred installation method is to place the cylinder above or out of sight in the kitchen. We don't need to have constant visibility as you do to check the condition of mechanical systems; any problems and these are instantly flagged.

Cylinder advantages.

a) Varying sizes allow a mix and match for complete flexibility of installation. They can be used together in and size configuration as well as standalone.
b) Hygienic, robust and corrosion resistant construction.
c) 100% hydrostatic test at manufacture to over 3 times the normal working pressure.
d) Inbuilt safety devices to protect against any possibility of over pressurisation.

Controls

There is a number of intelligent control panels available for the K-Series and choice is dictated by the complexity and demands placed on us by the kitchen environment. We are able to actuate up to 4 cylinders from one single control unit ensuring that even the largest of kitchens can be protected using the minimum of equipment. Making for simplicity and extreme reliability. The standard control panel employed is the NFS-4 controller. This comes complete with an inbuilt manual release facility, which is guarded against accidental, or malicious release by a tamper proofed guard. Designed around EN54 and approved under LPS 1223 the control panel has the following features and advantages.

Control panel advantages

a) Full battery back up against power outage for a minimum of 72 hours.
b) Additional manual releases can easily be added and placed on egress routes to guide people away from the risk should they need to manually actuate the system. No pulley cables or conduit just a simple fire protected cable to run.

c) Fully automated detection circuits.

d) Complete function monitoring for all fire and fault conditions. Unlike mechanical systems faults cannot go undetected or compromised. The fascia of the control panel provides full descriptive text of any fault and announces such both visually via LED's and audibly via and internal sounder.

e) Fully field programmable functionality to be able to isolate the actuation output so if deep cleaning takes place safeguards against accidental actuation can be guarded against.

f) As per EN54 there are volt free contacts for both fire and fault conditions so either can be transmitted to house or BMS systems and interface to gas and electrical shutdowns simply and efficiently.

g) Any type of fire detector can be used with the panel for single stage or two stage alarm level and actuation with the ability to program time delays if needed before system discharge.

h) Complete flexibility and intelligence at your fingertips.

i) System can be interrogated for analysis of condition from an on board non-volatile memory allowing all events to be viewed complete with time and date stamping.

j) The panel does not need to be placed local to the canopy being protected. It can be centrally located or be positioned in an office of say the head chef or other person having authority. Then simply run out additional manual release points to strategic and safe positions.

k) All cable runs are easy to hide, fast to install and again fully monitorable. No unsightly conduit, pulley elbows or fixings giving hygiene, flexibility, choice and control.

Fire Detection

Our LPCB approved probe detector and our UL approved Linear heat sensor. The design of each has been in consideration of speed of detection, robust construction and extreme reliability, resistance to physical and environmental conditions, easy clean for hygiene, economy, longevity and ease of service.

It is vitally important that any fire is detected quickly and efficiently however there is a balance to be struck between rapid detection and too slow a detection rate which will allow a fire to build to a greater level before the suppression system is released. The temperature settings are decided on using several variables and consideration including proximity of the cooking appliances to the canopy, their configuration and type as well as the heat created during the normal cooking process, Extraction air flow rate also has a major bearing on the efficiency of detection and all must be part of the risk assessment. We need to detect a fire on a range just as fast and efficiently as a wok range. Therefore the new Other mechanical systems have slow acting fusible links, fires will have progressed further before they react.

Detection advantages.

a) Unlike fusible links our detection system is fast and reliable.

b) Extremely durable and robust, easy clean and resistant to the rigors of the kitchen environment.

c) Cost effective and highly reliable.

d) Temperature variable settings to ensure all cooking variations can be accommodated.

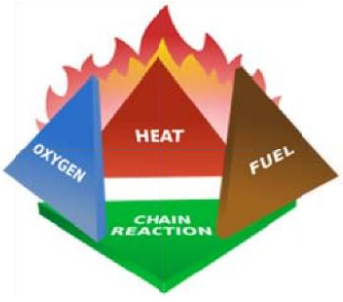
e) Resettable reducing lifetime costs.

f) Unlike mechanical systems detection is fully monitored for fault conditions. Essential to validate the working condition of the system.

Fire System Nozzles

All of the nozzles employed in the Nobel K-Series are Stainless steel low pressure, full cone misting type. There are 6 in total simplifying the range to 3 high proximity and 3 closer proximity coverage. The principle fire suppression action is to chemically alter the surface composition of the burning oil or fats to extinguish and contain the fire. Secondary but just as importantly it is important to reduce the temperature of the oil to below their auto ignition temperature. In combination with the K-Liquid, the nozzles produce an ultra-small droplet of mist that acts to absorb the heat. Each nozzle is protected with a blow off cap that prevents the oil and grease from entering the pipework. This cap blows off on actuation of the system to allow the mist to flow over the protected area. Whilst the main function of the cap is to protect the nozzle from ingress of oils we have manufactured that in sympathy with the environment. Small details make the difference so rather than a red colour we manufacture the cap in a steel grey colour so that the aesthetics when installed do not detract from the quality of the kitchen environment enabling our system to integrate as seamlessly as possible with the designs of the kitchen.

Fire Tetrahedron



The liquid acts in a number of ways and isn't dependant on cooling for its suppression effect. From the fire tetrahedron above you can see that every facet of the fire suppression attack is accomplished. The chemical chain reaction of the fire is the primary action, removing heat and starving the oil of oxygen by producing the foamy layer. Isolation of the cooking appliance is essential to close the final side and cutting off the fuel that continued to heat the oil.

Nozzle advantages.

a) Stainless steel not chrome plated brass make the nozzles highly robust and safe for use in the kitchen.
b) Misting technology gives superior fire knock down and securement performance.
c) Nozzle performance opens up nozzle placement positions so that they can be installed far more sympathetically with the kitchen environment.
d) No unsightly pipe drops that make the kitchen look extremely untidy and detract from the quality of the kitchen design.

Ansul R102 System

Nobel K- System

Wet Chemical Liquid – Nobel K

The K stands for Potassium. Our firefighting liquid is a solution based wet chemical containing Potassium organic salts that react with the fatty acids in oils and grease. This reaction produces a soapy layer of foam on top of the burning oil to extinguish the flames and prevent re-ignition. The efficiency of the liquid means that minimal volumes of liquid can be used to ensure that post discharge clean-up is minimal. Unlike other suppression mediums such as water mist the chemical interaction means that knock down is fast and reliable. Water mist requires larger volumes and longer running times as the only fire suppression mechanism is cooling. As an example even the larger canopies may require in total 30ltrs of wet chemical, in comparison water mist would run for longer with the potential of depositing 200lts + in the kitchen before it can be safely isolated.

The intimation that water mist systems are cleaner than wet chemical systems is a myth. Water may be clean and naturally occurring however the quantity needed to be used to achieve safe post fire containment negates any advantage what so ever. Nobel K liquid is easy clean up with any of the standard cleaning agents already found in the kitchen. It will not harm any of the cooking appliances and has minimal impact in the environment it is deployed.

K-Liquid Advantages

a) High efficiency minimises quantity needed.
b) Clean and effective with no major clean up requirements.
c) Non-harmful and environmentally sound.
d) Low Ph value ensures no damage to any equipment it comes into contact with. e) Long service life in the field.

Pipe work and fittings

Even the pipe work and pipe fittings contribute to the overall quality, fit and finish of the system. Using Stainless steel throughout the Nobel installation is installed quickly and efficiently with the utmost attention to position, cleanliness and hygiene. Systems use high quality swaged fittings that are crimped into place avoiding unsightly and heavy duty threaded pipework and ugly heavy duty elbows, Tees and nozzle adaptors. The whole focus of the Nobel design is to blend and compliment the aesthetics of the kitchen environment and not take over and compromise fit and finish.



The Nobel system and company ethos ensures that we provide a premier system in complete that isn't at odds with your designs.

Nobel K- System- Ansul R102 Comparison

	Nobel K- System	Ansul R102 System
Manufacturer	**Nobel Fire Systems Ltd**	**Ansul (Tyco)**
Country of manufacture	UK	USA
Fire Suppression Medium	Wet Chemical Potassium salt based (pH 7.8 -8)	Wet Chemical Potassium salt based (pH 8.5-9.5)
Type of System	All Electrical with 72 Hour battery backup. **No mechanical moving parts** Fully monitored for fire & faults conditions required under BS EN54, BS5839	All mechanical spring plunger actuation and fusible link fire detection system un-monitored for faults
Detection method	LPS 1223 European Kitchen fire suppression standard. Ultra-fast Thermal probes	UL/FM Approved slow acting Fusible links
Detection fault monitoring	**Yes.** Giving visual and audible warnings	**No.** Faults can go undetected until service
Actuation method	Electrical 24VDC Military approved initiator.	Mechanical spring plunger
Actuation fault monitoring	**Yes.** Giving visual and audible warnings.	**No.** Faults can go undetected until service
Power supply requirements	190-240VAC 50-60Hz with 24VDC battery backup	None
Power supply fault monitoring	**Yes.** Giving visual and audible warnings	None
Control	Suppression release control panel with fully monitored fire and fault circuits CE Marked	Ansul has unmonitored snap switches only. No system monitoring is possible.
Remote Manual actuation	**Yes** via EN54 approved call points using FP 200 fire protected cable	**Yes** via steel wire pulley mechanism using steel conduit and pulley elbows.
Expellant gas	**Gas Generator** Defence technology. Unpressurised until electrically actuated. No risk of loss of gas pressure. No mechanical regulators, gas produced at constant system pressure	**High pressure Nitrogen or Co2 cartridges** With regulator to reduce to system operating pressure
Materials of manufacture	Stainless steel tank assembly All pipe work and nozzles stainless steel as standard light weight 22 & 15mm	Stainless steel tank enclosure and tank Pipe work can be stainless or black pipe 3/8" Heavy duty Schedule 40

Nozzles	Stainless Steel 6 different types Simplified nozzle selection and positioning	Chrome Plated brass 14 different types for different applications
Direct Interface to Emergency power shut down buttons	**Yes inbuilt** Via monitored connection	**Yes** Via snap switches only. No Fault monitoring
Direct control of electrical isolators for power shut downs	**Yes inbuilt** Fully designed into control panel via monitored relays	**No** Only via additional snap switches
Interface to House alarm	**Yes inbuilt** Designed to integrate fully to transmit both fire and fault signals to building or ship fire alarm system with local audible and visual indication.	**Yes** Only via unmonitored Snap switch for fire only **No Faults conditions can be monitored** Faults can go undetected and will not be realised until a fire occurs and it fails to operate.
Audible & Visual Fire indication	**Yes inbuilt** Additional remote sounders can also be added	**No** Only plastic visual mechanical drop down indicator on enclosure face
Additional visual and audible alarms	**Yes inbuilt** Additional sounders can be added	**No**
Typical Installation time on similar sized systems.	1 day	2 days
Service intervals	1 service per year	2 times per year
Areas of coverage **Cooking appliances -** **Extract canopy plenum and filters -** **Entrance to extract duct -** **Extended ductwork protection through adjacent areas to roof level -**	 Yes Yes Yes **Yes**	 Yes Yes Yes **No**

YAENA Solutions BV
Yaena Solutions B.V.
Noordeindseweg 308d, 2651 LM Berkel en Rodenrijs
info@yaena-solutions.nl
www.yaena-solutions.nl
Phone: +31 (0) 10 514818

Environmental Impact	None	No information provided on Ansul system
ODP Ozone depletion potential	0	
GWP Global Warming Potential	0	
Order of hazard	None Hazardous (Please see relevant MSDS sheets for full information).	
and **Approvals, standards awards**	**LPS 1223** **ISO 15371:2000 & 2009** **ABS, Lloyds, DNV, RINA, KR, BV, GL,** **MCA, MED** **CE** **Royal Navy UK,** **Australia Royal Navy** **New Zealand Royal Navy German Navy** **Preferred product – Allianz Insurance**	UL300/LPS1223