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STAINLESS STEEL BUSES

A SAFER, COST- EFFECTIVE, & SUSTAINABLE SOLUTION



Corrosion
Resistance



Lightweight



Better
Aesthetics



Lower
Life Cycle Cost



Low Carbon
Footprint

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A large industrial ladle, tilted to the right, pours a thick, bright orange-yellow stream of molten metal. The ladle is dark and textured, with some residue on its inner surface. The background is a dimly lit industrial setting with various pipes, structural beams, and machinery. In the lower right, another source of molten metal is visible, creating a bright, glowing pool. The overall atmosphere is one of intense heat and industrial scale.

A STAINLESS LEGACY

India's leading stainless steel manufacturer, Jindal Stainless, achieved a consolidated annual turnover of INR 38,562 crore (USD 4.7 billion) in FY24. The company is expanding its facilities to reach 4.2 million tonnes of annual melt capacity by 2026. Jindal Stainless operates 16 manufacturing and processing facilities across India, Spain, and Indonesia, with a global network of 12 locations as of March 2024.

Jindal Stainless remains focused on a greener, sustainable future fuelled by environmental responsibility. The company manufactures stainless steel using scrap in an electric arc furnace, which lowers greenhouse gas emissions and enables recyclability with no reduction in quality. The company aims to reduce carbon emission intensity by 50% well before FY35 and achieve Net Zero by 2050.



BUILT TO LAST

STAINLESS STEEL BUSES

INTRODUCTION

The use of stainless steel in public transport systems has been widely accepted worldwide. The sterling features include safety, aesthetics, lightweight, fuel efficiency, and sustainability. Today, stainless steel is increasingly being used in the construction of structural parts as well as side paneling, floor, and luggage compartments of medium and long-distance buses.

It is an established fact that the use of stainless steel in a bus body guarantees better corrosion resistance and reduction in overall weight, offering substantial savings on fuel consumption. Also, due to its excellent toughness, stainless steel buses provide superior safety to passengers in case of accidents and crashes. In the rollover tests of bus frames, stainless steel is considered to be a safe material when properly designed and manufactured.

From the environmental aspect, stainless steel's full recyclability offers a 'green solution' and makes it the most preferred material for sustainable development in the future.

BEYOND COMPARISON

STAINLESS STEEL FOR SAFETY & TRUST

WHY STAINLESS STEEL IS THE BEST CHOICE FOR BUS BODIES

STAINLESS STEEL	MILD STEEL
High Corrosion Resistance	Low Corrosion Resistance
High Tensile Strength	Lower Tensile Strength
More Durable	Less Durable
Low Maintenance	High Maintenance
Sleek Aesthetics	Dull
Lightweight	Heavyweight
More Sustainable	Less Sustainable
Lower Life Cycle Cost	High Life Cycle Cost



BEYOND EFFICIENCY

DRIVE AHEAD WITH 35% LIGHTER & 3X STRONGER
STAINLESS STEEL BUSES*



Corrosion Resistance



Lightweight



Better Aesthetics



Lower Life Cycle Cost



Low Carbon Footprint

PARAMETERS	JT STAINLESS STEEL
WEIGHT	Reduces weight by 25-35% per bus
FUEL-EFFICIENCY	1.3 liters of diesel saved for every 1000 Kg weight reduction for every 100 kms of travel
COST SAVINGS	Cost savings of approx Rs. 12-15 lakhs per bus over 10-12 years

In India, stainless steel is gaining traction amongst some of the major bus body manufacturers. The normally used stainless steel grades for fabrication of bus body in India are as follows:

COMPONENTS	SS GRADE
SUPERSTRUCTURES	JT TUBES (SQUARE & RECTANGULAR)
ROOF AND OUTER PANELS	JT SHEETS
INNER PANELS	SS430 (MIRROR/SPECIAL FINISH)
FLOOR, FOOTSTEPS, LUGGAGE CARRIERS	JT CHEQUERED
HAND RAILS, GRAB POLES, WINDOW RAILS, STANCHIONS	SS 304 ROUND TUBES (POLISHED)

EFFICIENCY BEYOND IMAGINATION WITH STAINLESS STEEL GLOBALLY

RECOMMENDED GRADE OF STAINLESS STEEL JT
(N7 AS PER BIS 6911 SPECS)



JT – up to 35% weight reduction up to 3x strength



1.3 litre per 100 KM & 1000 KG weight reduction



Life cycle cost saving with SS structure – 12-15 lakhs per bus
Payback period – 7-8 months*



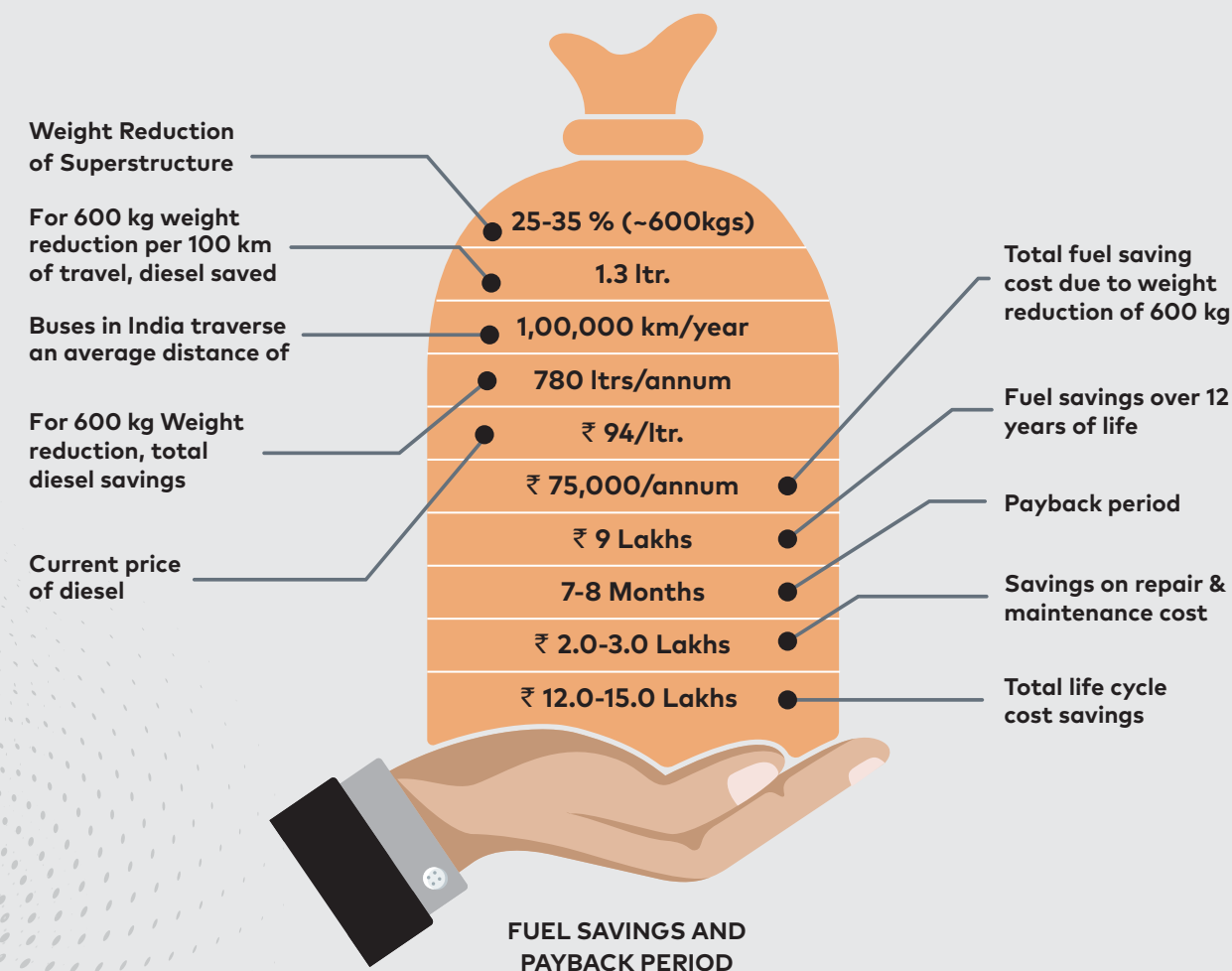
VOLVO

SCANIA

GREYHOUND

LIFE CYCLE COST BENEFITS

STAINLESS STEEL BUS BODY RESULTS IN BIG SAVINGS AND IS COST EFFICIENT



THE JSL ADVANTAGE

While Stainless Steel gives you a material advantage, Stainless Steel from JSL, the largest manufacturer of Stainless Steel in India and a global player, gives you a distinct edge.



Indigenous



Full Quality Control Completely made in-house



Full Body Stainless Steel Solution Sheet, Chequered Sheet, Pipes/Tubes



Support in Fabrication + Technical Training



Largest Distribution

BEYOND TRUST

REAL-LIFE IMPACT OF STAINLESS STEEL



SS BUS BODY FABRICATION IN THE YEAR 2017-18					
SL. NO.	BUS NO.	TYPE	ALLOTTED DEPT	DATE OF COMMISSION	KMS COVERED AS ON JUL'22
1	30z0177	UDLX	SKLM-1	26-10-17	811373
2	07z0592	UTVG	GNT-2	03-04-18	359212

PARAMETER	DETAILS
Diesel price in Rs	100
Daily Kms	470
Monthly Kms	14100
Diesel for GI bus body @5.53	2549.73
Diesel for SS bus body @5.67	2486.77
Diesel saved per month	62.9563
Amount saved per month in Rs.	6295.63
Amount saved per quarter in Rs.	18886.9

Dy. Chief Mech. Engineer (C&B)
A.P.S.R.T.C., RTC House
VIJAYAWADA - 520 013.



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PERFORMANCE ANALYSIS OF SS BUS VIS A VIS GI/ALUMINIUM BUSES								
SL. NO.	BUS NO.	TYPE	ALLOTTED DEPT	STRUCTURE	DATE OF COMMISSION	KMS OPERATED	DIESEL TOPPED UP	KMPL
1	30z0177	UDLX	SKLM-1	SS	26-10-17	811373	143039	5.67
2	30z0165	UDLX	SKLM-1	GI	11-08-17	836756	151385	5.53
VARIANCE								0.15

1	07z0592	UPVG	GNT-2	SS	17-04-18	32841	5980	5.49
2	07z0665	UPVG	GNT-2	AL	22-03-19	35950	6721	5.35
VARIANCE								0.14

REAL LIFE IMPACT OF STAINLESS STEEL IN ANDHRA PRADESH STATE ROAD TRANSPORT

APSRTC's Stainless Steel Ultra Deluxe Bus on the Srikakulam-Vizag route



SS TUBES REDUCED BUS WEIGHT BY 370 KG



₹ 6,300 DIESEL SAVINGS MONTHLY



₹ 75,600 ANNUAL DIESEL SAVINGS



APPROX ₹ 10-12 LAKHS OVER A PERIOD OF 12 YEARS

STAINLESS STEEL IS THE GLOBAL CHOICE OF MANUFACTURERS ACROSS COUNTRIES

STAINLESS STEEL BUSES PROVIDE MORE COMFORT & SAFETY TO TRAVELLERS AND LEAST COST TO OWNERS

International Case Studies:

SILVER EAGLE, USA



GREYHOUND, USA



OPTARE, UK
And many more.



BEYOND SUSTAINABILITY

LOW CARBON FOOTPRINT FOR GREENER ROADWAYS

MATERIAL CHARACTERISTICS

CHEMICAL COMPOSITION

Grade	% C (max)	% Mn (max)	% P (max)	% S (max)	% Si (max)	% Cr	% Ni	% Mo	N (ppm)	%Others Cu:
JT	0.14	9.0 – 11.5	0.10	0.03	1.00	13.50-16.00	0.20-0.95	-	1000 - 2500	0.4 – 0.8

MECHANICAL PROPERTIES OF SHEETS

Property (Sheets)	JT	430	Mild Steel CRCA	Aluminium Annealed	Aluminium ½ hard
Yield Strength (MPa, min)	400	205	205	49	137
Ultimate Tensile Strength (MPa, min)	700	450	260	108	157
% Elongation (min)	40	22	16	43	12
Density (gm/cc)	7.8	7.8	7.8	2.7	2.7
Hardness (HRB, max)	100	89	70	Soft	Moderate

Note:

- When formed into tubes, stainless steel, due to its superior hardening property, exhibits a very high strength, coupled with excellent elongation.
- Typical mechanical properties of stainless steel tubes vis-à-vis MS tubes are tabulated as below:

MECHANICAL PROPERTIES OF TUBES

Property (Tubes)	JT	Mild Steel
Yield Strength (Mpa, min)	700	210 / 240 / 310
Ultimate Tensile Strength (Mpa, min)	900	
%Elongation (min)	30	12 / 10 / 8

SIZE RANGE COILS

Products	Max width (mm)	Thickness (mm)	
		Min	Max
CRAP Coil	1000	0.50	3.15
	1250	0.50	3.15

Note:

- We can also supply in sheet form in the standard size of 1250 X 2500 mm. However, we can also supply customized widths and lengths, if required.
- We can also supply in width of 1500 mm, for specific thicknesses and grades.



SQUARE, RECTANGULAR AND ROUND TUBES

WEIGHT CHART - SQUARE PIPES

Dimension		Wall thickness (mm) Welded tubes according to ASTM A 554-DIN 2395-NFA 49647								
A mm	B mm	1	1.2	1.5	2	2.5	3	4	5	6
12	12	0.358								
15	15	0.453	0.538	0.661						
16	16	0.485	0.576	0.709						
19	19	0.567	0.675	0.832	1.090					
20	20	0.613	0.729	0.901	1.176					
22	22	0.677	0.806	0.996	1.303					
25	25	0.772	0.921	1.140	1.495	1.837	2.167			
30	30	0.932	1.112	1.379	1.814	2.236	2.645			
32	32	0.960	1.150	1.420	1.870	2.310	2.740			
35	35	1.091	1.304	1.618	2.133	2.635	3.124			
40	40	1.251	1.495	1.858	2.452	3.033	3.602	4.703		
45	45	1.410	1.686	2.097	2.771	3.432	4.081			
50	50		1.878	2.336	3.090	3.831	4.559	5.979	7.349	
60	60		2.254	2.814	3.728	4.628	5.516	7.255	8.943	
70	70			3.293	4.366	5.426	6.473	8.531	10.538	
80	80			3.771	5.004	6.223	7.430	9.807	12.133	14.410
100	100			4.728	6.279	7.818	9.344	12.359	15.323	18.237
120	120				7.555	9.413	11.258	14.910	18.513	22.065
140	140				8.831	11.008	13.172	17.462	21.703	25.893
150	150				9.469	11.805	14.129	18.738	23.298	27.807
200	200				12.659	15.793	18.913	25.118	31.272	37.376

UNIT WT. = KG/METRE

WEIGHT CHART - RECTANGULAR PIPES

Dimension		Wall thickness (mm) Welded tubes according to ASTM A 554-DIN 2395-NFA 49647								
A mm	B mm	1	1.2	1.5	2	2.5	3	4	5	6
15	10	0.370	0.440	0.540						
20	10	0.453	0.538	0.661						
20	15	0.533	0.634	0.781	1.016					
25	10	0.533	0.634	0.781						
25	10	0.613	0.729	0.901	1.176					
25	20	0.693	0.825	1.020	1.335					
26	13	0.613	0.729	0.901	1.176					
30	10	0.613	0.729	0.901	1.176					
30	15	0.693	0.825	1.020	1.335					
30	20	0.772	0.921	1.140	1.495	1.837	2.167			
30	25	0.840	1.000	1.240	1.630					
35	15	0.760	0.910	1.130	1.480					
35	20	0.852	1.017	1.259	1.654	2.036	2.406			
40	10	0.760	0.910	1.130	1.480					
40	15	0.852	1.017	1.259	1.654	2.036	2.406			
40	20	0.932	1.112	1.379	1.814	2.236	2.645			
40	27	1.044	1.246	1.547	2.037	2.515	2.980			
40	30	1.091	1.304	1.618	2.133	2.635	3.124			
45	15	0.910	1.090	1.350	1.780					
45	20	0.990	1.180	1.460	1.920					
50	10	0.910	1.090	1.350	1.780					
50	20	1.091	1.304	1.618	2.133	2.635	3.124			
50	25	1.171	1.399	1.738	2.292	2.834	3.363			
50	30	1.251	1.495	1.858	2.452	3.033	3.602			
50	40	1.410	1.686	2.097	2.771	3.432	4.081			
60	20	1.251	1.495	1.858	2.452	3.033	3.602			
60	30	1.410	1.686	2.097	2.771	3.432	4.081			
60	40		1.878	2.336	3.090	3.831	4.559			
70	20		1.650	2.050	2.710	3.360	4.000			
70	30			2.290	3.030	3.760	4.480			
70	40			2.575	3.409	4.229	5.038			
75	25		1.878	2.336	3.090	3.831	4.559			
80	20			2.290	3.030	3.760	4.480			
80	30			2.530	3.350	4.160	4.960			
80	40		2.254	2.814	3.728	4.628	5.516	7.255	8.943	10.582
80	50			3.010	4.000	4.960	5.920	7.790	9.620	11.390
80	60			3.293	4.366	5.426	6.473	8.531	10.538	12.496
100	20			2.760	3.650	4.540	5.410			
100	30			3.010	4.000	4.960	5.920			
100	40			3.293	4.366	5.426	6.473	8.531	10.538	12.496
100	50			3.532	4.685	5.824	6.952	9.169	11.336	13.453
100	60			3.771	5.004	6.223	7.430	9.807	12.133	14.410
100	80			4.250	5.641	7.021	8.387	11.083	13.728	16.324
120	40			3.771	5.004	6.223	7.430	9.807	12.133	14.410
120	60			4.250	5.641	7.021	8.387	11.083	13.728	16.324
120	80			4.728	6.279	7.818	9.344	12.359	15.323	18.237
140	80						10.301	13.635	16.918	20.151
150	50						9.344	12.359	15.323	18.237
150	100						11.736	15.548	19.310	23.022
160	80						11.258	14.910	18.513	22.065
200	100						14.129	18.738	23.298	27.807

WEIGHT CHART - ROUND PIPES

Outside Diameter (mm)										Weight (kg/metre)					Wall Thickness (mm)				
	0.40	0.45	0.50	0.60	0.70	0.75	0.80	0.90	1	1.2	1.5	1.6	2	2.5	2.6	3	3.2	3.6	4
6.00	0.056	0.063	0.069	0.081					0.125										
7.20	0.068	0.076	0.084	0.100															
7.50	0.072	0.080	0.088	0.104															
8.00	0.077	0.085	0.094	0.112	0.128	0.137	0.145	0.161	0.175										
9.50	0.091	0.102	0.113	0.134	0.155	0.165	0.175												
10.00	0.097	0.108	0.119	0.142	0.164	0.175	0.185	0.206	0.225										
12.00	0.117		0.145	0.172	0.199	0.212	0.225	0.251	0.275	0.325	0.394								
12.70	0.124		0.153	0.182	0.211	0.225													
13.30	0.130		0.161	0.192	0.222	0.237	0.251	0.280											
13.50	0.132		0.163	0.195	0.225	0.240	0.255	0.285											
14.00	0.137		0.170	0.202	0.234	0.250	0.265	0.296	0.326	0.385	0.470								
14.80	0.145		0.180	0.214	0.248	0.265													
15.00	0.147		0.182	0.217	0.252	0.269	0.286	0.319	0.351	0.415	0.507								
15.70	0.154		0.191	0.228	0.264	0.282	0.300	0.335											
15.88	0.155		0.193	0.230	0.266	0.284	0.302	0.338											
16.00	0.157		0.195	0.232	0.269	0.287	0.306	0.342	0.376	0.445	0.545	0.577	0.701						
17.00	0.167		0.207	0.247	0.287	0.306	0.326	0.364											
17.20	0.168		0.209	0.249	0.289	0.309	0.367	0.406	0.481	0.590	0.625	0.761							
18.00	0.177		0.220	0.262	0.304	0.325	0.346	0.387	0.426	0.505	0.620	0.657	0.801	0.970					
19.00	0.187		0.232	0.277	0.322	0.344	0.366	0.409											
19.05	0.187		0.232	0.277	0.322	0.344	0.366	0.409	0.452	0.536	0.659	0.699	0.854	1.036					
20.00	0.197		0.245	0.293	0.340	0.363	0.386	0.432	0.476	0.565	0.695	0.737	0.901	1.096	1.133	1.277			
21.00	0.207		0.258	0.308	0.357	0.382	0.406	0.455											
21.30	0.210		0.261	0.312	0.362	0.387	0.412	0.461	0.508	0.604	0.714	0.789	0.967	1.177	1.217	1.375			
22.00			0.270	0.323	0.375	0.401	0.426	0.477	0.526	0.625	0.770	0.817	1.002						
22.23			0.272	0.325	0.377	0.403	0.429	0.481	0.532	0.632	0.779	0.827	1.013						
23.00			0.283	0.338	0.392	0.419	0.446	0.500											
24.00			0.295	0.353	0.410	0.438	0.466	0.523											
25.00			0.308	0.368	0.428	0.457	0.487	0.545	0.601	0.715	0.883	0.937	1.125	1.409	1.458	1.653			
25.40			0.317	0.378	0.440	0.470	0.501	0.561	0.611	0.727	0.898	0.954	1.172	1.434	1.484	1.683			
26.00			0.320	0.383	0.445	0.476	0.507	0.568											
26.90			0.333	0.398	0.463	0.495	0.527	0.590	0.649	0.772	0.954	1.014	1.247	1527	1.582	1.795			
27.00			0.333	0.398	0.463	0.495	0.527	0.590											
28.00			0.346	0.413	0.480	0.514	0.547	0.613	0.676	0.805	0.995	1.058	1.302						
28.58			0.352	0.420	0.489	0.523	0.556	0.624	0.691	0.823	1.017	1.081	1.331						
30.00			0.371	0.443	0.515	0.551	0.587	0.658											
31.75									0.770	0.918	1.136	1.208	1.490	1.831	1.898	2.160			
31.80			0.396	0.474	0.551	0.589	0.627	0.703											
32.00			0.396	0.474	0.551	0.589	0.627	0.703	0.776	0.925	1.146	1.218	1.502	1.847	1.914	2.178			
33.00										0.956	1.183	1.258	1.552						
33.40									0.811	0.968	1.198	1.274	1.573	1.934	2.005	2.284			
33.70									0.819	0.977	1.209	1.286	1.588	1.953	2.025	2.306	2.444		
34.00									0.826	0.966	1.221	1.298	1.603	1.972					
34.93									0.850	1.014	1.256	1.335	1.649	2.030					
35.00									0.851	1.016	1.258	1.338	1.653	2.035					
38.10									0.929	1.109	1.375	1.462	1.808	2.229	2.311	2.637			
40.00									0.977	1.166	1.446	1.538	1.903	2.348	2.435	2.779			
41.30									0.999	1.193	1.481		1.494	2.406		2.850			
42.00										1.226	1.521	1.619	2.003						
42.40									1.037	1.238	1.536	1.635	2.023	2.498	2.591	2.960	3.141	3.498	3.444

WEIGHT CHART - ROUND PIPES

[illegible]

IN INDIA STAINLESS STEEL HAS BEEN HELPING MANUFACTURERS TO GENERATE VALUE SOCIALLY AND FINANCIALLY

IN INDIA ALSO, STAINLESS STEEL BUSES ARE PREFERRED BY TRANSPORT OPERATORS BECAUSE OF BETTER COST EFFICIENCY, LOW MAINTENANCE AND LONGER LIFE

Indian Case Studies:

STATE ROAD TRANSPORTS

- Karnataka State Road Transport Corporation
- Andhra Pradesh State Road Transport Corporation
- Pune Mahanagar Parivahan Mahamandal Ltd
- Telangana State Road Transport Corporation
- State Express Transport Corporation, Tamil Nadu
- Kadamba Coaches, Goa
- Maharashtra State Road Transport Corporations



PRIVATE TRANSPORTS

- VOLVO
- Tata Motors
- JBM Group
- Veera Vahana
- Amar Coach Builders
- Olectra Greentech
- Eka Mobility, Pune
- Azad Coaches, Bangalore



TESTIMONIALS



We switched to stainless steel buses way back in 2018, and have seen remarkable progress in various operational efficiencies thereon. The weight of our buses reduced, leading to significant fuel savings, thereby reducing CO2 emissions considerably. As stainless steel is corrosion resistant, our buses did not require any repair and maintenance over the last 6-7 years, although the buses have been operating in the coastal region.

Mr. Krishna Mohan
Executive Director (Tech),
APSRTC



We are very satisfied with the performance of the 2 stainless steel buses developed at our Kengri workshop. We are planning to develop more buses under the developmental project. The buses will be operated from different depots and based on their feedback, we will decide on adding more stainless steel buses to our fleet.

Mr. Basavaraju
CME, KSRTC

