

# Analyzing Physical Distancing at Workspace: Study Case Office PT. Energi Guna Raharja

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## ABSTRACT

Pandemic era had great impact on human's entire life. One of most inflicted was working process. When pandemic strikes, most people forced to work from home. Indonesian government then introduced New Normal scheme, where workers allowed to work at office with special requirements implied – health protocols and social distancing. Health protocols imposed clean hands and other body parts maintained through the day, and social distancing imposed to avoid unnecessary touching with other people and objects used together and maintain 'safe' distance minimum 1 meter. Based on these regulations, interior arrangement at offices became important to re-check. Space circulation and distance between people calculated to match the regulation. PT. Energi Guna Raharja try to impose government regulation inside its office and need to rearrange space. In this study, researchers made series of alternative simulation to get better solution to the problem. This research used field observation analysis to develop space arrangement alternatives.

**Keywords:** New Normal, office spaces, social distancing, physical distancing, territoriality

## 1. INTRODUCTION

Since March 2020, virus COVID-19 spread worldwide. Its spread depended on saliva splash when infected person coughed or sneezed. Governments around the world decided to secure and tighten human's movements in public place. Human activities outside their residential limited and confined into necessary cause only. This precaution helped the spread of the virus. One of biggest consequence was working and learning done online from home.

Pandemic escalation in Indonesia was very high since beginning. National record on February 8<sup>th</sup> 2021 confirmed 1.166.709 patients, 963.028 recovered, 31.763 died [1]. As highest number of people in ASEAN, Indonesia also achieved the highest cases rate several times. Indonesian government forced majority to stay at home and changed level of communication digitally and working online. Confinement of people's activities considered best way to broke virus spread chains.

Indonesian government, under arrangement of Health Ministry arranged two important regulations to dealt with pandemic in public spaces. Health protocols imposed clean hands and other body parts maintained through the day, while social distancing imposed to avoid unnecessary touching with other people and objects used together and maintain 'safe' distance minimum 1 meter between humans [2]. Based on these regulations, Health Ministry made series of technical protocols held at various public spaces if they

must open for business or public services. This 'New Normal' scheme enable some offices open for business.

Pandemic not only affected people's health, but also macro economic at general. Indonesian Minister of Finance, Sri Mulyani [6] stated at June 2020 that Indonesian economic condition had strong dependency with COVID-19 cases development since it affected economic activity. Based on the economic stagnant growth compared to China and Vietnam at Lockdown Phase, government favored leniency strategy for business to open and run, with tight regulation guarding them.

Around June 2020, when statistic data of Indonesian pandemic cases decreased, Indonesian government implied *Pembatasan Sosial Berskala Besar / PSBB* (Big Scale Social Distancing). Government allowed offices to open for business if they combined Work From Home (WFH) and Work From Office (WFO) alternately for their workers, imposed Health Protocols, and Social Distancing scheme. PT. Energi Guna Raharja was a company engaged in service of Mechanical Electrical installation and system, running since 2016. Its office decided to open for business with blended WFO and WFH scheme by grouping the workers into 2 shift groups. This scheme decreased crowding and enhanced individual territoriality. After careful preparation and series of meeting to study all requirement aspects required by government and company's organization members, the company comply to PSBB regulation at its best.

The problem arose from company decision was the need to rearrange its office spaces and furniture to match the social distancing and physical distancing regulation. company's limited ability of interior arrangement made the present existing furniture position was not at its best to comply with health regulation.

Beside the physical distancing, company office already implies health protocols, such as hand sanitizing at every door, swab test check once a month, and temperature check when entering office.

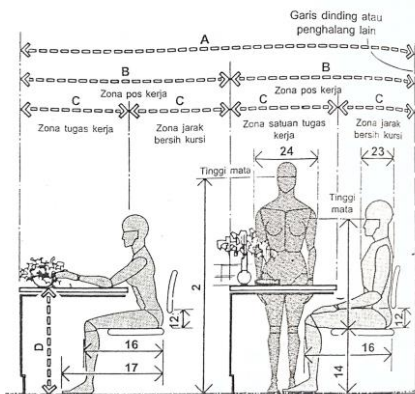
**2. THEORIES**

**2.1. Ergonomic**

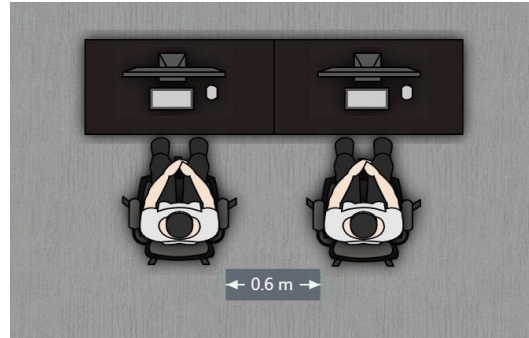
Discussing territorialities imposed because social distancing needs ergonomic basic theory. Ergonomic was systematical knowledge to utilized human limitations and abilities information into designing better work system [3]. Its aim was enhanced human ability to work and life inside that better system; to create effective and efficient way of working and living.

People at work configuration data calculated for their ease of movements, working conditions, and constraints avoidance. For people working at desk, there were several position combinations existed (Picture 2, 3, 4). In Alternative 1, working desk position horizontally arrange from side to side. This arrangement enhances collaborative work but less privacy. In Alternative 2, working desk position arranged face-to-face and back-to-back. This position still enhances collaborative work and privacy, but back-to-back side too close to each other. Alternative 3 similar to alternative 2 but instead of face-to-face, they facing to one direction. This arrangement best for individual working but decrease chance for collaborative works.

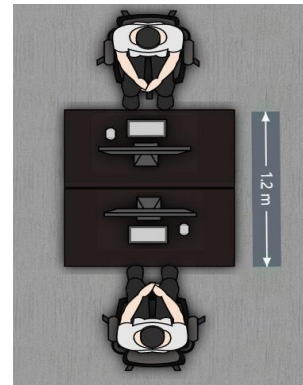
These theoretical arrangements would be tested for case study's office configuration and test for effectiveness according to physical distancing.



**Figure 1** Human Working at Desk Ergonomic Calculation  
Source: Panero, 1979



**Figure 2** Working Desk position: Alternative 1  
Source: Private



**Figure 3** Working Desk position: Alternative 2  
Source: Private



**Figure 4** Working Desk position: Alternative 3  
Source: Private

Besides configuration for working desks for workers, company also had to calculate meeting space. The meeting table and sitting arrangement had to follow health protocols and physical distancing requirement. Picture 5 display basic arrangement for meeting.

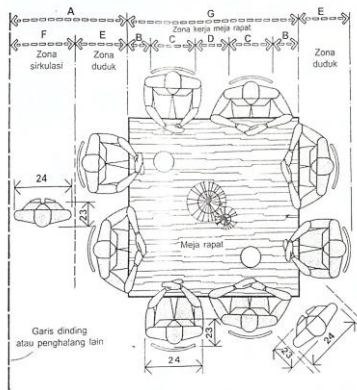


Figure 5 Meeting Desk Ergonomic Calculation  
Source: Panero, 1979

### 2.2. Interior Space Circulation

Circulation was human movement pattern around the space; way to move around objects in space [3]. Good circulation gave flexibility, economical, and functional consideration. The basic consideration was understanding of human activities' patterns.

Based on function, circulation divided into 3 groups: vehicles, goods / objects, and human circulations. Human circulation features allowance and restriction in dynamic movement, low speed, and confined by human scale.

Comfortable personal zone in proxemic theory invented by Edward T. Hall. Personal zone used to protect human from unwanted touch and privacy. Its distance generally calculated for 42 inches or 106 centimeters. In this position, a person can pass through sideways from 2 other humans standing at their own personal zones without touching them [4].

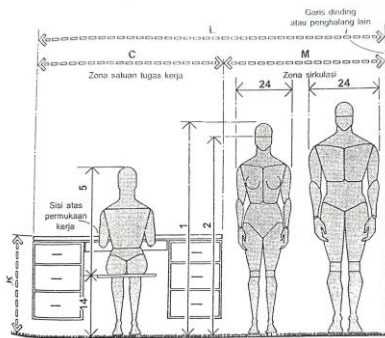


Figure 6 Working space with sideways circulation.  
Source: Panero, 1979

### 2.3. Psychological Consideration

Pandemic era caused psychological disturbance in human life. Since the virus infected by airborne, interior public space had to accommodate health protocols regulation, not only for health precautions, but also for psychological comfort. People cannot work properly if they felt always in dangerous situation [5]. Health protocols and physical

distancing imposed at workspace add to work stress, and if work area did not meet the standard requirements, it will contribute to distraction at work and endanger health of workers.

### 2.4. Indonesian Pandemic Regulation for Office

Based on Health Ministry Regulation on Keputusan Menteri Kesehatan Republik Indonesia No. HK.01.07/MENKES/382/2020 about People Health Protocols at Public Facility [2], it regulates individual health protocols (washing hands, using proper face mask, avoiding touching others or objects) and physical distancing (1 meter), technical manipulation by partition, one way circulation, and administrative manipulation by quota restriction and scheduling.

Although offices were private owned and not grouped into general public places, when they opened for business, they had to comply with general regulation. The basic rule for workers to maintain individual health, using face mask all the time, avoid touching self, cleaning workspaces, minimal physical contacts with others. Physical distance was done with these actions: 1) worker and guests quota restriction, 2) rearrange operational business time, 3) distance minimum 1 meter each worker.

## 3. STUDY CASE BACKGROUND

This section discussed about the study case and its problem analysis.

### 3.1. The Office

PT. Energi Guna Raharja was a company built in 2016. Its main services were Mechanical and Electrical system built and installation. This company was privately owned by Mr. M (55 years old). The first office set up at Cimone, Tangerang. The growing company then in 2018 moved to Ruko Green Lake, since the area was more strategic and well-developed.

The building was built by big developer Agung Sedayu Group, a well-established developer in Indonesia. Its building has good qualification, 3 story floor shop office modules. The general work unit discussed located at second floor of this building.

### 3.2. Working Staff Area

In second floor, there were 2 work functions mainly placed: general workers area and meeting area. The working space contained general administration working at table, such as reading, writing, and working with computers.

Detailed job descriptions held at this working space were:

- 1) Engineering – planning design system, build tender document, and controlling field system installation,
- 2) Purchasing – purchase and ordering materials for projects,
- 3) Draftman – drawing mechanical and electrical system digitally for shop drawing, design drawing, and as-built

drawing, 4) Administration – working general administration work and necessary correspondence, 5) Logistic – data collecting, dispatch and receiving goods, 6) Finance and Tax – preparing bills, tax documents, cost control, salary and office supplies.

Every worker has their own office desks, supplied by their working needs, such as computers and office supplies. They were placed in 1 bureau desk with standard dimension 120 x 60 cm.

This working area now occupied with 4 workers with their own working desks. There was also one long high cabinet for storing documents and files at the end of the room. These workers were enough to do their job description, and Mr. M does not have plan to add more worker until next phase of company's long plan.

**3.3. Meeting Area**

Meeting area inside office usually used to contains collaboration and decision-making kinds of works. The general arrangement would be facing each other and sometimes sitting, standing, and moving around. Circulation around the meeting table has to be considered.

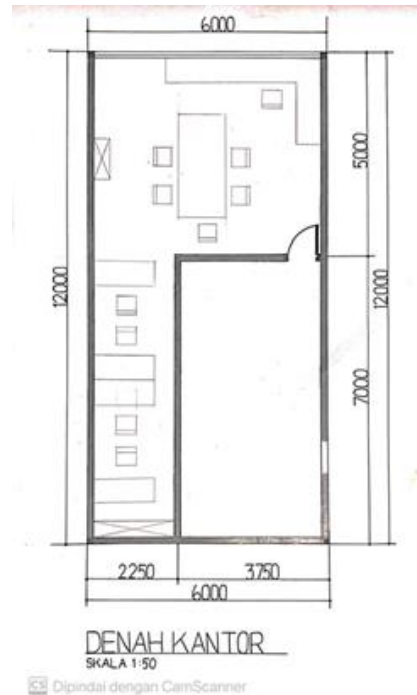
**4. SPACE ANALYSIS**

**4.1. The Unit**

Picture 7 showed layout of the research object. This existing configuration needs analysis for their effectiveness and generate more alternative to choose better option.

The existing position using face-to-face and back-to-back position. This arrangement had better collaborative tasks and privacy. The weakness was it definitely could not comply with 1 meter minimum physical distancing required. Back-to-back configuration made 2 workers had very short distance, although they were not facing each other. This dangerous position should be ommited and changed.

There were unnecessary circulation at the end of the corridor, to access the document cabinet. With carefull rearrangement and calculation, the circulation could became more efficient.



**Figure 7** 2<sup>nd</sup> Floor Plan  
Source: Private

**4.2. Observation**

The first step of this research was doing observation by accessing recorded photos of its interiors. Field observation cannot be obtained since office strictly forbidden for guests. With the help of owner, researchers access the condition photographs for analysis.



**Figure 8** View of workspaces  
Source: Private

Picture 8 showed work desks position around area 7 x 2.25 meters. This area had one entry and the other end was dead end. Its short side only can be used for one line work desk position, and one side used for minor circulation. This area needs physical distancing assessment for more effective ways of working in pandemic era.





**Figure 9** Meeting area  
Source: Private

In Picture 9, meeting area was spacious enough to held small meetings and accommodate circulation around the big table. Distance between the main door and meeting table also spacious enough to contain physical distancing and should have one small table for disinfecting people entered the room.

**4.3. Interview**

The interview was done digitally with online platform of Whatsapp phone call on February 9<sup>th</sup>, 2021. Mr. M reported the health protocols done everyday in his office, with this table below.

**Table 1** Health protocols applied at office

Characteristics	Application	
	Yes	No
Checking temperature upon arrival	✓	
Monthly SWAB routine	✓	
Health Protocol assessment	✓	

Every worker received swab test for virus monthly. This facilitated from company and for free. This scheme will prevent spreading virus entering office and avoid more infection. Every worker has to wash hands upon arrival and before exiting office. There were posters suggesting physical distancing at strategic positions.

Until interview there was no case of virus affected workers and they obeyed the extra rules. Work From Office (WFO) allowed for urgent task that cannot be done remotely from home.

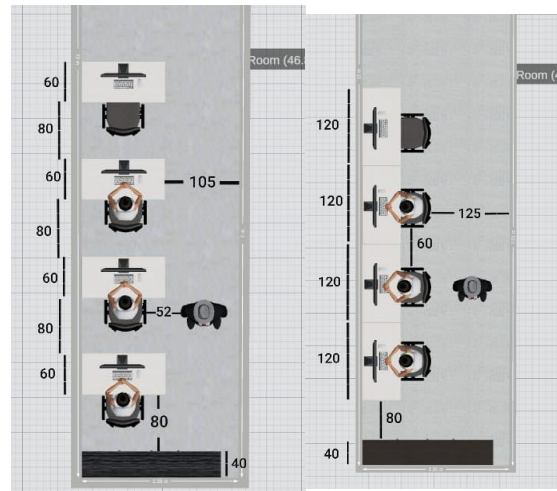
Mr. M admitted that they try to rearrange the furniture at office to comply with physical distancing regulation, but he still felt it was not effective enough. Researchers would help

him to present the alternatives he could choose later after analysis.

**4.4. Working Space Analysis**

There were four alternatives generated from the existing plan. The four alternatives generated from the literature and theory findings about configuration of working desk.

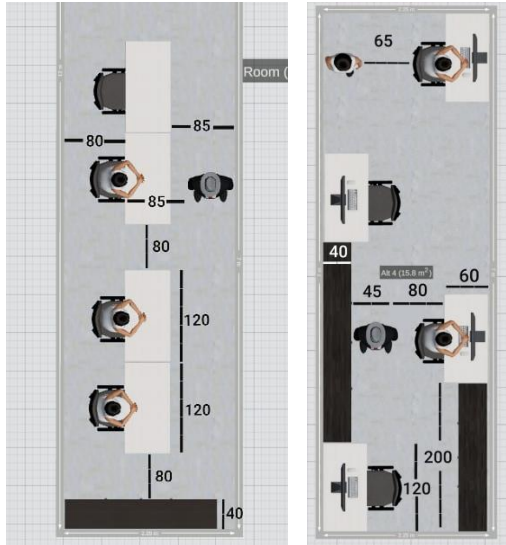
Picture 10 contains Alternative 1 and Alternative 2. In Alternative 1 the working desk aligned into one column of 4 rows. Every worker facing to one direction. This left the circulation 105 cm. It was enough for small circulation, since only very small group of people will use this pathway.



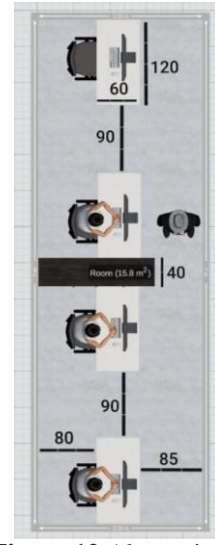
**Figure 10** Alternative 1 and Alternative 2

Alternative 2 gain more spacious circulation path than the Alternative 1. The weakness of this alternative was people facing the wall and have less privacy since people will walk at his / her back and nearer to the people walking through. There were no barrier between workers and the people walking so their distance is too fluid and people walking may forget to keep distance. this condition will not convenient psychologically for people sitting because their personal space bubble will be violated from the back and they don't have control to prevented it.

Picture 11 has Alternative 3, where workers facing the circulation pathways. The desk became the barrier, so worker has additional protection against the person walking in circulation path.



**Figure 11** Alternative 3 and Alternative 4  
Source: Private



**Figure 12** Alternative 5  
Source: Private

At alternative 4 has more interesting arrangement. The distance between worker expanded, and placement for document cabinet added. The weakness was zigzag circulation path which not effective as other alternatives, and the distance between workers and people walking was shorter.

**Table 2** Analysis of Alternative’s efficiency

Consideration	Alternatives			
	1	2	3	4
Sitting spaciousness between workers	80x120	80x60	80x60	80x120
Circulation width	105	125	85+60	85 45
Physical distancing sitting workers	✓ 80+60	X 60	X 60	✓ 120
Physical distancing workers and walkers	✓ 80	X 60	✓✓ 90	✓ 80

From this Table 2, researcher run into deadlock since there were no alternatives accommodate better answer to the problem. Researchers agreed to initiate second phase and re-do the analysis based on the first analysis’ result.

In phase 2, researchers then brainstormed to make more alternatives that used previous alternatives strength points and eliminate several weakness points. Sitting considerations has to accommodate 80 x 120 cm, circulation width has to apply 85 + 60 cm. putting additional high cabinet between working desk and workers’ chairs will minimize 1 meter distance requirement.

In Alternative 5, the document cabinets used as divider. This alternative met all 4 considerations. Sitting spaciousness between workers maintained in more than 1 meter distance. Circulation width similar with Alternative 3, 85 cm + desk width 60 cm. physical distancing between workers and physical distancing between worker and people walking met the requirement.

#### 4.5. Meeting Space Analysis

Meeting table already met requirement to have meeting between 6 people maximum around and have more than 1 meter circulation distance. Since it has no problem arise regarding its physical distancing compliance, Mr. M decided to keep arrangement as it is.

### 5. CONCLUSION

Working From Office (WFO) in New Normal Era needs changing of interior design arrangement at office. Health protocols and physical distancing requirement were not obstacles for human to back to work normally. Instead, it became new opportunity and heighten interior designers’ consideration on design interior programming at office. Designers now must always consider health first, as part of human safety interior requirement.

Based on space analysis showed in this case study, alternatives were generated to look for fresh, different, and more efficient solutions to the problem. By setting aim and

considerations to test for, alternatives were tested and questioned about its efficiency.

## ACKNOWLEDGMENT

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