

Risk Engineering Report



Prepared for:

STICHTING FONTYS

Site Name: Rachelsmolen 1Eindhoven

Date of Survey: November 17, 2022

Report Date: December 16, 2022

Survey Type: Property All Risk - Initial

TIV (EUR): 144,710,000

Site Address: Rachelsmolen 1, EINDHOVEN, 5612 MA, Netherlands

Latitude: 51.451838

Longitude: 5.479685

RFS ID: RFS-132469

SIC Code: 8221-02-Colleges and Universities, NEC, Private

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- Tips sheets that offer guidance and checklists to use before, during and after extreme weather events

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Questions or special requests: Email: globalproperty.impairment@aig.com

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- 1-877-705-7287 (US & Canada) or 1-817-490-3255 (Global)
- Email: globalproperty.impairment@aig.com or reach out to your dedicated account risk engineer

Purpose of Visit

This facility was visited to undertake a risk assessment of the fire and associated perils for insurance purposes. The purpose of the assessment was to assist in the identification and mitigation of hazards and exposures that could lead to the loss or damage to assets or business interruption.

The site visit was the first conducted by AIG. During the visit, the various buildings on the Rachelsmolen campus were visited to get a general impression of the organization, buildings and so on. Fontys also made it possible to visit the three buildings under construction.

Site Overview

Fontys Hogescholen is a college for Higher Professional Education. It has various locations in Eindhoven, Tilburg, Venlo, Sittard, Den Bosch, and Utrecht. It offers more than 100 studies. This report covers the Campus site Rachelsmolen in Eindhoven. At this Campus the buildings R3, R4, R5, R9 and R10 are in place. The R3/R4 building is the largest of the group. The main focus on this location lies in theoretical education, only building R9 is a parking garage.

All the three locations are classified as an ISO4 construction, a limited m² (<5%) is combustibile due to the roof construction with EPS insulation. The total floor surface per building is:

- R3: constructed in 1988, 5 floor, total floor surface: 8,954 m².
- R4: constructed in 1988, 6 floors, total floor surface: 10,343 m².
- R5: constructed in 1988, 3 floors, total floor surface: 4,279 m².
- R9: constructed in 2018, 3 floors, total floor surface: 9,960 m².
- R10: constructed in 2020, 6 floors, total floor surface: 13,390 m²

There is no sprinkler protection in place. All the buildings have a limited fire detection system, situated for personal safety (evacuation) and in area with an enhanced risk like technical rooms, utility shafts etc.. The kitchen deep fat fryers/hoods are not protected with a wet agent, a risk improvement (advice) is noted. The building is divided in a large number of horizontal and vertical compartments according Dutch legislation. During a large part of the day security is present in the building also responsible for the closing round.

The organizational measures, procedures and so on are up to standard but improvement to a good/ excellent level is possible. During the site visit risk improvement were discussed and noted:

- Remove private equipment.
- Involvement new PV system..
- Scope 12 inspection existing (and new) PV system.
- Used battery storage.
- Material use nose reduction.
- Advise: Protection system deep fat fryer.

Site Loss History

No large losses reported during the site visit.

New Projects, Significant Changes and Observations

It is important to involve your insurer in new projects, such as refitting, refurbishment, extension work, new builds or relocating to a new site. Failure to do so could result in using non-approved construction materials (even though they meet local Building Codes and Fire Regulations) or inadequately protected facilities which could lead to expensive retrospective additions or rework. The Loss Prevention Engineering team at AIG can assist you with this by providing you with engineering support both before and during your project. Please contact us before you commence your project to ensure that we can arrange a consultation with one of our engineers.

During the site visit contractors were realizing three new buildings on the campus site. The buildings will be completed in 2023. Buildings are:

- R11: A floor surface of about 4,000 m², a combination of ISO5 and ISO3 construction. The building will hold general functions like a restaurant and meeting rooms.
- R12: A floor surface of about 8,000 m², a combination of mainly ISO5 construction, limited an ISO3 construction. The building will be for theoretical and practical lessons.
- R13: A floor surface of about 13,000 m², a combination of mainly ISO5 construction, limited an ISO3 construction. The building is for theoretical studies.

All buildings will be heated with a thermal energy storage system (Dutch: WKO).

Since the buildings are still under construction they are not part of the policy yet. After the buildings are occupied, they will be visited by AIG. We have not been involved in the development process.

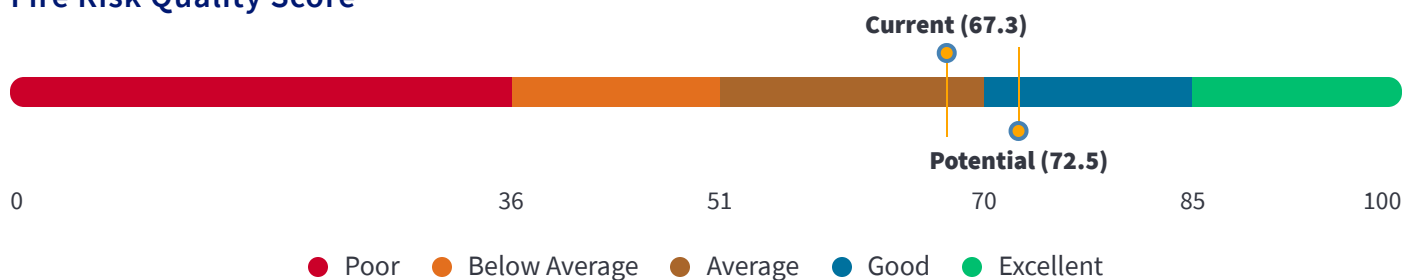
Additional information can be found on the internet at the Fontys and Hurks site.

A decision will be made in 2027 as to what will be done with building R4. There is a possibility the building will be demolished and a new building will be realized. If plans become clear AIG will be informed.

Risk Summary

Open RI by Classification	6	Open RI by Age	6	Open RI by Type	6
Critical	0	New	6	Management Programs	3
Important	5	Outstanding	0	Physical Protection	3
Advisory	1	Completed RI	0		

Fire Risk Quality Score



Ratings

	Current rating	Potential rating
Hazards	Slight	Slight
Water Supply	Adequate	Adequate
Protection	Nearly Adequate	Nearly Adequate
Management Programs	Adequate	Adequate
Supervision	Adequate	Adequate
Exposures	Slight	Slight

Risk Improvements

Risk Improvements - Open

Number	Name	Classification	LE Before (EUR)	LE After (EUR)
22-11-02	Remove privated owned appliances	Important	--	--
22-11-03	New - PV systems	Important	--	--
22-11-04	Scope 12 inspection	Important	--	--
22-11-05	Material use noise reduction	Important	--	--
22-11-06	Storage (old) batteries	Important	--	--
22-11-01	Kitchen protection (best practice)	Advisory	--	--

Note: Risk Improvements associated with management programs will not have an associated Loss Estimate before or after implementation

Open Risk Improvements : Important

Number/Type	Name	LE Before (EUR)	LE After (EUR)
22-11-02 Physical Protection	Remove privated owned appliances		

Summary

Inform employees that it is forbidden to use home appliances at work because of the (fire)risk. After a certain period remove all private owned home appliances like the coffee machines, radio's, toasters, microwaves, fridges, and so on.

Details

As an employer you are responsible that all fixed electrical installations, portable, and transportable electrical equipment is examined and tested by a competent qualified electrical contractor according Dutch legislation. The inspections are designed to maintain a safe working environment and minimize the risk of a fire. The problem with home taken appliances is that they are not included during inspections and in most cases are at the end of their technical life, or damaged and therefore no longer suitable for home use. For these reasons, this is an increased risk for starting a fire that is reasonably easy to prevent. For these reasons, this is an increased risk for starting a fire that is reasonably easy to prevent with a clear policy and enforcement that home appliances are not allowed. However, if as employer you choose to let employees use their own electrical appliances you must accept full responsibility for its maintenance and safety. They must include it in their portable appliance testing arrangements.

Images



Example of home appliances

Number/Type	Name	LE Before (EUR)	LE After (EUR)
22-11-03 Management Programs	New - PV systems		

Summary

Submit the PV plans to AIG for review prior the development of these plans.

Details

During the survey it was mentioned that there are preliminary plans to realize PV system on several building of Fontys (also other location outside Rachelsmolen Campus). These plans are scheduled to be implemented within two years. The plans can be evaluated by AIG (and Aon) to ensure that the possible risks are taken into account adequately. AIG will review the plans to ensure they are acceptable for AIG insurance purposes and will provide recommendations as needed. Having AIG involved earlier on and throughout the project will help ensure that the appropriate loss prevention features are provided and prevent project delays. Important aspects are the load-bearing capacity of the complex, insulation materials used, technical lifetime of roofing, drainage and inspection after completion.

Client Exit Conference Comments

Will be taken into account.

Number/Type	Name	LE Before (EUR)	LE After (EUR)
22-11-04 Management Programs	Scope 12 inspection		

Summary

Conduct a scope 12 inspection of the photovoltaic (PV) system. And if applicable solve/ repair deviation noted in the scope 12 report.

Details

A scope 12 inspection of a PV system ensures that the PV system is realized according applicable standards. And if the maintenance is at a sufficient level. This will limit the risk of an issue or starting fire at the PV system or an other risk that can result in a loss.

Client Exit Conference Comments

System on building R10 is disconnected, will be done after system is in place.

Number/Type	Name	LE Before (EUR)	LE After (EUR)
22-11-05 Management Programs	Material use noise reduction		

Summary

Provide AIG the documents about noise reduction materials that could be used for building R10. It is upmost important that these are verified before application.

Details

Building material can contribute in case of a fire. By applying non combustible materials (Dutch: brandklasse A) this is not possible. during the visit, Fontys explained that students complain about the acoustics of the complex. And they are looking to solve this problem by applying acoustic insulation materials.

Client Exit Conference Comments

Will be taken into account.

Number/Type	Name	LE Before (EUR)	LE After (EUR)
22-11-06 Physical Protection	Storage (old) batteries		

Summary

Provide storage containers/ drums and/or packaging with betonite at the ICT service desk (R10) were (old) batteries can be stored in before removal offsite.

Details

Old batteries can explode, leak, release harmful gases or, as we have seen, catch fire. While the battery may be small, no bigger than a coin, its impact can be enormous. Batteries have been known to catch fire in a variety of unusual circumstances – for example, waiting in an office or during the middle of a flight.⁵ In these instances, the batteries were not discarded and were nominally being supervised. The effects, however, could have been severe. Those same risks still apply when the battery has reached the end of its useful life, the major difference is they are no longer being supervised and they may be kept in conditions that exacerbate the potential for harm.

For additional information about recycling of batteries see the Dutch government site Stibat.

Client Exit Conference Comments

Will be taken into account

Open Risk Improvements : **Advisory**

Number/Type	Name	LE Before (EUR)	LE After (EUR)
22-11-01 Physical Protection	Kitchen protection (best practice)		

Summary

Protect the commercial cooking equipment (i.e. deep fat frying equipment) in the kitchen area with an ANSI/UL 300 compliant wet chemical extinguishing system interlocked to shut off the fuel supply to the equipment upon system actuation in accordance with NFPA 96. Also for new tenants at street level in the public area this should be part of the negotiations/ standard for new renting contracts.

Details

A fire involving oils used in the cooking equipment represents a significant fire hazard that can release large amounts of smoke. Conventional sprinklers and older dry chemical systems are not as effective as wet chemical extinguishing systems. The suppressant in these systems is specifically designed to extinguish cooking oil fires through the process of saponification that produces a soap foam layer when mixed with the oil that cools and seals off the surface, preventing re-ignition. Examples of the systems could be found at:

- <https://flamecontrol.nl/keuken-blussystemen/>
- https://www.johnsoncontrols.com/nl_nl/brandbestrijding/grootkeuken-blussystemen
- <https://www.saval.nl/producten/kitchenflex/69/174/>
- <https://acm-air.com/keukenbrand-blussysteem/>

Occupancy & Process Overview

Fontys Hogescholen (rest of the report noted as Fontys) is in the South part of the Netherlands, with locations in:

- Eindhoven
- Tilburg
- Venlo
- Sittard
- Den Bosch
- Utrecht

Fontys has a total some 46.000 national and international students. The general times buildings are open is Monday till Friday between 7:30 am till 22:00 pm (other times possible depending day and building). During this period the reception is occupied. Throughout the building are classrooms, practical training rooms, and offices for students and staff employees. Restaurants/ cafes are in most cases at ground floor level, which are equipped with a professional kitchens with only in building R4 deep fat frying equipment. The largest number of classrooms are theoretical. Practical class rooms are limited for ICT, no chemistry.

The location described in this report is the Campus Rachelsmolen in Eindhoven. At this campus the following buildings are located:

- R3/4: Lecture halls, classrooms, a variety of learning spaces, meeting spaces, media library, coffee bar, offices, restaurant and bar (not in use at the moment).
- R5: Security lodge, ICT, server room, meeting/ presentation rooms.
- R9: Parking garage.
- R10: Lecture halls, classrooms, a variety of learning spaces, meeting spaces, media library, coffee bar, offices,

During the site visit building R11, R12 and R13 were under construction, the first will be completed Q2-2023 and in-service for study year 2023/2024.

Occupancy Details

Building	SIC Code	Description	Operating Days/yr	Operating Hrs/Day	Other Tenants
Rachelsmolen 1Eindhoven	822102	Colleges and Universities, NEC, Private	260	12	No

Images



Campus site (source Fontys)



Building R10



View from building R4



Hazards

Hazard Category	Type	Current Rating	Potential Rating	RI's
Heating, Ventilation, Air Cond & Refrigeration	Common	No Deficiencies	No Deficiencies	0
Electrical	Common	Low	No Deficiencies	1
Storage	Common	No Deficiencies	No Deficiencies	0
Commercial Cooking	Process	Slight	Slight	0
Electrical	Process	Slight	No Deficiencies	0
Flammable Liquids - Storage, Transfer, Use	Common	No Deficiencies	No Deficiencies	0

Non-Process HVAC Equipment

Heating of the buildings is by means of natural gas fired boilers and air handling units, which are located the technical rooms at top floor level. Cooling compressors (chillers with a Freon replacement medium) are located on top of the roof. Air ventilation ducts are reportedly equipped with fire dampers. Building R10 uses a thermal energy storage system (Dutch: WKO).

The technical rooms are supervised by automatic smoke detection. The compartmentation and housekeeping in the technical rooms visited was good. All rooms also provided with water detection on the floors.

Status of installations are managed and monitored via the building management systems. Equipment appears visually in a good state of repair. Periodic maintenance is contracted out to specialized contractors.

Images



Heating



Ventilation

Electrical

Electrical installation is fed by transformers located in the buildings in separate 60' fire compartments. Capacity of the transformers is unknown. They are oil filled and owned by Enexis. Maintenance of transformers and main circuit breakers is outsourced.

The electrical installations appear visually in a good state of repair. Penetrations for electrical cables were found to be adequately fire stopped, including inside vertical utility shafts. The electrical installation is subjected to inspection according to the Dutch standard NEN 3140, which comprises visual inspection of all installation parts and checks by measurements. The periodicity is set to according the NEN3140. Inspections are done by third party and include thermographic surveys. Recommendations are followed.

Electrical equipment is also subjected to periodical NEN 3140 checks indicated by stickers on the equipment involved. Once a year a check round is done to ensure safe use of electrical extension cords and all appliances are checked according NEN3140.

During the site visit different private appliances were noted. This is an enhanced risk a risk improvement is noted and discussed during the site visit.

On the roof of R10 a PV (solar) system was realized, at the moment the system has been decommissioned. During the site visit the importance of involvement of AIG in plan-making for new PV installation and the inspection (scope 12) of existing PV systems is discussed, see risk improvements.

Risk Improvements

Name	LE Before (EUR)	LE After (EUR)
Remove privated owned appliances 22-11-02	0	0

Images



Trafo



Private equipment

Incidental Storage

There are no large central storage areas, but a few small store rooms (< 25 m²) are present throughout the campus with storage of classroom materials, office supplies, electronic components and parts, food storage, etc.. Storage takes place both on floor and on shelf racks to a height of 2.5 meters.

Classroom

The vast majority of the buildings consist of theory classrooms, project group rooms, meeting space, media library, and offices. Practical classrooms at Fontys Eindhoven are limited, in these classrooms technical equipment is present like computers, TV screens and so on and some handheld equipment. Students work under the guidance and supervision of teachers. In building R5 the main server of the Fontys is located. This is not visited. Back up external.

In building R10 ICT service desk is present. They help in cases of problems with ICT and have different spare parts and hand held equipment for maintenance. A risk improvement discussed and noted is to place at this desk closed containers with betonite in it for storage of used batteries.

Commercial cooking

Hoods/Duct Cleaning Frequency Weekly	Ceiling Sprinklers present ? No	Cooking/Frying Area Special Protection None	Fuel Shutoff Interlock Yes
Fryers separated from open flames of adj. equipment Yes	Portable Extinguishers Acceptable Yes		

There is one professional kitchen in building R4 on the ground floor. It contains electrical and gas fired kitchen equipment like an oven (electrical) and deep fat fryers (gas). In other buildings there is only small electrical equipment, like ovens. The professional equipment in the kitchen is well maintained and is always operated under supervision of professionals. High temperature limit switches are reportedly available. Fire blankets and adequate portable fire extinguishers have been provided. Periodic inspection and cleaning of the exhaust ducts is subcontracted to a professional company (reportedly once every year). The kitchen is not provided with a local extinguishing system (recommended only as best practice).

Images



Cafe - electrical equipment (R3)



Restaurant - deepfat fryer (R4)

Construction

Category	Current Rating	Potential Rating	RI's
Construction	ISO 4 / Class B - Masonry Noncombustible with noncombustible metal deck roof	ISO 4 / Class B - Masonry Noncombustible with noncombustible metal deck roof	0

Building	Year Built	# Stories	Height (m.)	Total Area (sq. m.)
Rachelsmolen 1Eindhoven	1988	6	24	43,924

Area (1,000 sq. m.)

Building	ISO1/D	ISO2/C	ISO3/C	ISO3/B	ISO4/C	ISO4/B	ISO5/A	ISO6/AA
Rachelsmolen 1Eindhoven	--	--	0.5 (1.14%)	--	7.2 (16.32%)	--	36.3 (82.54%)	--
Total	0.0 (0.00%)	0.0 (0.00%)	0.5 (1.14%)	0.0 (0.00%)	7.2 (16.32%)	0.0 (0.00%)	36.3 (82.54%)	0.0 (0.00%)

Definitions: ISO1=wood frame walls roof, ISO2=masonry walls wood roof, ISO3=light non-combustible walls roof, ISO3 (CMD)=ISO3 with combustible metal deck, ISO4=non-combustible metal deck and masonry walls, ISO4 (CMD)=ISO4 with combustible metal deck, ISO5=modified fire resistive walls roof, ISO6=fire resistive walls roof.

Comments

The buildings on campus have according BAG site the following data:

- R3: constructed in 1988, 5 floor, total floor surface: 8,954 m²
- R4: constructed in 1988, 6 floors, total floor surface: 10,343 m²
- R5: constructed in 1988, 3 floors, total floor surface: 4,279 m²
- R9: constructed in 2018, 3 floors, total floor surface: 9,960 m²
- R10: constructed in 2020, 6 floors, total floor surface: 13,390 m²

The four buildings mostly have concrete load bearing constructions, concrete floors, concrete roof and inner wall blade of concrete. Roof extensions for technical installations have non-combustible wall constructions, but have steel deck roofs with PU foam insulation. The m² of these extension is limited (<5% of total floor surface). The vast majority of the buildings are constructed with a concrete roof, insulation, bitumen roofing and on buildings R4 and R5 partially covered with a gravel layer. The type of insulation is unknown, based upon the technical rooms and the roof feels solid probably a combustible type of insulation.

The facades of the different buildings are:

- R3: glass (<20%) and a reportedly mineral wool insulation, and sheets with a plastered finish.
- R4: a reportedly mineral wool insulation with a brick work finish and a limited m² of glass.
- R5: a reportedly mineral wool insulation with a brick work finish. The middle part two top levels have a metal cladding outerwall.
- R9: no walls, only a steel and wooden construction to create a green finish with plants.
- R10: has a combination of glass, wooden and metal cladding finish. Insulation present is mineral wool.

All buildings are divided into several fire compartments. Generally speaking the buildings are divided into compartment according the Dutch building code by 60' fire separations. Each floor is 60' fire proofed. The staircases are a separated compartment 60 minutes rated. The lifts are partly 60 and partly 30 minutes (doors) fire separated. Cable and other penetrations seem to be kept well closed. doors in the fire-resistant partitions are held up with magnets. In the event of a fire, the magnets are released and the doors automatically fall shut.

Remarks:

- *Number of floors is including the roof extension for technical installations.*
- *The building classification is divers, a limited percentage is ISO3C (roof extensions) the rest is classified as and ISO4 and ISO5 construction. Because the specific m² per floor and wall finish is unknown the overall construction classification applicable is downgrade to ISO4(b).*

Images



Example of inside



Roof covering

Water Supply & Fire Pumps

Water Supplies

Category	Current Rating	Potential Rating	RI's
Water Supply	Adequate	Adequate	0

Name	Type	Pump Associated	Adequacy
Hydrants	Gridded Municipal	None	Adequate

Comments

Underground hydrant connections in the public roads around the campus, capacity unknown (> 60m³/h)

Protection

Category	Current Rating	Potential Rating	RI's
Sprinklers	Nearly Adequate	Nearly Adequate	0
Special Extinguishing Systems	Inadequate	Good	1
Fire Extinguishing Equipment	Good	Good	0
Public Fire Department	Good	Excellent	0

Sprinklers

Building	AS (%)	ASA (%)	ASN (%)	Fire Detection (%)
Rachelsmolen 1Eindhoven	0.00	0.00	100.00	60.00
Total	0.00	0.00	100.00	60.00

Definitions: AS (%) =sprinklers provided, ASA (%) =adequate sprinklers provided, ASN (%) =sprinklers improvements needed, Detection=Smoke or other Fire Detection excluding sprinkler waterflow

Comments

No sprinkler system present in the buildings of Fontys. Although not present rating based upon NLE according AIG guidelines. Realization of a sprinkler system not technical and financial feasible therefore no risk improvement noted.

Special Extinguishing Systems

Risk Improvements

Name	LE Before (EUR)	LE After (EUR)
Kitchen protection (best practice) 22-11-01	0	0

Fire Extinguishing Equipment

Water Supply & Inspection

Frequency

- Meets NFPA requirements

FEA/Hose Reel Details

- Equipment is properly maintained
- Inspections are properly documented with records maintained and readily available
- Plant personnel properly trained

Recommendations

None

Comments

Adequate number and appropriate types of portable fire extinguishers and fire hose reels available on each floor. Their number, visibility, and accessibility are rated as being adequate throughout. Inspection and maintenance are subcontracted and conducted annually.

Public Fire Department

Fire Department Type

- Full Time

Fire Department Features

- Fully trained and funded (adequate for the risk if special hazards exist)
- Fully equipped with required modern pumping appliances, ladders, aerial equipment, BA equipment
- Equipment regularly tested and maintained
- Full time emergency communications center to dispatch FD
- Closest FD participates w/ other local full-time FD's w/in a "mutual aide" concept
- Response time is less than 20 minutes

Fire Department Distances (kilometers)

Station #1

Station #2

2.00

3.20

Comments

In Eindhoven there are several fire stations. The fire brigade can use dry risers.

Supervision

Category	Current Rating	Potential Rating	RI's
Automatic Fire Detection	Adequate	Adequate	0
Security	Good	Good	0

Automatic Fire Detection

Signaling Systems Central Station/ARC	Recognized Yes	Monitored Line Yes	Fire Protection Alarm - Smoke Detection - Pull Boxes
Valve Locked NA	Fire Detection Coverage (Including Sprinklers) at least 80%	Smoke Detection Monitored Yes	Other Alarms No

Maintenance, Testing and Inspection per NFPA 25

Satisfactory

Comments

The buildings are equipped with automatic fire detection system. For safely evacuation (hallways, restaurant, dead end etc.) and in increased risk areas such as technical rooms, elevator machine room, shafts and so on. The AFD is realized in accordance with NEN2535, control and maintenance by installer. The alarms are transmitted to a private alarm station. The alarm station contact the technical department or a security firm to verify the alarm. In case of several alarms/ zone reportedly the fire brigade is directly called.

Security

Security & Watch Service (24/7) Other	Round Frequency at least every 8 hrs	Security Rounds Recorded	Coverage 100%
Security Alarms - CCTV - Door Contacts - Internal Movement Detection	Intrusion Alarm Monitoring Recognized central station	Site Fencing and Barriers Single fence	Burglar and Theft Exposure Yes

Vandalism / Malicious

Mischief Exposure

Yes

Sabotage and Terrorism

Exposure

No

Comments

In building R5 the security lodge is situated overlooking all camera positions of Fontys (also buildings in other cities). the lodge is occupied during opening times. Around the campus is fencing, exterior lighting consists of public and private lighting. The buildings are fully equipped with a burglar alarm system in accordance with the Dutch VRKI, free access during opening times.

Images



Example AFD in shaft

Management Programs

Category	Current Rating	Potential Rating	RI's
Emergency Organization & Planning	Adequate	Adequate	0
Self-Inspection Program	Adequate	Adequate	0
Fire System Impairment Procedures	Good	Good	0
Contractor Management	Excellent	Excellent	0
Hot Work Permit	Good	Good	0
Smoking	Excellent	Excellent	0
Housekeeping	Adequate	Adequate	0
Planned Preventative Maintenance	Adequate	Good	1
Management Interest	Adequate	Good	2
Site Level Business Continuity Planning	Adequate	Adequate	0

Management Programs

Emergency Organization & Planning

Written Emergency Action Plan

Commensurate with exposure, but not as precise or focused on life safety

Drills/practices conducted

periodically

Yes

Fully Updated

Yes

Comments

A trained emergency response team in first aid and the use of extinguishers.

Self-Inspection Program

Self-Inspection Program

- Yes

Documentation

- Formal, documented checklist

Frequencies

- Minimum weekly or commensurate with the occupancy

Root cause & training

- Program includes items such as inspector training, root cause analysis, management of change, auditing, etc.

Risk Improvements

- None

Fire System Impairment Procedures

Written and documented procedure

- Yes

Communication

- Communicated to relevant personnel with mgmt. responsibilities assigned and ensures restoration of protection as soon as practical.

Impairment logging

- Paper logging system is utilized and fully up to date

Conforms to AIGs guidelines

- Yes

Risk Improvements

- None

Comments

Impairment procedure for the automatic fire detection system is in place.

Contractor Management

Contractor Training Program

- Yes

Management Program Features

- Covers ALL aspects of plant safety & operations
- Required for all contractors and sub-contractors
- Strongly supported by management with zero tolerance for misconduct
- Contractors follow all plant policies including but not limited to hot work, impairment, housekeeping, and smoking

Records

- Maintained electronically

Risk Improvements

- None

Comments

Fontys works with fixed contractors. All contractors are informed about site safety, regulations and so on. Upon arrival contractors have first to report to the technical department or other representative of Fontys.

Hot Work Permit

Hot Work Program in Place

- Yes – Conforms to AIG

Communication

- Communicated to personnel with mgmt. responsibilities assigned

Logging

- Paper logging system

Is there Hot Work Occurring

- No Hot Work Occurring

Comments

The procedures to limit the risks are in place, for example hazardous work is first coordinated with the necessary measures, including a hot work procedure.

Smoking

Policy

- No smoking allowed within the perimeter of the site

Appropriate Receptacles

- Yes

Inspections

- Weekly

Material Disposal

- Adequate

Risk Improvements

- None

Comments

Smoking is highly regulated. On the premises of the school smoking is prohibited by Dutch Law. The smoking ban is largely observed, only at the edge of the premises and near the parking lot not in all cases. This is considered not to be a risk.

Housekeeping

Quality

- Commensurate with exposure

Inspections

- Regular inspections w/ management support; well-documented

Risk Improvements

- Important

Comments

Around the building no storage against building facade of combustible materials present. A designated waste storage area (partly fenced) is > 10 meters from R5. During site visit with exception of one technical room the housekeeping is up to standard. During site visit the technical room on the ground floor of R3 is discussed and action will be taken. Because the overall housekeeping and action that will be carried out no risk improvement is noted.

Planned Preventative Maintenance

PM Program in place

PM System

Overdue Assignments

- Yes – includes all equipment including work performed by outside contractors

- Fully computerized and automated work order generation

- None

PM of Critical Components/Equipment

- Conforms to manufacturer's minimum requirements

Risk Improvements

- None

Comments

All installations are maintained according legislation, standards, and/or manufacturer's requirements. Maintenance contracts with specialized companies. The technical department is limited and only in place for troubleshooting and small-scale maintenance. For PV panels it is important to conduct a scope 12 inspection (see risk improvement).

Risk Improvements

Name	Classification
Scope 12 inspection 22-11-04	Important

Management Interest

Management Interest

- Supportive
- Involved in Communications
- Respond Positively to Comments/Recommendations

Field Safety and Risk Management

- Important

Comments

It is important to involve your insurer in new projects, such as refitting, refurbishment, extension work, new builds or relocating to a new site. Although Fontys informs AIG especially during site visit it is also important to contact us before our site visit and commencing your project to ensure that we can arrange a consultation with one of our engineers. Two risk improvement for future plans are discussed during the site visit and noted in this report.

Risk Improvements

Name	Classification
New - PV systems 22-11-03	Important
Material use noise reduction 22-11-05	Important

Site Level Business Continuity Planning

Comments

BI is not insured, therefore considered 'Adequate'.

Exposures

Category	Current Rating	Potential Rating	RI's
Exposure	Slight	Slight	0

Internal Exposure

On the campus several cafes en canteens run by third parties. The equipment is owned and maintained by Fontys.

External Exposure

The Rachelsmolen Campus is near the city center of Eindhoven. Around the campus site public roads. External exposures around the campus are:

- North: offices and dwellings at a minimum distance of 70 meter.
- East: no third-party buildings within 100 meter. On the east side are several sports fields.
- South: dwellings and apartments at a minimal distance of 30 meter.
- West: at > 75 meter apartments, retail shop and a primary school.

Yard Storage

Yard storage is limited to waste containers

Water Intrusion Exposure

No

Aircraft Exposure

No

Structural Collapse Exposure

No

BI Exposures

General BI

BI is not insured.

NATCAT Exposure Summary

	Flood	Wind	Earthquake	Hail	Collapse	Other
Zone/Exposure	No Flood Exposure	36 m/s	MR Zone 2:MMVII	MRe Zone 3	No	No

Flood

Site Property Flood Zone

No Flood Exposure

Redundant Power/Utilities

Client has no power nor utility redundancy

Building	Flood Zone	Flood Source	FFE (m)	100 Yr Flood Elv. (m)	500 Yr Flood Elv. (m)
Rachelsmolen 1Eindhoven	No Flood Exposure	River	--	--	--

Comments

The campus is located in an area without a flood risk.



Wind

Wind Speed (m/s)

36

Redundant Power/Utilities

Client has no power nor utility redundancy

Building

Distance to Coast

Rachelsmolen 1Eindhoven

10 and greater miles

Earthquake

EQ Zone

MR Zone 2:MMVII

Peak Ground Acceleration (%g)

26.00

EQ Emergency Response Plan

Client has no BCP in place

Redundant Power/Utilities

Client has no power nor utility redundancy

Seismic Bracing of Equipment

No seismic bracing or restraint is provided

Asset Strengthening

Unknown

Seismic Gas Shutoff Valves (SGSV)

No flammable gas or liquid exposure present

Other NATCAT Perils

Other CAT Perils

Lightning protection in place on the dominant buildings, annually maintained.

Fire Loss Estimates

All loss estimates developed as a result of our property surveys are for the sole use of AIG underwriters. Engineering loss estimates are based on the professional judgement of our engineer / consultants. There is detailed guidance and methodologies that are reference and used in the calculate of our Loss Estimates. Using our Loss Estimates without an understanding of the underlying guidance and methodologies is not recommended. AIG assumes no responsibility for use or reliance upon the loss estimates presented below.

	PD (M EUR)	PD%	BI (M EUR)	BI%	IBI (M EUR)	TOTAL (M EUR)
MAS	144.71	100.0		0.0		144.71
MFL	36.51	25.2		0.0		36.51
NLE	6.94	4.8		0.0		6.94

Reported Values

Property Damage

Building (EUR)	Contents (EUR)	M&E (EUR)	Stock/Inventory (EUR)	Other PD (EUR)
118,412,000	26,298,000	0	0	0

Business Interruption

Indemnity Period	BI/Gross Revenues (EUR)	Rental Income (EUR)	Payroll (EUR)
12 Months	0	0	0

Totals	EUR
Total Property Damage Value	144,710,000
Total BI Value	0
Total Insured Value	144,710,000

Maximum Amount Subject (MAS)

Total LE (EUR): 144,710,000

PD Loss Estimate

Building	Bldg (EUR)	M&E (EUR)	Content (EUR)	Stock (EUR)	Other (EUR)	Total (EUR)
Rachelsmolen 1Eindhoven	118,412,000 (100.00%)	0 (100.00%)	26,298,000 (100.00%)	0 (100.00%)	0 (100.00%)	144,710,000 (100.00%)
Total	118,412,000 (100.00%)	-- (--%)	26,298,000 (100.00%)	-- (--%)	-- (--%)	

Total Property Damage Loss Estimate (EUR): **144,710,000 (100.00%)**

TE Loss Estimate

Building	BI (EUR)	Payroll (EUR)	Rent (EUR)	Downtime (Months)	Total(EUR)
Rachelsmolen 1Eindhoven	-- (--%)	-- (--%)	-- (--%)	--	--%
Total	-- (--%)	-- (--%)	-- (--%)	--	

Total TE Loss Estimate (EUR): -- (0.00%)

Loss Estimate Comments

PD-MAS

The MAS is set to be the entire Rachelsmolen Campus.

BI-MAS:

Not insured.

Maximum Foreseeable Loss (MFL)

Total LE (EUR): 36,505,700

PD Loss Estimate

Building	Bldg (EUR)	M&E (EUR)	Content (EUR)	Stock (EUR)	Other (EUR)	Total (EUR)
Rachelsmolen 1Eindhoven	27,595,700 (23.30%)	-- (--%)	8,910,000 (33.88%)	-- (--%)	-- (--%)	36,505,700 (25.23%)
Total	27,595,700 (23.30%)	-- (--%)	8,910,000 (33.88%)	-- (--%)	-- (--%)	

Total Property Damage Loss Estimate (EUR): **36,505,700 (25.23%)**

TE Loss Estimate

Building	BI (EUR)	Payroll (EUR)	Rent (EUR)	Downtime (Months)	Total(EUR)
Rachelsmolen 1Eindhoven	-- (--%)	-- (--%)	-- (--%)	--	--%
Total	-- (--%)	-- (--%)	-- (--%)	--	

Total TE Loss Estimate (EUR): **-- (0.00%)**

Loss Estimate Comments

MFL-PD:

Under MFL conditions a fire will start in the largest building, R3/R4, this is a Hazard Occupancy 3, the building is classified as an ISO4 construction. The campus consist of several connected buildings and two free standing building (R9 & R10). There is a walkway between building R4 and R5.

The free distance between R3 and R10 is 10 meter. The free distance between R9 and R10 is about 78 meter. In between a new building (R11) is constructed. Limiting the free distance in the near future. According AIG guideline the minimal free distance for MFL based upon a hazard category occupancy 3 and ISO4 building classification must be at least 10 meter.

Based upon AIG guideline the fire will have a direct effect on the building R3, R4 and R5. The salvage potential of the type of construction (also because the occupancy) is 55%.

According the latest sheet (B0100103722 Specificatie Vervangende polis 4) provided by the broker the PD is:

Building:

- R3/4: € 41,222,000 * 55% = € 22,672,100
- R5: € 8,952,000 * 55% = € 4,923,600

Total: € 27,595,700

Inventory:

- R3: € 4,999,000 * 55% = € 2,749,450
- R4: € 3,965,000 * 55% = € 2,180,750
- R5: € 7,236,000 * 55% = € 3,979,800

Total: € 8,910,000

MFL-BI:

Not insured

Normal Loss Expectancy (NLE)

Total LE (EUR): 6,944,625

PD Loss Estimate

Building	Bldg (EUR)	M&E (EUR)	Content (EUR)	Stock (EUR)	Other (EUR)	Total (EUR)
Rachelsmolen 1Eindhoven	5,073,000 (4.28%)	-- (--%)	1,871,625 (7.12%)	-- (--%)	-- (--%)	6,944,625 (4.80%)
Total	5,073,000 (4.28%)	-- (--%)	1,871,625 (7.12%)	-- (--%)	-- (--%)	

Total Property Damage Loss Estimate (EUR): **6,944,625 (4.80%)**

TE Loss Estimate

Building	BI (EUR)	Payroll (EUR)	Rent (EUR)	Downtime (Months)	Total(EUR)
Rachelsmolen 1Eindhoven	-- (--%)	-- (--%)	-- (--%)	--	--%
Total	-- (--%)	-- (--%)	-- (--%)	--	

Total TE Loss Estimate (EUR): **-- (0.00%)**

Loss Estimate Comments

PD-NLE:

A fire will start in the R3/R4 building of the campus. The fire will be detected by the automatic fire detection system. Detection is delayed because there is no full coverage fire alarm system in the complex. After verification the fire brigade is alarmed. The fire load in the building is limited and the building is classified as ISO4 (non-combustible). The fire spread will therefore be slow. The fire brigade will start fighting the fire using the dry risers and having a capacity available up to 60 m³/h from the hydrants. It is considered that one compartment (according Dutch building code max 1,000 m²) will be considered lost. The compartments above and beneath will be damaged due to smoke, soot and water. The compartment are rated 60 minutes, which is considered sufficient for a hazard occupancy 3 with a limited fire load (AIG classification A). Also the adjacent compartments (same level as fire originated, floor area about 2,500 m²) a total of 5 compartments will be damaged resulting in an area of 5,500 m². The loss potential for building is estimated according AIG guidelines at max 25%, for the inventory/goods and so on in the building it is classified as moderate with a loss potential of max 55%.

Fire damage:

- Building: $1,000\text{m}^2 * 2,136 \text{ €/m}^2 = \text{€ } 2,136,000$
- Content: $1,000\text{m}^2 * 465 \text{ €/m}^2 = \text{€ } 465,000$

Non thermal damage (smoke, soot & water):

- Building: $5,500 \text{ m}^2 * 2,136 \text{ €/m}^2 * 25\% = \text{€ } 2,937,000$
- Content: $5,500 \text{ m}^2 * 465 \text{ €/m}^2 * 55\% = \text{€ } 1,406,625$

TOTAL:

- Building: $\text{€ } 2,136,000 + \text{€ } 2,937,000 = \text{€ } 5,073,000$
- Content: $\text{€ } 465,000 + \text{€ } 1,406,625 = \text{€ } 1,871,625$

BI-NLE:

Not insured.

Remarks:

1. The insured value per location is: Building $\text{€ } 41,222,000 / 19,297 \text{ m}^2 = 2,136 \text{ €/m}^2$ - Inventory/goods $\text{€ } 8,964,000 / 19,297 \text{ m}^2 = 465 \text{ €/m}^2$
2. Equal spread of insured values.

Images and Site Sketches



Inside R10



Building R3/R4



Building R10



Inside building R13



Building R13



Building R12

Risk Improvement Classification

Critical

Critical recommendations represent conditions or work practices that create an imminent or severe loss-producing situation. This means that there must be a readily available ignition source or the potential for a severe loss event.

Important

Important recommendations represent conditions or work practices that could result in a loss-producing situation, but for which immediate action is not necessary. These are recommendations to correct uncontrolled exposures or to achieve and maintain a reasonable level of property protection. These recommendations require commitment on the part of the insured to change or modify conditions or work practices in order to reduce the potential for serious loss, resulting from either frequency or severity events.

Advisory

Advisory recommendations represent conditions or work practices that do not directly pose a risk for severe loss or injury, but could contribute to a loss situation. These are recommendations that are considered best practices to enhance the level of property protection. Compliance with these recommendations improves the risk and reduces the likelihood of a loss occurring from the recognized hazard or situation.

Risk Improvement Types

Physical Protection:

A Physical Protection Risk Improvement is associated with provision of physical plant and equipment; typically there could be a capital expenditure associated with these improvements.

Management Programs

A Management Programs Risk Improvement typically relates to procedures and management programs and will not normally involve, or will have limited, capital expenditure.

NATCAT:

NATCAT Risk Improvement is either a physical improvement or the addition/enhancement of management procedures to reduce the risk associated with natural catastrophe events.

B&M Management Programs

A B&M Management Programs Risk Improvement relates to procedures and management programs, such as inspection, testing and maintenance, which will not normally involve, or have limited capital expenditure. Such a risk improvement is directed at reducing the probability of the identified risk exposure.

Loss Estimate Definitions

Maximum Amount Subject (MAS)

The **Maximum Amount Subject (MAS)** is defined as the area of the largest insured value (PD and BI) that is subject to a single fire or explosion. The amount Subject area will only be limited by clear space separation that is sufficient to restrict the spread of fire, as defined in the Space Separation Table which is found in the AIG Commercial Property Field Engineering Manual, MFL section. MAS considers complete failure of all active protection including automatic sprinkler systems, all water supplies, automatic extinguishing systems, alarm supervision, public and private water supplies, no firefighting effort and offers no credit for MFL or fire walls, fire proofing or other passive barriers. In circumstances where the location consists of only one building, the Amount Subject will normally be equal to the full TSI for that building. Calculate of MAS will include PD, BI, BI interdependencies, contingent BI and any other time element values such as Extra Expense, Extended Period of indemnity, Rents, etc.

Maximum Foreseeable Loss (MFL)

MFL is defined as the largest amount of loss that can be anticipated (including PD, BI, BI interdependencies, contingent BI and any other time element values such as extra expense, extended period of indemnity, rents, etc. due to a fire and/or explosion event with all fire protection systems and equipment out of service and with no fire-fighting effort, either public or private. The loss would be that which occurs if the fire were allowed to “burn freely” until it burns itself out. The MFL area is the maximum plant area that could be affected by a single fire or explosion, occurring in the more vulnerable area of the facility (i.e. that with the largest total PD and BI potential). The only acceptable ways to reduce the MFL estimate are:

- Adequate clear space separation between buildings
- Lack of continuity of combustibles
- Effective horizontal cut-offs with MFL walls
- Effective vertical cut-offs
- Expectable salvage values
- Reliable make-up capacity

Airports, High Rise Buildings, Hospitals and Universities are treated as unique and may have a MFL calculation that differs from the above providing certain favorable factors exist.

Normal Loss Estimate (NLE)

The Normal Loss Estimate (NLE) is defined as the largest loss anticipated for a location under existing conditions. The NLE for a protected (sprinklered) facility assumes that the existing automatic and manual protection functions as designed and for intended and in its existing condition, whether it is adequate for the occupancy or not. This can include both public and private protection, including fixed automatic protection (such as sprinkler systems with reliable water supplies), other fixed automatic protection (such as special extinguishing systems or fire alarms with off-site signaling), and proximity of the public fire department and availability of public and private water supplies for firefighting purposes. In addition, construction characteristics are considered that include firewalls, draft curtains, roof

parapets, fire doors, etc., as these factors relate to the hazard and combustibility of the occupancy. Fire department response is anticipated.

Factors that could influence the NLE include:

- Construction classification and characteristics including fire walls, fire doors, etc.
- Occupancy and contents susceptibility to damage (smoke or water damage)
- Continuity of combustibles and combustible loading (light, moderate, heavy)
- Sprinkler protection/water supply adequacy
- Special hazard conditions, protection and controls
- Public Fire Department
- Fire alarms and Central Station monitoring

Deficiencies, minor in nature that are not expected to contribute significantly to a loss but do represent or could contribute to unsafe conditions or unsafe acts. These are recommendations that are considered best practices to enhance the level of property protection. Although compliance with these recommendations improves the risk and reduces the likelihood of a loss occurring from the recognized hazard or situation, they are considered desirable and not mandatory in nature.