How To Group And Schedule Assets For Effective Preventive Maintenance

TOOLS *for the* BOX SERIES



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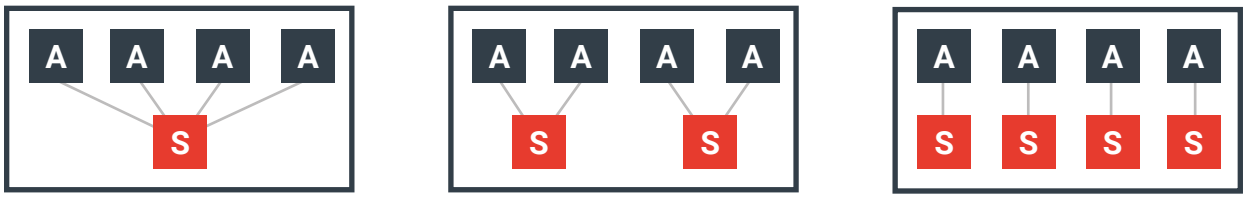
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Why should we care about asset grouping?

Asset grouping relates to putting assets into different buckets depending on their features, maintenance care procedures, criticality, and many other factors. By grouping assets by their similarities, it makes managing preventive maintenance schedules and their assigned maintenance plans easier and reduces administrative overhead costs. The goal is to find a balance between having one PM schedule for all assets and having a PM schedule for each individual asset. Both sides of the spectrum are inefficient. Considerations also need to be made regarding your maintenance teams' bandwidth. Assigning 100 asset inspections at the start of every month might be more than your team can complete on time. This guide will go over asset grouping best practices and how to schedule maintenance according to your teams' capability.

A Assets

S Schedules/Maintenance Plan



Too few groups
Maintenance plans are too general
Higher risk of breakdowns
Less control
Not enough work orders

Too many groups
Maintenance plans are too specific
Costly to execute
Hard to manage
Excessive work orders

Note: Q Ware recommends that teams refer to O&M maintenance procedures for developing maintenance plans and determining scheduling intervals for their assets.

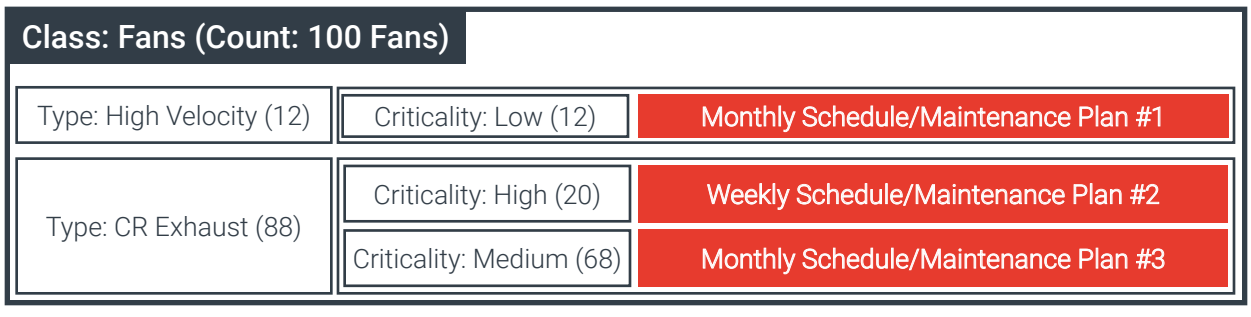
Define grouping criteria that makes sense for your operation

The most common way of grouping assets is by class and type or category and sub-category depending on the terms you want to use. Class refers to the highest-level definition of an asset e.g. Fan, Pump, Generator, Condenser etc. Type refers to a more descriptive definition. For instance, fans could be typed as belt driven versus direct drive or high velocity versus corrosion resistant. The more assets you have and the more diverse they are, the more schedules you would be expected to create. What's important is that assets with the same or similar maintenance plans are grouped together efficiently.

The goal of asset grouping is to work out maintenance plans and schedules that effectively reduce unexpected break downs as much as possible while also minimizing the number of unique maintenance plans and schedules. The more schedules and maintenance plans you have to maintain the more administrative overhead cost you'll incur from managing those schedules and the additional PM work orders they generate. Here is a basic grouping example using the fan scenario mentioned earlier.

Common Criteria

- Asset Category/Class
- Asset Sub-Category/Type
- Criticality (Function of reliability score and cost of breakdowns)
- Location
- Task Priority/Type of Task
- Task Frequency
- Skill Sets Required
- Shutdown Requirement (Do assets need to be offline to perform maintenance tasks)
- Age/Historical Failures/Reliability Score



Example: The "Fans" class of assets are grouped by their asset type and then by their criticality. Schedules and maintenance plans are developed for each unique group.

Additional Grouping Examples

Class: Fans (Count: 100 Fans)		
Reliability Score: High (17)	Task Type: Visual Inspeciton	Monthly Schedule/Maintenance Plan #1
Reliability Score: Medium (54)	Task Type: Visual Inspeciton	Monthly Schedule/Maintenance Plan #2
	Task Type: Vibration Analysis	Semi-Annual Schedule/Maintenance Plan #3
Reliability Score: Low (29)	Task Type: Visual Inspeciton	Bi-Weekly Schedule/Maintenance Plan #4
	Task Type: Vibration Analysis	Monthly Schedule/Maintenance Plan #5

Example: Here we are grouping our fan class assets by their reliability score (Which is the ratio of uptime over expected runtime e.g. High >= 95%, Medium >= 85%, Low < 85%) and then by the activity type we want to perform regularly. As reliability scores decrease, we are adjusting schedules to conduct preventive measures more frequently.

Location: Warehouse #1 (Count: 56 Assets)		
Class: Fans (32)	Criticality: High (5)	Monthly Schedule/Maintenance Plan #1
	Criticalilty: Medium (12)	Semi-Annual Schedule/Maintenance Plan #2
	Criticality: Low (15)	Yearly Schedule/Maintenance Plan #3
Class: Lifts (14)	Type: LPG (10)	Weekly Schedule/Maintenance Plan #4
	Type: Electric (4)	Weekly Schedule/Maintenance Plan #5
Class: Overhead Doors (10)	Task Type: Electrical Inspeciton	Yearly Schedule/Maintenance Plan #6
	Task Type: Mechanical Inspection	Semi-Annual Schedule/Maintenance Plan #7

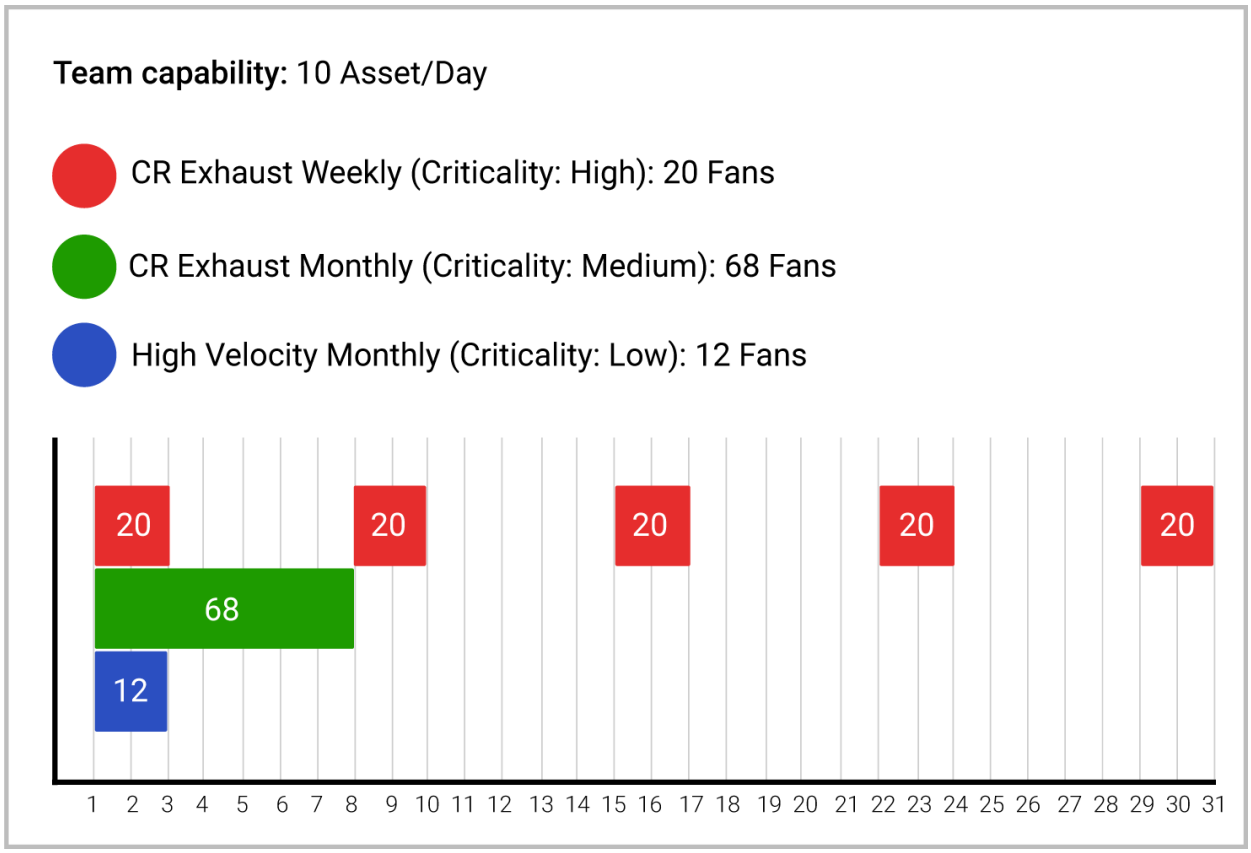
Example: Here we have assigned a team to a specific location and made them responsible for creating and managing schedules for the assets at that location. Assets are grouped by class and then each class has its own sub-grouping method.

Adjust Schedules To Work With Team Capabilities

Once asset groupings are worked out, the next step is to assign schedules and maintenance plans. Schedules determine the frequency and timing of work order generation while maintenance plans outline the tasks that need to be performed at each interval, for each asset. Problems occur when schedules start to overlap, and the amount of work required can be more than your team is capable of finishing on time. For example, teams might have the ability to complete only 10 asset inspections per day, but they have been assigned 100 that are due on the first of every month. What happens as a result is some of those inspections get deferred for days or possibly weeks past their due date.

Using our original fan example, this would occur if we decided to front load each of our schedules at the start of every month. On the first of the month, the team would get assigned an overwhelming 100 asset inspections that can not realistically be completed when they are due.

Example: Front loading all schedules at the beggining of the month.

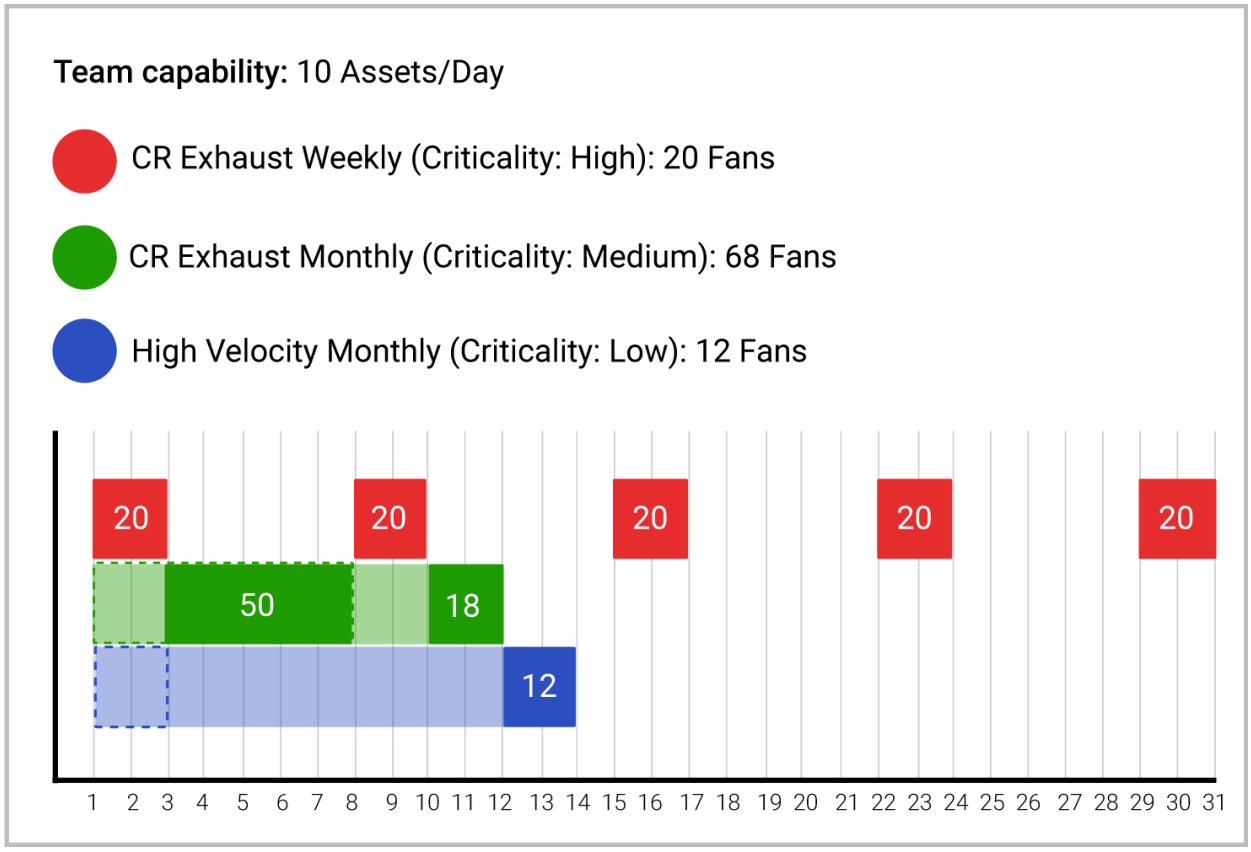


Adjust Schedules To Work With Team Capabilities - Continued

Because of prioritization, teams are forced to defer lower priority inspections, in some cases for weeks. They are also forced to split up inspection tasks because schedules of differing criticality overlap. This forces teams to change focus to take care of more operationally critical inspections. The results of this scheduling method does not reflect the intentions of the schedules because team capabilities were not taken into consideration.

Even though inspections are not being completed as planned, it is possible they could still be managed to stay true to assigned intervals. This is not an easy task, however. Teams would have to make sure they follow the same asset inspection order each period. This gets more difficult when large numbers of assets are assigned to a single schedule and other unplanned tasks come up. A better way would be to schedule assets in manageable "chunks" that are equal to or less than your teams' capability.

Example: The likely outcome of front loading all the fan schedules at the start of every month

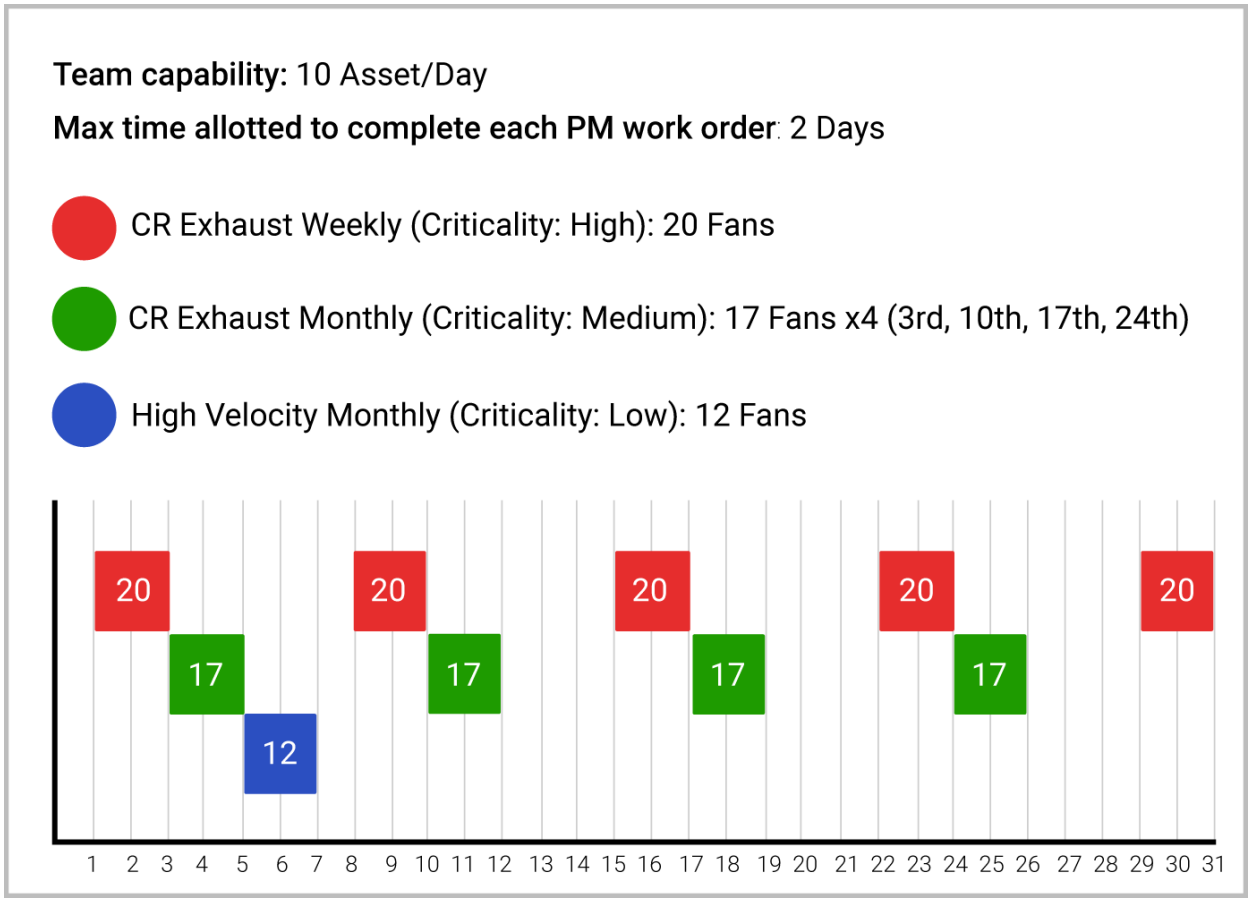


Adjust Schedules To Work With Team Capabilities - Continued

By breaking out the single monthly schedule for all 68 medium criticality exhaust fans into four separate monthly schedules with 17 fans each, we can stagger them to occur at different times of every month. This gives teams a more manageable set of assets and those assets are easily inspected within a two-day timeframe that has been allotted. Smaller "chunks" allow for more scheduling flexibility which helps to minimize overlap and the need to prioritize workloads.

Setting a max time allotment for preventive maintenance work to be completed is essential. The amount of work should not exceed your teams' capability within the allotment period and the time allotted shouldn't be more than a few days. If asset groupings exceed your teams' capability within the max time allotment, that lets you know when asset groups should be broken up into multiple schedules if possible. This method gets harder to configure as intervals become shorter but is best practice whenever it can be implemented.

Example: "CR Exhaust Monthly" broken into four separate monthly schedules and staggered



From-the-ground-up

At Q Ware, we think a “one size fits all” attitude towards CMMS design and implementation just doesn’t work. Our solution starts with a facility teams unique needs and way of working and then it grows from there. We believe that this works well for our customers and empowers them to maintain excellence.

“Q Ware gives us the ability to generate and manage work orders including the ability to schedule reminders and work orders for preventative and repetitive maintenance jobs. Q Ware provides excellent value for our investment”

— Michael H., Executive Director
Montessori School of Silicon Valley

Maintain Excellence

GET IN TOUCH WITH US TODAY.

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