

## ABSTRAK

Telah terjadi beberapa kali insiden kebakaran pada gedung bertingkat sehingga membuat para perencana gedung harus memperhatikan betul perencanaan yang akan dibangun terutama instalasi pemipaan kebakaran yang efektif dan mengacu pada standarisasi yang ditentukan, semua ini dilakukan untuk mencegah terjadinya kebakaran yang cukup besar kembali terjadi. Berdasarkan teori-teori dasar sistem pemadam kebakaran dan teori-teori dasar pemipaan menggunakan persamaan Azas Bernoulli maka perencanaan sistem pemadam yang baik perlu nya analisis yang mengacu pada SNI 03-1745-2000 dan NFPA-14 tentang Pipa Tegak dan Slang Pada Bangunan, SNI 03-3989-2000 dan NFPA-13 tentang instalasi Sprinkler Otomatik Pada Bangunan. Sistem pemadam kebakaran pada gedung-gedung bertingkat tinggi pada umum nya sudah dilengkapi dengan terpasangnya instalasi sprinkler untuk memadamkan api secara otomatis dan instalasi hidran untuk mempermudah teknisi maupun team damkar dalam memadamkan api secara keseluruhan. Dari hasil analisis pada gedung prasetya mulya menggunakan instalasi dua zona yaitu high zone dan low zone, dimana low zone dari lantai basement sampai lantai 7 menggunakan Pressure Reducing Valve. Berdasarkan luas area dan tinggi gedung fakultas dan laboratorium menggunakan kapasitas 1000 gpm dengan head 16 Bar. Ground water tank menggunakan positif section dan untuk kebutuhan air dengan jangka waktu 60 menit dengan kapasitas 60 m<sup>3</sup>. hidran terdiri dari hidran halaman untuk gedung Laboratorium 2 buah pillar hidran dan 1 seamesse connection, gedung Fakultas 2 buah pillar hidran dan 1 seamesse connection. Hidran gedung untuk gedung Laboratorium 8 buah indoor hidran box, gedung Fakultas 34 buah indoor hidran box. Instalasi sprinkler area ceiling menggunakan tipe pendent sedangkan area tidak ceiling menggunakan tipe up right, warna cairan dalam tabung gelas berwarna merah pada suhu 68 °C. gedung Laboratorium 302 buah sprinkler, gedung Fakultas 1287 buah sprinkler. kebutuhan fluida air yang mengalir di dalam dalam pipa instalasi hidran dan sprinkler mengacu pada Azas Bernoulli. Kecepatan aliran fluida menggunakan Pressure drop dari hazen-william sehingga instalasi pemipaan sprinkler tertinggi pada beberapa jalur titik terjauh menuju BCV di gedung laboratorium Lantai Basement jalur A menuju BCV = 3,18 Bar. Lantai Dasar jalur D menuju BCV = 3,39 Bar. Lantai 1 - 2 jalur A menuju BCV = 3,11 Bar. Lantai 3 jalur A menuju BCV = 3,26 Bar. Lantai 4 - 6 jalur C menuju BCV = 2,78 Bar. kemudian di gedung fakultas Lantai Basement jalur A menuju BCV = 3,27 Bar. Lantai Dasar jalur C menuju BCV = 3,05 Bar. Lantai 1 jalur A menuju BCV = 3,44 Bar. Lantai 2 - 14 jalur B menuju BCV = 3,89 Bar. Lantai 15 jalur A menuju BCV = 4,24 Bar. Dan pressure drop sistem pemipaan hidran pada beberapa jalur dari pompa di lantai basement menuju perlantai memiliki tekanan sisa yang tertinggi dan terendah di gedung laboratorium Lantai Basement menuju Lantai Dasar ( Low Zone ) = 11,2 Bar. Lantai Basement menuju Lantai 6 ( Low Zone ) = 7,6 Bar. Gedung fakultas Lantai Basement menuju Lantai Dasar ( Low Zone ) = 11,4 Bar. Lantai Basement menuju Lantai 7 ( Low Zone ) = 7,5 Bar. Lantai Basement menuju Lantai 8 ( High Zone ) = 11,6 Bar. Lantai Basement menuju Lantai 15 ( High Zone ) = 7,8 Bar.

Kata kunci : Azas Bernoulli, Ground Water Tank, Sprinkler, Hidran, Pressure Reducing Valve.

*PLANNING PIPING HIGH ZONE AND LOW ZONE SYSTEM  
FIRE FIGHTING IN THE PRASETYA BUILDING STAGE 3 -  
TANGGERANG*

**ABSTRACT**

*There have been several fire incidents in multi-storey buildings, making building planners must pay close attention to the plans to be built, especially effective fire piping installations and refer to the specified standardization, all of this is done to prevent the occurrence of a large fire again. Based on the basic theories of fire fighting systems and the basic theories of piping using the Bernoulli Principle, a good fire fighting system needs an analysis that refers to SNI 03-1745-2000 and NFPA-14 concerning Upright Pipes and Building Slang, SNI 03 -3989-2000 and NFPA-13 regarding the installation of Automatic Sprinklers in Buildings. The fire fighting system in high-rise buildings in general has been equipped with installed sprinkler installations to fighting fires automatically and hydrant installations to make it easier for technicians and fire fighters to fighting the fire as a whole. From the results of the analysis on the Prasetya Mulya building using two zone installations namely high zone and low zone, where low zone from the basement floor to the 7th floor uses a Pressure Reducing Valve. Based on the area and height of the faculty building and laboratory using a capacity of 1000 gpm with head 16 Bar . The ground water tank uses a positive section and for water needs with a period of 60 minutes with a capacity of 60 m<sup>3</sup>. hydrants consist of yard hydrants for Laboratory buildings 2 hydrant pillars and 1 seamesse connection, Faculty building 2 pillar hydrants and 1 seamesse connection. Building hydrants for laboratory buildings 8 indoor hydrant boxes, Faculty building 34 indoor hydrants boxes. The sprinkler area ceiling installation uses a pendent type while the non-ceiling area uses the type up right, the color of the liquid in a red glass tube at a temperature of 68 ° C. Laboratory building 302 sprinkler fruit, Faculty building 1287 sprinkler. fluid requirements of water flowing inside the hydrant and sprinkler installation pipes refer to the principle of Bernoulli. The velocity of fluid flow uses a Pressure drop from hazen-william so that the highest sprinkler piping installation is on some of the furthest path points to BCV in the laboratory building Basement Floor A to BCV = 3,18 Bar. Ground floor of line D goes to BCV = 3,39 Bar. Floor 1 - 2 line A goes to BCV = 3,11Bar. 3rd floor line A goes to BCV = 3,26 Bar. Floor 4 - 6 line C towards BCV = 2,78Bar. then in the faculty building Basement floor A line towards BCV = 3,27 Bar. Ground floor line C goes to BCV = 3,05 Bar. 1st floor line A to BCV = 3,44 Bar. Floor 2-14 route B goes to BCV = 3,89 Bar. 15th floor line A to BCV = 4,24 Bar. And the pressure drop of the hydrant piping system on several lines from the pump on the basement to the floor has the highest and lowest residual pressure in the laboratory building Basement to the Low Zone = 11,2 Bar. Basement floor to 6th Floor (Low Zone) = 7,6 Bar. Faculty building Basement floor to Ground Floor (Low Zone) = 11,4 Bar. Basement floor to 7th Floor (Low Zone) = 7,5 Bar. Basement floor to 8th Floor (High Zone) = 11,6 Bar. Basement floor to Floor 15 (High Zone) = 7,8 Bar.*

*Keywords: Azas Bernoulli, Ground Water Tank, Sprinkler, Fire Hydrant, Pressure Reducing Valve.*