FINE DUST EXPOSURE REDUCTION

2017

MARKET SIZE

AIR QUALITY CONTROL SYSTEMS

Air Quality Control Systems: Global market size (Value in USD Million)
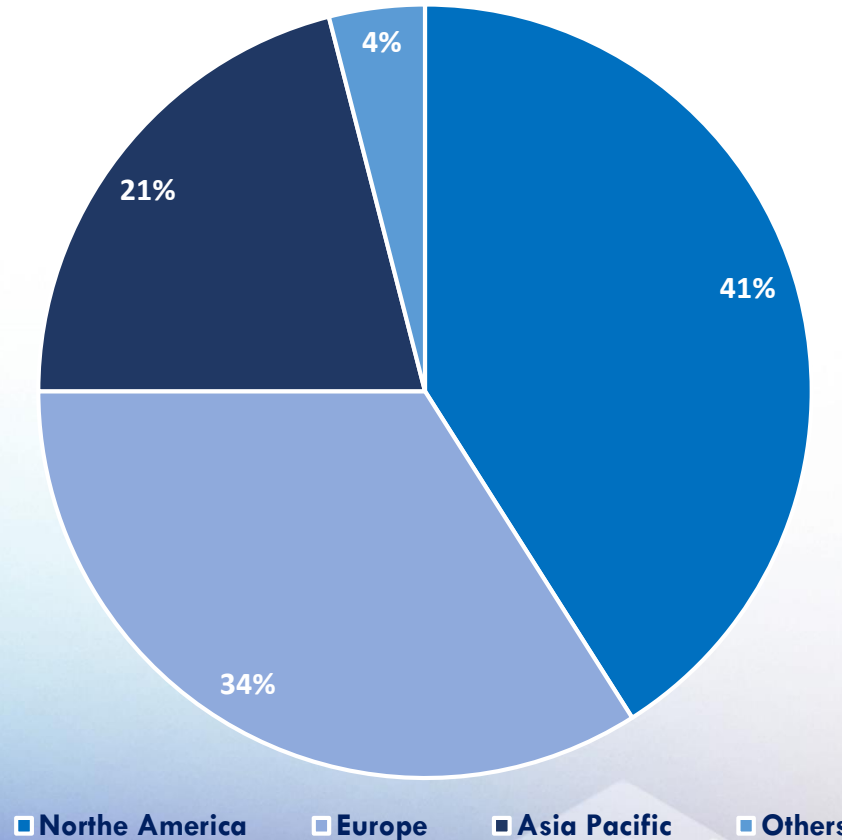

The market for air quality control systems is estimated to grow from USD 64,125 Million in 2016 to USD 95,665 Million in 2021 at a CAGR of 8.33%. The major factor that drives the air quality control systems market are government regulations.

AIR QUALITY CONTROL SYSTEMS

Air Quality Control Systems: Market Share

- Northe America
- Europe
- Asia Pacific
- Others

North America holds the largest share when it comes to air quality control systems because of regulations and standards fixed by agencies and a high level of awareness and consciousness among people; followed by Europe.

AIR QUALITY MONITORING SYSTEMS

Air quality monitoring systems: Global market size (Value in USD Million)

The market for air quality monitoring systems is estimated to grow from USD 3,750 Million in 2016 to USD 5,640 Million in 2021 at a CAGR of 8.5%. The major factor that drives the air quality monitoring systems markets is the growing level of air pollution globally.

AIR QUALITY MONITORING SYSTEMS

Air quality monitoring systems: Global market size (Value in USD Million) by product type


The indoor monitors segment is estimated to command the larger share in the global air quality monitoring market. This can be attributed to the increasing adoption of smart home and growing preference for pollution-free indoor environments

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AIR PURIFICATION SYSTEMS

Air purification systems: Global market size (Value in USD Million) by year

The market for air purification systems is estimated to grow from USD 15,255 Million in 2016 to USD 23,012 Million in 2021 at a CAGR of 8.57%. Increasing demand in various end-use sectors such as automotive, building & construction, healthcare & medical, manufacturing, and energy & utilities are the major factors driving the growth of the air purification market.

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AIR QUALITY CONTROL SYSTEMS FOR FINE DUST

Air quality control systems for fine dust: Global market size (Value in USD Million) by year
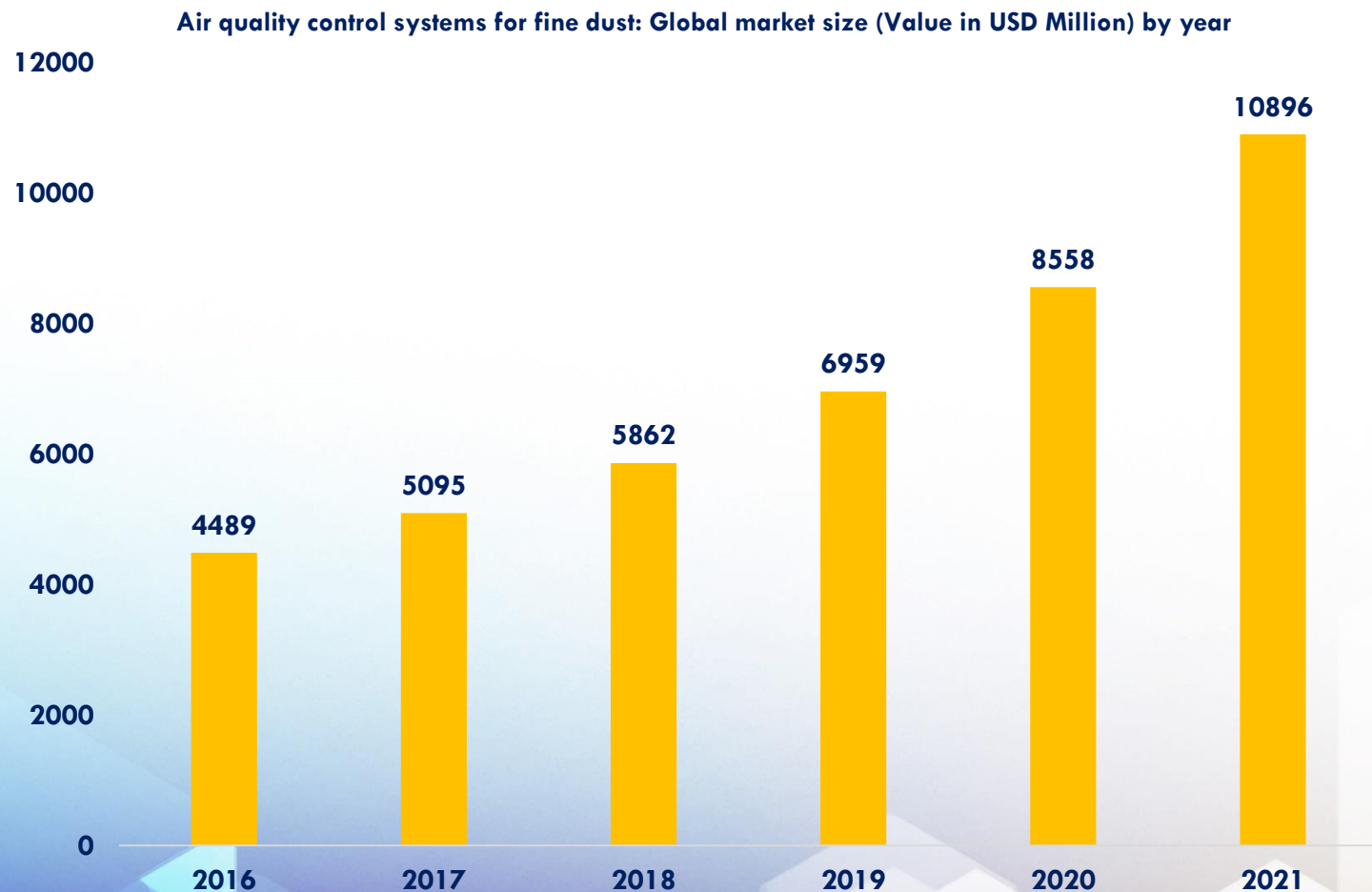
The market for air quality control systems for fine dust is estimated to grow from USD 4489 Million in 2016 to USD 10896 Million in 2021 at a CAGR of 19.41%. Increasing awareness of how harmful breathing in fine dust is and government regulations are major factors driving this market.

FINE DUST MONITORING SYSTEMS

Fine dust monitoring systems: Global market size (Value in USD Million) by year

The market for fine dust monitoring systems is estimated to grow from USD 263 Million in 2016 to USD 716 Million in 2021 at a CAGR of 22.18%. Increasing awareness of how harmful breathing in fine dust is and government regulations are major factors driving this market.
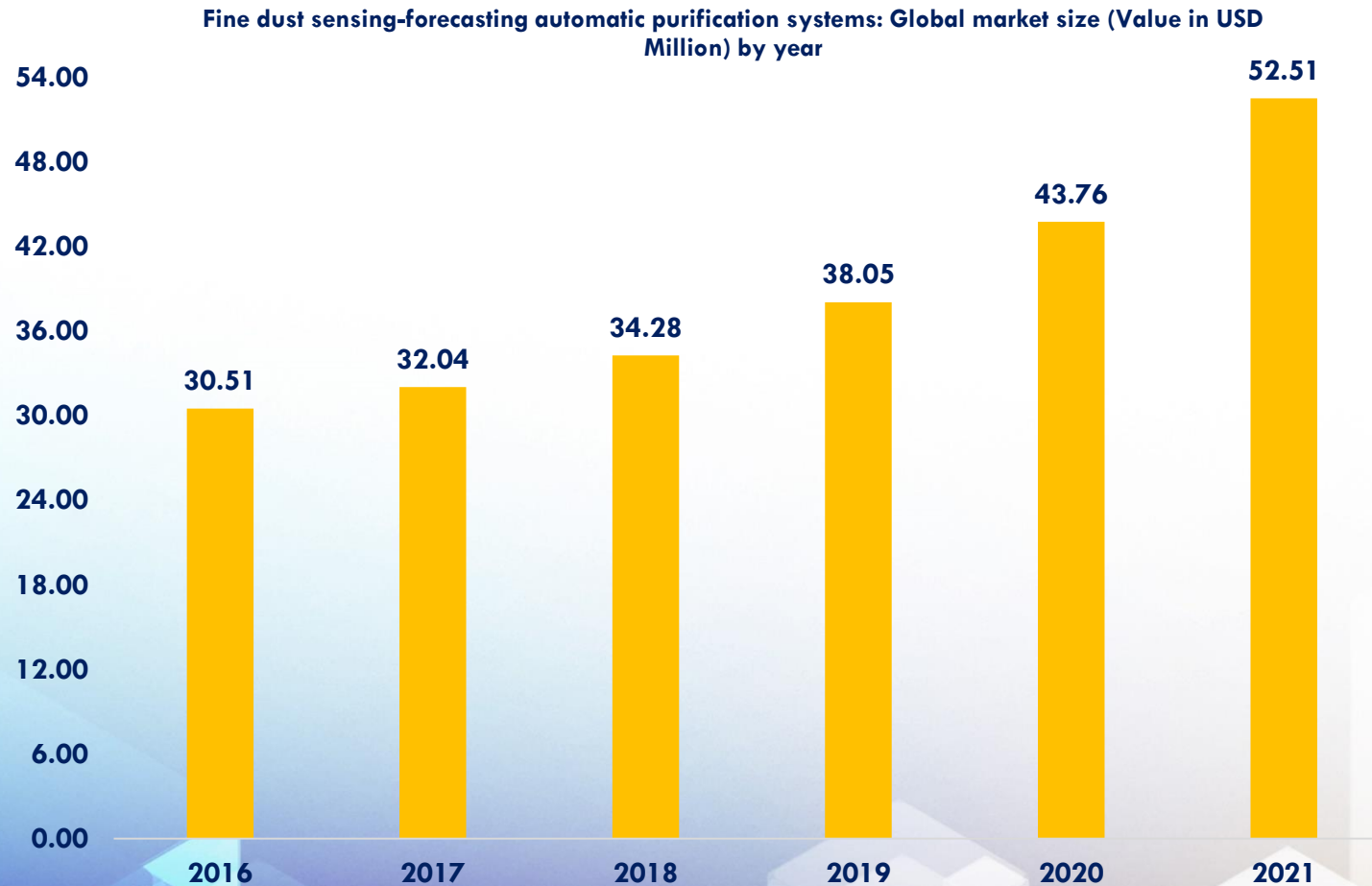
FINE DUST PURIFICATION SYSTEMS

Fine dust purification systems: Global market size (Value in USD Million) by year

The market for fine dust purification systems is estimated to grow from USD 3051 Million in 2016 to USD 6517 Million in 2021 at a CAGR of 16.39%. Increasing awareness of how harmful breathing in fine dust is and government regulations are major factors driving this market.

FINE DUST SENSING-FORECASTING AUTOMATIC PURIFICATION SYSTEMS

Fine dust sensing-forecasting automatic purification systems: Global market size (Value in USD Million) by year

The market for fine dust sensing-forecasting automatic purification systems is estimated to grow from USD 30.51 Million in 2016 to USD 52.51 Million in 2021 at a CAGR of 11.47%. Increasing awareness of how harmful breathing in fine dust is and government regulations are major factors driving this market.

FINE DUST MONITORING SYSTEMS IN RAILWAYS

Fine dust monitoring systems in railways: Global market size (Value in USD Million) by year
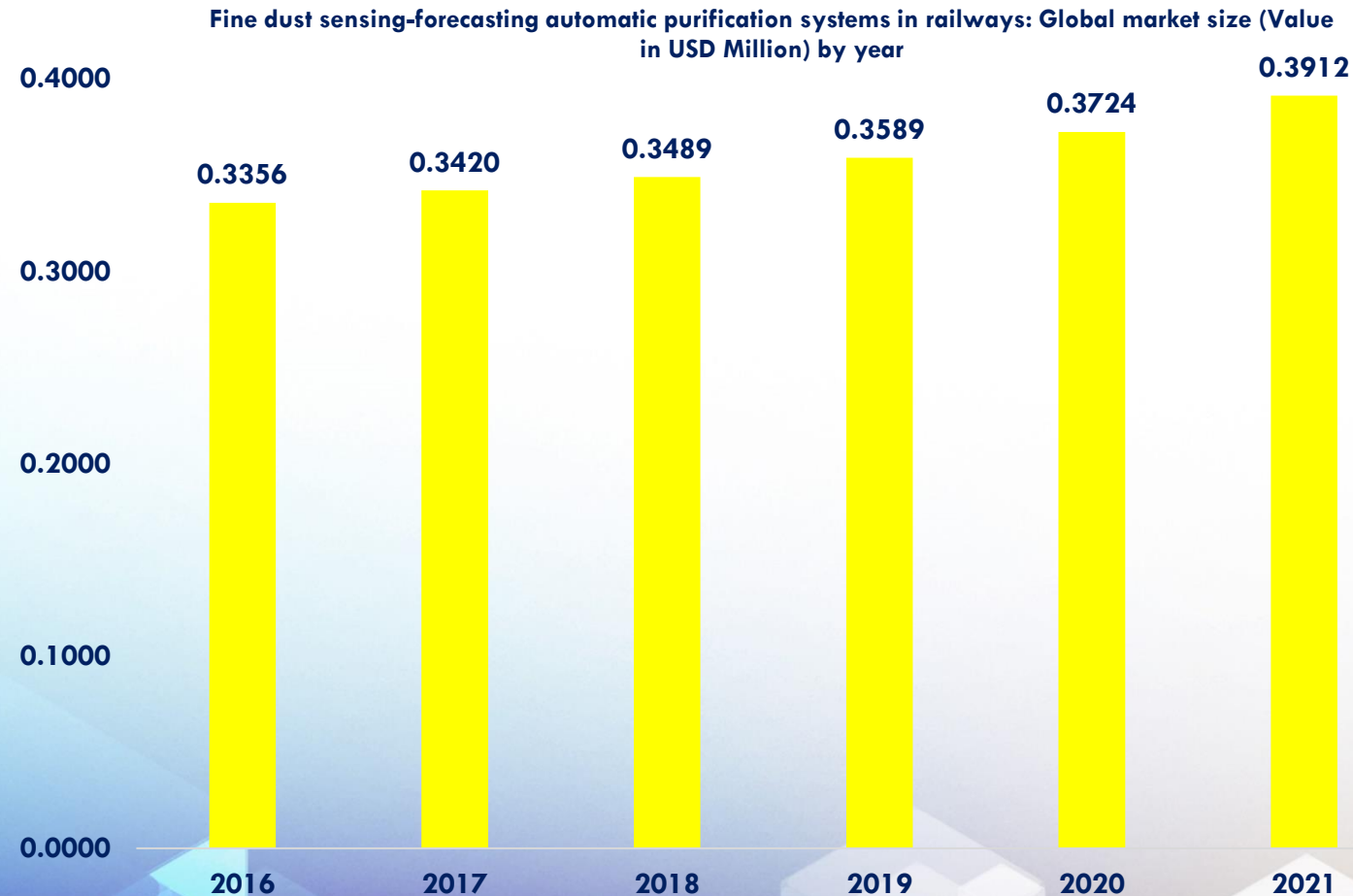

The market for fine dust monitoring systems in railways is estimated to grow from USD 2.62 Million in 2016 to USD 3.12 Million in 2021 at a CAGR of 3.52%. This segment is yet to penetrate properly into railway; this reason is responsible for the slow growth rate

FINE DUST PURIFICATION SYSTEMS IN RAILWAYS
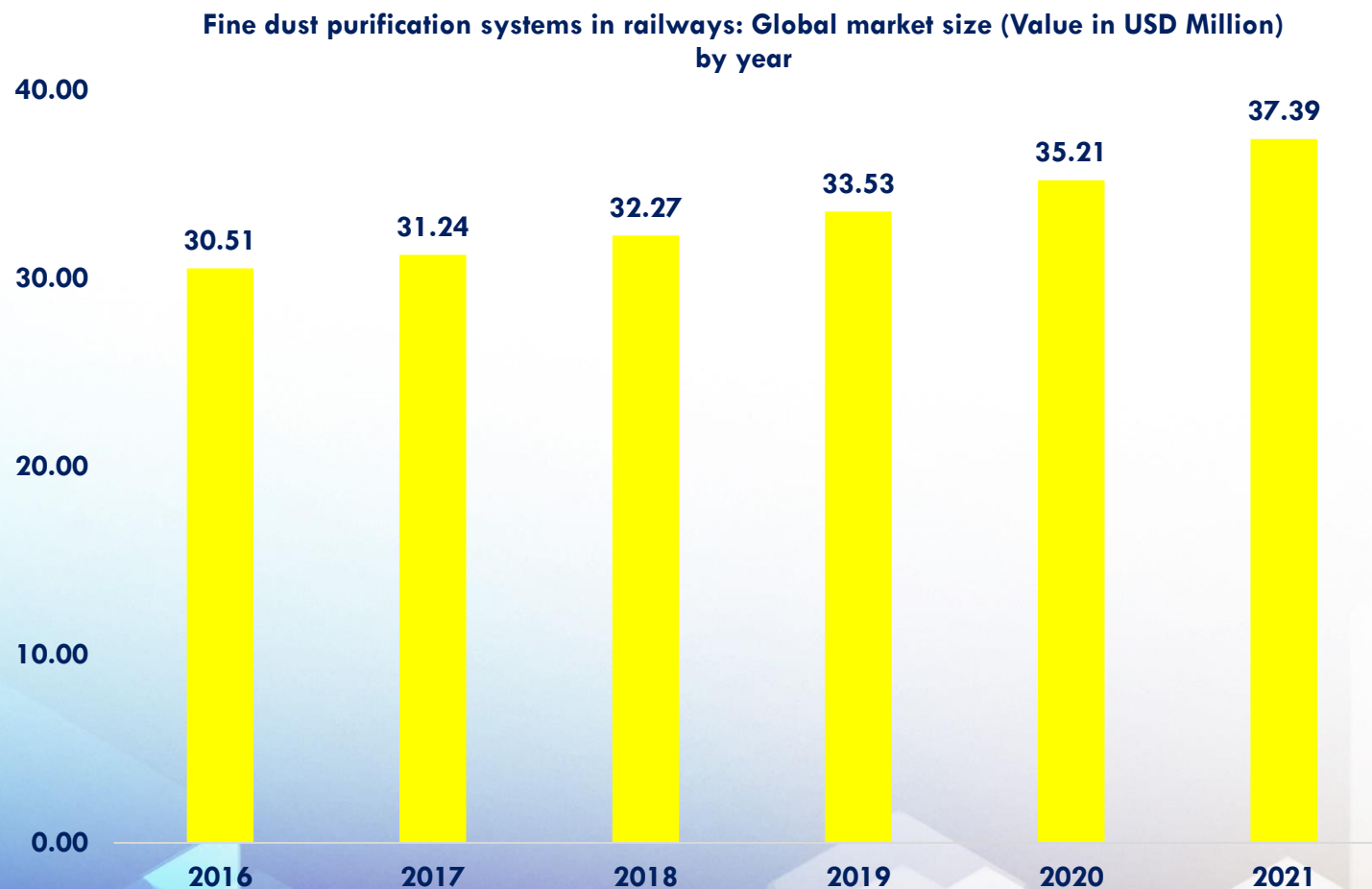
**Fine dust purification systems in railways: Global market size (Value in USD Million)
by year**

The market for fine dust purification systems in railways is estimated to grow from USD 30.51 Million in 2016 to USD 37.39 Million in 2021 at a CAGR of 4.15%. This segment is yet to penetrate properly into railway; this reason is responsible for the slow growth rate

FINE DUST SENSING-FORECASTING AUTOMATIC PURIFICATION SYSTEMS IN RAILWAYS

Fine dust sensing-forecasting automatic purification systems in railways: Global market size (Value in USD Million) by year

The market for fine dust sensing-forecasting automatic purification systems in railways is estimated to grow from USD 0.3356 Million in 2016 to USD 0.3912 Million in 2021 at a CAGR of 3.11%. This segment is yet to penetrate properly into railway; this reason is responsible for the slow growth rate
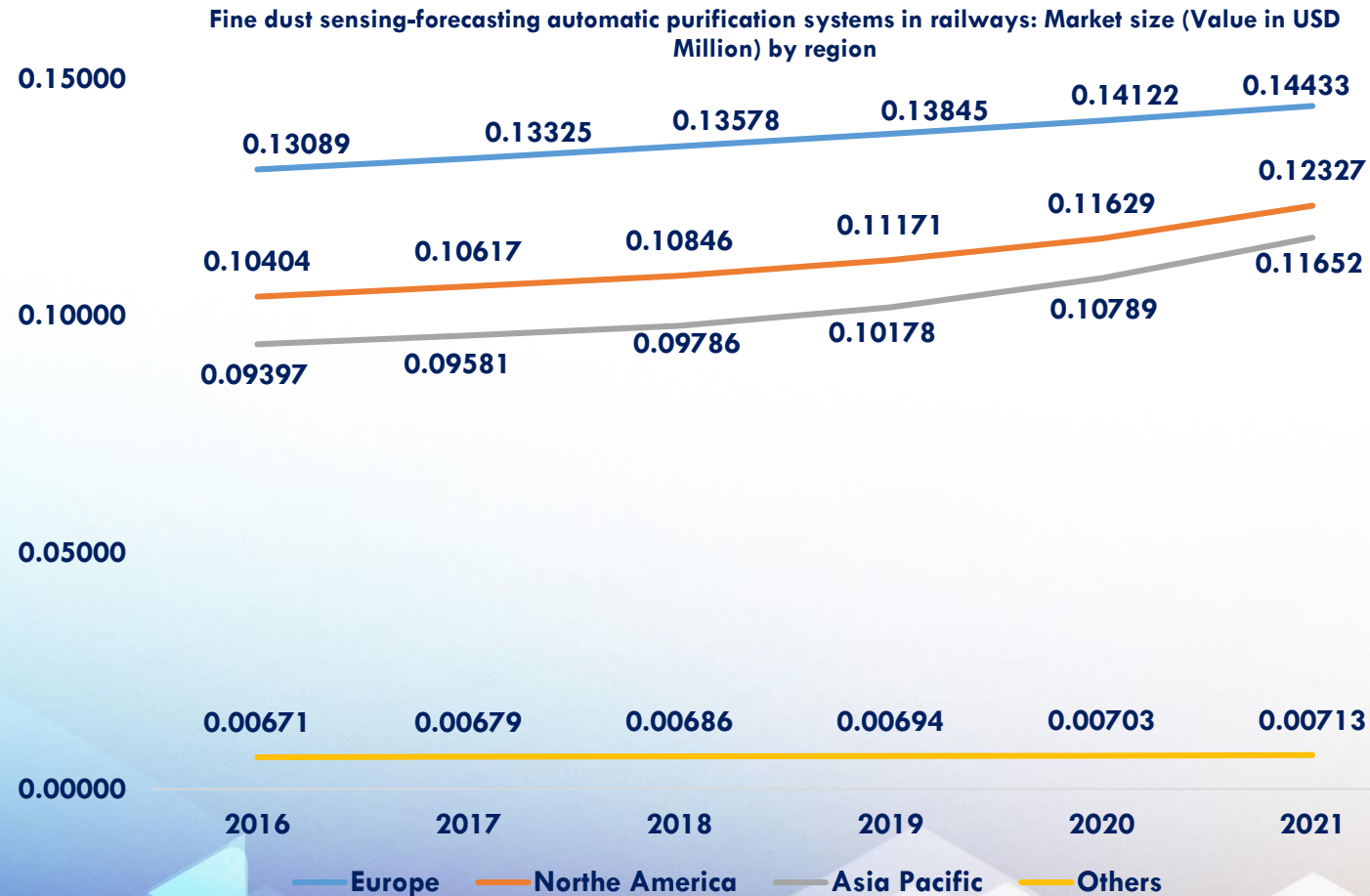
Note: Beyond 2021 we expect the CAGR to accelerate with more money going into R&D for this particular segment.

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FINE DUST SENSING-FORECASTING AUTOMATIC PURIFICATION SYSTEMS IN RAILWAYS

Fine dust sensing-forecasting automatic purification systems in railways: Market size (Value in USD Million) by region

Europe is estimated to hold the largest share in this segment; factors being it's conscious efforts to fight air pollution and it's market share in advanced railways. Asia Pacific is pose to grow the fastest though at a CAGR of 4.4%

ANALYST PERSPECTIVE AND FORESIGHT ON MARKET

TRANSFORMATIONAL IoT AND BIG DATA

Right from a simple watch worn around your hand to the house you live in, IoT and big data will enable these devices and appliances to become highly personalized and sensitive.

IoT and big data have brought about a tremendous change in the industry having capabilities of revolutionizing every device. The IoT is going to transform the industry by making industrial machines more intelligent and enabling services using real-time data coming from sensors and machines.

Further what's left is these intelligent devices be able to take actions (to optimize processes, improve efficiencies, reduce costs, etc.) themselves without human based insights generated from real-time data and analytics. Here is where automation comes into the picture.

With the help of automation all the devices with IoT would have the data to base their actions upon.

IoT, big data and automation are the future that will renew and remodel not only the equipment they are integrated into but also our very lives based on how often we interact with these devices.

IoT, big data and automation are the future that will renew and remodel not only the equipment they are integrated into but also the very way the infrastructure within Railways and ecosystem we're part operates and impacts our lives.

AUTOMATION

Automation is the use of control systems, such as computers or robots, and information technologies for handling different processes in to replace a human being. It is the second step beyond mechanization.

Right now automation is largely being used to automate industrial machineries to increase productivity and accuracy and also increase consistency of output.

The drawbacks being Unpredictable/excessive development costs and high initial cost.

All the data that is communicated with the help of IoT can further be used to automate systems and equipment to carry out their functions without the need of human intervention thus automating it.

Marriott International, Inc plan on bringing together a mix of smart, IoT, sensed and automated technology to roll out to the company's 1.3 million rooms under management in late 2018 or early 2019.

They claim this technology will enable their rooms to know your favorite songs, your exercise routine, whether you like lots of light or very little, whether you prefer the curtains open or closed, whether you like it steamy or chilly. And do you want the room to have acted on that knowledge.

Automation in par with sensing and data capture will revolutionize everything we see and perceive.

SYSTEM INTEGRATION

System integration (SI) is an IT or engineering process or phase concerned with joining different subsystems or components as one large system. It ensures that each integrated subsystem functions as required. SI is also used to add value to a system through new functionalities provided by connecting functions of different systems.

The gathering of different component systems or subsystems that cooperate to deliver a whole functionality has been the focus of industries that use technology. This is known as the modular approach to systems building, and the SI process has always been at the near-end of the development cycle.

SI has the following types:
- Horizontal Integration
- Vertical Integration
- Star Integration
- Common Data Format

Star Integration is also known as "Spaghetti Integration" because each subsystem is connected to multiple subsystems and this is the integration that would be most useful to integrate sensors and purification systems. This will help create a much bigger chain of integrated sensor and purification systems which means better interactions between them.

MARKET ANALYSIS AND FORESIGHT

The market for technology that can monitor and tackle fine dust is definitely on an up rise because of the rising levels of air pollution globally and the increase in awareness of how sensor and purification systems can help create an healthier environment.

This is leading to an ever increasing number of startups in this particular industry; not just any startups but startups driven by innovative and new ideas. Companies are turning more and more environmental friendly - Greencity Solutions uses green moss as air filters; Oizon uses solar energy as a source to power their systems; Graviky turns polluted dust into ink.

These startups are increasingly being funded privately and publicly and might further have opportunities to be **consolidated as a solution into a larger framework to address issues at hand.** This will only boost and uplift the market as R&D budgets for these acquired startups will increase and we expect more innovations to fight fine dust.

As far as railways are concerned, fine dust reduction systems have a very infinitesimal share right now. To pioneer systems that have the capabilities to forecast and act automatically based on forecast is something the government will have to lead. They are better positioned to cast vision, and bring together players with diverse expertise across sensing, purification, IoT, big data, automation, forecast and integration of these all and with other systems part of ecosystem.

Thank You!

Questions?
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