Bridgestone India Private Limited

Find Optimized pattern for arranging the tyres in a truck

Description of the Problem: -

- 1. Variation in loading pattern causing under utilization of vehicle capacity.
- 2. Lack of compatibility of load plan with Vehicle capacity causing changes in load.

What we want:-

- 1. Need to determine the compatibility of a load plan with a vehicle in optimized manner so as to accommodate maximum tyres with vehicle constraints (Weight & Volume). Results can advice under or over Utilization of available space.
- 2. Flexibility in planning to accommodate variation in vehicle dimensions / Chimney space etc.
- 3. Accommodate various loading patterns Horizontal / vertical / cross loading.
- 4. Determine the optimal loading pattern with sequence.

Process

Planning team Issues confirmation to Warehouse through mail as per standard format

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Warehouse team prepares check sheet as per confirmation received



As per check sheet WH team prepare tyre and put tyre in preparation area with tags of location & Qty



After vehicle arrival pre inspection are done and warehouse starts loading

			C 8	ı.F		F'BAD CTL 7T M001 C060	DELHI-N	B'LORE	H'BAD	MADURAI MXL M001 C480	Jabalpur	
			MO	DE			CTL 7T	MXL	MXL		CTL 7T	
			From	WH			M001	M001	M001		M001 C180	
		(&F Com	pany No.			C070	C350	C310			
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A01	135 70 R 12	B290	TL	PSR0D539			4	10				
A02	145 70 R 12	FR500	TL	PSR0D45F								
A03	145 70 R 12	S322M	Π	PSR0D252	PSRCD143			40	35	100		
A04	145 70 R 12	S322M	TO	PSR0D2523		6						
A05	145 80 R 12	AR2AZ	TL	PSR0D438								
A06	145 80 R 12	B290	TL	PSR0D526		300	50	250	70	150	10	
A07	145 80 R 12	ER60BZ	TL	PSR0D357		20		20				
A08	145 80 R 12	FR500	TL	PSR0D37F			60					
A08	145 80 R 12	FS100	TL	PSR0D64F								
A09	145 80 R 12	S248E	Π	PSR0D358	PSRCD142	6	12	130	150	100	10	
A10	145 80 R 12	S248E	TO TO	PSR0D3583								
A11	155 65 R 12	B290	TL	PSR0D541			4	15	20			
A12	165 60 R 12	EG3KZ	TL	PSR0D359				15				
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NOTE: (1) Only White strapping TBR Tyre load in Faridabad & Ludhiana. (2) Attached Weight copy Before loading & After loading Lucknow/G/BAD/VARANASHI vehicle.																					
(3) Inform the supervisor If there is the space of more than 25 tyres in the truck after loading. (4) For any changes (Add-Less), attached mail with check sheet and should be verify by GL/SV नोट:- इस गाड़ी में उपर रिस्ते अनुसार टायर,ट्यूब और परेप की गिनती कर ती है एवं ट्यूब और परेप की बोरी भी गिन ती है और सभी इन्छमिशन सही है ।																					
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Find Optimized pattern for arranging the tyres in a truck

Target – Use Weight / Volume to the fullest extent possible.

Process -

- 1. Input
 - a) size wise Dispatch Plan (SKU Qnty) for every location.
 - b) Vehicle dimension for planning.
- 2. Output
 - a) Options for optimum loading plans within rules
 - b) Sequence wise loading plan to ensure max utilization of available volume.
 - c) Indicate spare capacity to enhance loading plan.

Vehicle Type:

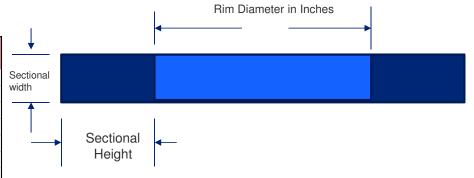
Туре	Weight	Dimension (lxwxh)					
MXL 270	14 MT	32 x 10.3 x 8.5 Ft					
MXL 250	14 MT	32 x 8.5 x 9.5 Ft					
MXL 220	14 MT	32 x 8.5 x 8.5 Ft					
MXL 200	14 MT	32 x 8 x 8 Ft					
FTL	7 MT	17 x 7.5 x 7.5 Ft					
FTL 24FT	7 MT	24 x 7.5 x 7.5 Ft					
CTL	7 MT	32 x 8.5 x 8.5 Ft					

*From Autopandit

Volume

Tyre Volume

Tyle	Volume			
FC Code	Description	Volume	Unit Wt	Loading
TC Code	Description	m ³	Kg	Pattern
LVR0D082	LVR 155 R13 L607 TT	0.03	7.81	Cross
LVR0D079	LVR 215 R15 D689 TT	0.05	14.16	Cross
PSR0D696	PSR 215/60 R16 T01ABZ TL	0.04	9.60	Normal
PSR0D480	PSR 165/65 R14 S322 TT	0.03	8.16	Cross
PSR0D509	PSR 155/70 R13 S322 TT	0.03	6.92	Cross
PSR0D259	PSR 155/65 R13 S322 TT	0.02	6.10	Cross
PSR0D520	PSR 175/65 R14 B29Z TL	0.03	7.57	Cross
PSR0D433	PSR 165/80 R14 S248TL	0.04	7.84	Cross
PSR0D552	PSR 195/60 R15 B29Z TL	0.04	8.67	Cross
PSR0LC23	PSR 265/60 R18 684AGZ TL	0.08	16.04	Normal
PSR0D607	PSR 235 60 R18 850Z TL	0.06	13.56	Normal
PSR0D529	PSR 175 70 14 B290 TL	0.03	7.82	Cross
PSR0D669	PSR 195/65 R15 1501Z TL	0.03	8.52	Cross
PSR0D543	PSR 185/65 R15 B29Z TL	0.04	8.14	Cross
PSR0D538	PSR 185/60 R15 B29Z TL	0.03	7.98	Cross
PSR14227	PSR 245/40 R17 ES1Z TL	0.04	11.73	Normal
PSR15003	PSR 225/50 R17 ES1Z TL	0.04	13.76	Normal
PSR0D657	PSR 185/65 R14 B290 TL	0.03	8.53	Cross
PSR0D283	PSR 175 70 13 B250 TL	0.03	7.86	Cross
PSR0D590	PSR 175/60 R13 MY02AZ TL	0.02	7.09	Cross
PSR14651	PSR 245/45 R19 ES1Z TL	0.04	14.55	Normal
PSR12375	PSR 275/45 R20 DHPAMZ TL	0.05	17.38	Normal
PSR0D252	PSR 145/70 R12 S322 TT	0.02	6.16	Cross
PSR0D526	PSR 145/80 R12 B29Z TL	0.03	5.69	Cross
PSR0D539	PSR 135/70 R12 B29Z TL	0.02	4.92	Cross
PSR0D359	PSR 165/60 R12 EG3KZ TL	0.02	6.33	Cross
PSR0D673	PSR 195/60 R16 EP15KZ TL	0.04	9.11	Normal
PSR0D694	PSR 205/50 R17 EP15CZ TL	0.03	9.44	Normal



Aspect Ratio = Sectional Height / Sectional Width

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Constraints -

- 1. Horizontal tyres loading on floor 3 layers.
- 2. No cross loading in 16~18 inch segment.
- 3. No cross loading for Firestone tyres & TBR Tyres
- 4. Bigger tyres below (Rim, Sectional width).
- 5. Gaps to be filled properly.
- 6. Heavy tyres must be placed near to cabin.

Truck Loading Pattern



















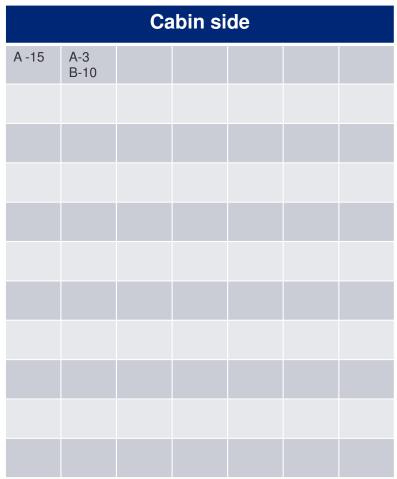






OUTPUT

a) Loading Sequence



- b) Volume Utilization efficiency
- c) Multiple layouts for volume utilization scenarios
- d) Suggestion of remaining volume & Estimate the tyres can be added (inch wise).