Çemberci Denizcilik 22 Mart 2007

Norveç model tankında 1969 senesinde yapılan bir çalışmadır. Orijinal literatur ekte bulunmaktadır.Ayrıca Lotus .wk4 Dosyasıda zip olarak sitede bulunmaktadır.Araştırmacılara Yardımcı olmak üzere eklenmiştir.

Model test edilmek üzere 30 ft in karşılığı olan 1/23 de bir ölçekte yapılmıştır.Yüksek hızlarda verilen ağırlıklara göre direnç sonuçlarını doğru bulabilmek üzere üç değişkenin fonksiyonu olarak gurublanmıştır.

$$Cl - Lcb/B - \beta$$

Cl yardımıyla teknenin hızı tespit edilmektedir.

$$Vsel\ (knots) = (1/b)*(\Delta*(2/\rho)\ \mathbf{(1/Cl))\hat{}1/2*(1/.514)}$$

Lcb/B ise burada Ağırlık merkezinin kıçtan mesafesinin Teknenin çene genişliğine bölümüne oranıdır.
Ağırlık merkezinin yeri ise % 80,90,100,110,120,130,140,150 Sonuçları eğri olarak verilmiştir.

Deplasman ise 1.5,2.0,2.5,3.0,3.5,4.0,4.5,5.0,6.0,7.0,8.0,9.0 ton Olarak belirlenmiştir.

Yöntem tekne cene genişliğinin kıçtaki genişliğine görede Fv 2.5 tan 4.5 arası Kıçtaki genişliğin çene genişliğine oranı % 70,%80,%90 göre dirençte düzeltme imkanı vermektedir.

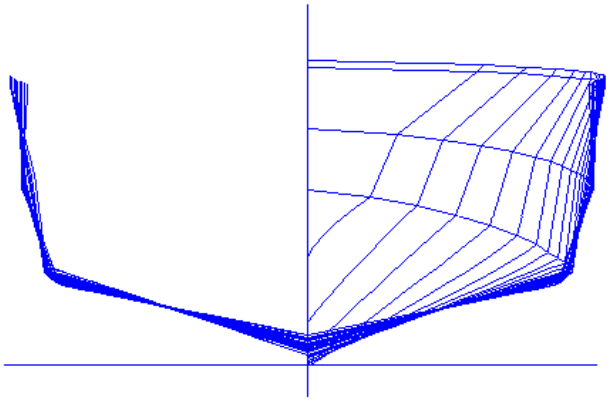
Ekte üç tane örnek hazırlanmıştır.Birinci model kalkıntı açısı 17.5 derece 1500 kg diğeri ise kalkıntı açısı 22.5 derece 2000kg Sonuncusu ise kalkıntı açısı 22.5 derece 4500 kg olarak mevcut Yöntemle Savitsky + Blount M(0.5) karşılaştırması yapılmıştır.

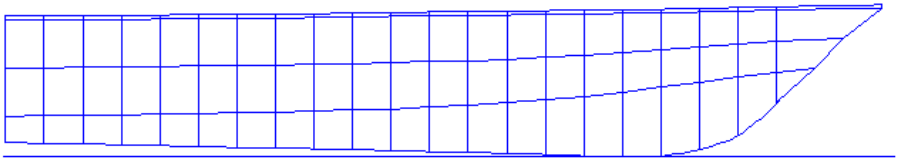
Oktay Çemberci
İstanbul

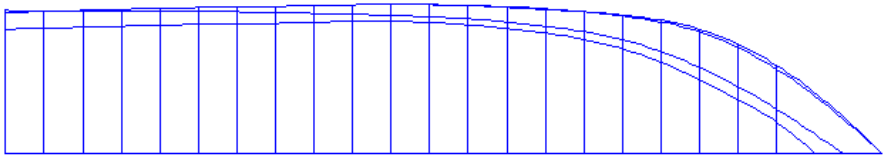
TEKNENİN BOYUTLARI

Loa TAM BOYU		*5.822*	*metre*
Lpx CENE BOYU		*5.375*	*metre*
Lwl SU HATTI BOYU		*5.122*	*metre*
Boa TAM ENI		*2.060*	*metre*
Bpx CENE GENİŞLİĞİ		*1.829*	*metre*
Bwl SU HATTI ENİ		*1.841*	*metre*
Twl CENE BOYU ORTASINDAKİ SU KESİMİ		*0.288*	*metre*
TEKNE SU HATTINDAKİ AĞIRLIĞI	*Dep*	*1500.0*	*kg*
CENE BOYU ORTASINDAKİ KALKINTI AÇISI		*17.5*	*derece*

Kalkinti Acisi 17.50 Derece Model







Tekne Ağırlığı 1500 kg

İmalat etmeye yönetik değerler

SECTION NUMBER 0 AT 0.000 M
1.2025 0.2428 1
1.2025 0.2352 1
0.7603 0.1597 2
0.4349 0.0842 3
0.0000 -0.0000 4

SECTION NUMBER 1 AT 0.000 M
0.2954 0.2378 1
0.2838 0.2297 1
0.1491 0.1521 2
0.1044 0.0745 3
0.0194 0.0223 4
0.0000 0.0000 4

SECTION NUMBER 2 AT 0.440 M
0.3669 0.2357 1
0.3557 0.2274 1
0.2254 0.1458 2
0.1827 0.0643 3
0.1018 0.0055 4
0.0243 -0.0577 4
0.0000 -0.0791 4

SECTION NUMBER 3 AT 0.880 M
0.4171 0.2335 1
0.4085 0.2250 1
0.2900 0.1387 2
0.2487 0.0523 3
0.1655 -0.0032 4
0.0824 -0.0588 4
0.0000 -0.1142 4

SECTION NUMBER 4 AT 1.320 M
0.4476 0.2317 1
0.4415 0.2230 1
0.3428 0.1314 2
0.3061 0.0397 3
0.2198 -0.0108 4
0.1323 -0.0593 4
0.0443 -0.1068 4
0.0000 -0.1305 4

SECTION NUMBER 5 AT 1.759 M
0.4647 0.2303 1
0.4613 0.2215 1
0.3827 0.1245 2
0.3517 0.0276 3
0.2628 -0.0182 4
0.1717 -0.0596 4
0.0801 -0.0995 4
0.0000 -0.1336 4

SECTION NUMBER 6 AT 2.199 M
0.4753 0.2293 1
0.4757 0.2203 1
0.4091 0.1184 2
0.3833 0.0165 3
0.2922 -0.0246 4
0.1988 -0.0602 4
0.1047 -0.0942 4
0.0104 -0.1275 4
0.0000 -0.1311 4

SECTION NUMBER 7 AT 2.639 M
0.4832 0.2282 1
0.4860 0.2191 1
0.4270 0.1131 2
0.4046 0.0071 3
0.3116 -0.0294 4
0.2166 -0.0605 4
0.1211 -0.0903 4
0.0255 -0.1195 4
0.0000 -0.1272 4

SECTION NUMBER 8 AT 3.079 M
0.4906 0.2268 1
0.4926 0.2175 1
0.4413 0.1086 2
0.4200 -0.0003 3
0.3254 -0.0324 4
0.2294 -0.0604 4
0.1332 -0.0876 4
0.0368 -0.1143 4
0.0000 -0.1244 4

SECTION NUMBER 9 AT 3.519 M
0.4966 0.2255 1
0.4966 0.2162 1
0.4520 0.1050 2
0.4314 -0.0061 3
0.3353 -0.0336 4
0.2387 -0.0595 4
0.1420 -0.0851 4
0.0453 -0.1105 4
0.0000 -0.1224 4

SECTION NUMBER 10 AT 3.959 M
0.4996 0.2248 1
0.4992 0.2154 1
0.4587 0.1023 2
0.4396 -0.0108 3
0.3425 -0.0345 4
0.2454 -0.0587 4
0.1484 -0.0829 4
0.0514 -0.1072 4
0.0000 -0.1201 4

SECTION NUMBER 11 AT 4.399 M
0.5000 0.2239 1
0.5000 0.2144 1
0.4631 0.0998 2
0.4437 -0.0148 3
0.3460 -0.0356 4
0.2486 -0.0583 4
0.1513 -0.0813 4
0.0540 -0.1046 4
0.0000 -0.1175 4

SECTION NUMBER 12 AT 4.839 M
0.4989 0.2222 1
0.4990 0.2126 1
0.4668 0.0974 2
0.4432 -0.0178 3
0.3450 -0.0369 4
0.2474 -0.0586 4
0.1499 -0.0807 4
0.0524 -0.1031 4
0.0000 -0.1152 4

SECTION NUMBER 13 AT 5.278 M
0.4966 0.2207 1
0.4966 0.2109 1
0.4701 0.0953 2
0.4400 -0.0203 3
0.3418 -0.0389 4
0.2440 -0.0597 4
0.1463 -0.0810 4
0.0486 -0.1025 4
0.0000 -0.1132 4

SECTION NUMBER 14 AT 5.718 M
0.4938 0.2200 1
0.4937 0.2102 1
0.4731 0.0940 2
0.4368 -0.0224 3
0.3385 -0.0405 4
0.2406 -0.0607 4
0.1427 -0.0813 4
0.0449 -0.1021 4
0.0000 -0.1116 4

SECTION NUMBER 15 AT 6.158 M
0.4913 0.2196 1
0.4913 0.2097 1
0.4754 0.0930 2
0.4344 -0.0244 3
0.3360 -0.0420 4
0.2379 -0.0615 4
0.1399 -0.0813 4
0.0419 -0.1013 4
0.0000 -0.1099 4

SECTION NUMBER 16 AT 6.598 M
0.4896 0.2186 1
0.4896 0.2085 1
0.4772 0.0915 2
0.4328 -0.0260 3
0.3343 -0.0433 4
0.2360 -0.0620 4
0.1379 -0.0809 4
0.0397 -0.100 4
0.0000 -0.1077 4

SECTION NUMBER 17 AT 7.038 M
0.4874 0.2175 1
0.4874 0.2073 1
0.4787 0.0901 2
0.4307 -0.0271 3
0.3321 -0.0441 4
0.2338 -0.0621 4
0.1354 -0.0803 4
0.0371 -0.0986 4
0.0000 -0.1055 4

SECTION NUMBER 18 AT 7.478 M
0.4837 0.2170 1
0.4837 0.2068 1
0.4799 0.0891 2
0.4272 -0.0286 3
0.3286 -0.0453 4
0.2301 -0.0627 4
0.1316 -0.0802 4
0.0332 -0.0977 4
0.0000 -0.1036 4

SECTION NUMBER 19 AT 7.917 M
0.4800 0.2164 1
0.4800 0.2061 1
0.4785 0.0880 2
0.4232 -0.0303 3
0.3245 -0.0465 4
0.2259 -0.0631 4
0.1273 -0.0797 4
0.0287 -0.0963 4
0.0000 -0.1011 4

SECTION NUMBER 20 AT 8.357 M
0.4772 0.2154 1
0.4772 0.2050 1
0.4755 0.0865 2
0.4199 -0.0320 3
0.0000 -0.0999 4

SECTION NUMBER 21 AT 8.797 M
0.4719 0.2143 1
0.4719 0.2038 1
0.4803 0.0853 2
0.4168 -0.0332 3
0.3181 -0.0485 4
0.2192 -0.0634 4
0.1203 -0.0782 4
0.0214 -0.0931 4
0.0000 -0.0963 4

Loa = 10 , Boa = 1 , Twl = 0.1 değerlerindedir

POWERING OF PLANING CHINE HULLS

17.50 ve 22.50 Derece Tekne değişik LCG Merkezlerindeki Güç değer 24-Mar-2007
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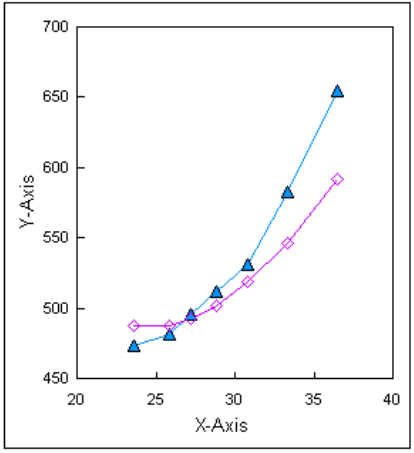
Lpx	**17.636**	**ft**	**5.375**	**Metre**	**Lpx/Bpx=**	**2.939**
Bpx	**6.000**	**ft**	**1.829**	**Metre**		
Tpx - 22.50	**1.243**	**ft**	**0.379**	**Metre**		
17.50	**0.946**	**ft**	**0.288**	**Metre**		
Deplasman	**2000.000**	**(22.5 deg)**	**1500.000**	**kg**	**(17.5 deg)**	
Lcg	**4.800**	**ft**	**1.463**	**Metre**		

Lcg/B = **0.8000** **Lcg/Lpx =** **0.272**

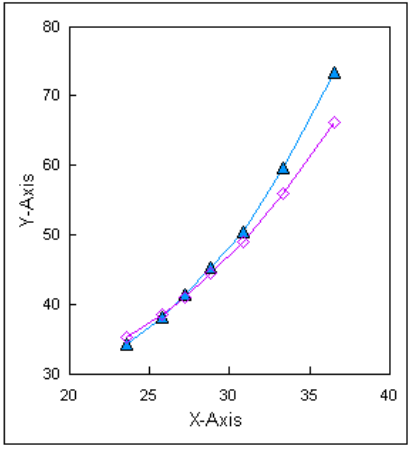
Cv	Rbh/Dep	Rbh - kg	Rbh - Libre	Vsel-knots	Hull-E Power HP
0.060	*0.14303846*	214.56	473.02	23.56	34.220
0.050	*0.14571581*	218.57	481.87	25.81	38.188
0.045	*0.14977244*	224.66	495.29	27.20	41.374
0.040	*0.15479808*	232.20	511.91	28.85	45.357
0.035	*0.16061325*	240.92	531.14	30.84	50.310
0.030	*0.17605235*	264.08	582.19	33.32	59.564
0.025	*0.19781410*	296.72	654.16	36.50	73.315
0.000	*0.00000000*	0.00	0.00	ERR	ERR
0.000	*0.00000000*	0.00	0.00	ERR	ERR
0.000	*0.00000000*	0.00	0.00	ERR	ERR

KARŞILAŞTIRMA
NSMET Model Sonuçuyla Savitsky+ Blount Hesaplama

Tekne Hızı	Nsmet Rbh	Savitsky Rbh
23.56	473.02	487.38
25.81	481.87	487.35
27.20	495.29	492.14
28.85	511.91	501.66
30.84	531.14	518.48
33.32	582.19	546.24
36.50	654.16	591.13
Knot	Libre	Libre



Tekne Hızı	Nsmet Ehp	Savitsky Ehp
23.56	34.22	35.24
25.81	38.19	38.60
27.20	41.37	41.08
28.85	45.36	44.41
30.84	50.31	49.01
33.32	59.56	55.85
36.50	73.32	66.21
Knot	HP	HP



POWERING OF PLANING CHINE HULLS

17.50 ve 22.50 Derece Tekne değişik LCG Merkezlerindeki Güç değer 24-Mar-2007
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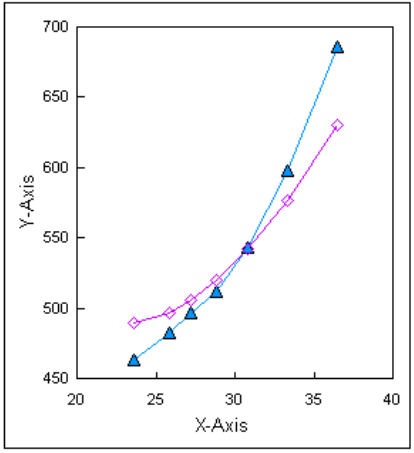
Lpx	**17.636**	**ft**	**5.375**	**Metre**	**Lpx/Bpx=**	**2.939**
Bpx	**6.000**	**ft**	**1.829**	**Metre**		
Tpx - 22.50	**1.243**	**ft**	**0.379**	**Metre**		
17.50	**0.946**	**ft**	**0.288**	**Metre**		
Deplasman	**2000.000**	**(22.5 deg)**	**1500.000**	**kg**	**(17.5 deg)**	
Lcg	**5.400**	**ft**	**1.646**	**Metre**		

Lcg/B = **0.9000** **Lcg/Lpx =** **0.306**

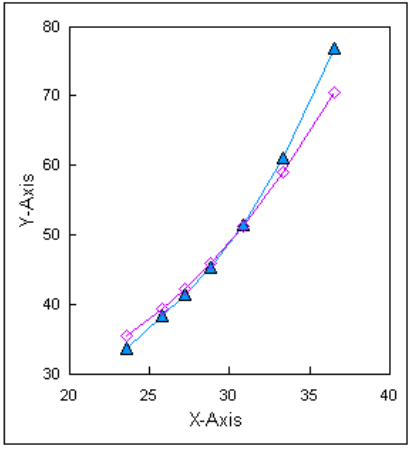
Cv	Rbh/Dep	Rbh - kg	Rbh - Libre	Vsel-knots	Hull-E Power HP
0.060	*0.14015308*	210.23	463.48	23.56	33.530
0.050	*0.14584762*	218.77	482.31	25.81	38.223
0.045	*0.15018405*	225.28	496.65	27.20	41.488
0.040	*0.15471194*	232.07	511.62	28.85	45.331
0.035	*0.16408129*	246.12	542.61	30.84	51.396
0.030	*0.18066030*	270.99	597.43	33.32	61.123
0.025	*0.20735749*	311.04	685.72	36.50	76.852
0.000	*0.00000000*	0.00	0.00	ERR	ERR
0.000	*0.00000000*	0.00	0.00	ERR	ERR
0.000	*0.00000000*	0.00	0.00	ERR	ERR

KARŞILAŞTIRMA
NSMET Model Sonuçuyla Savitsky+ Blount Hesaplama

Tekne Hızı	Nsmet Rbh	Savitsky Rbh
23.56	463.48	489.90
25.81	482.31	496.70
27.20	496.65	505.47
28.85	511.62	519.60
30.84	542.61	541.85
33.32	597.43	576.33
36.50	685.72	629.92
Knot	Libre	Libre



Tekne Hızı	Nsmet Ehp	Savitsky Ehp
23.56	33.53	35.42
25.81	38.22	39.34
27.20	41.49	42.19
28.85	45.33	46.00
30.84	51.40	51.28
33.32	61.12	58.93
36.50	76.85	70.56
Knot	HP	HP



POWERING OF PLANING CHINE HULLS

17.50 ve 22.50 Derece Tekne değişik LCG Merkezlerindeki Güç değer 24-Mar-2007
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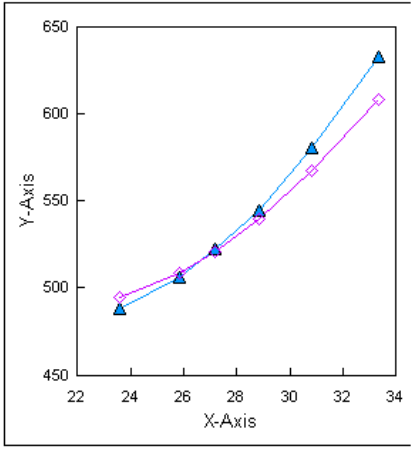
Lpx		**17.636**	**ft**	**5.375**	**Metre**	**Lpx/Bpx= 2.939**
Bpx		**6.000**	**ft**	**1.829**	**Metre**	
Tpx -	**22.50**	**1.243**	**ft**	**0.379**	**Metre**	
	17.50	**0.946**	**ft**	**0.288**	**Metre**	
Deplasman		**2000.000**	**(22.5 deg)**	**1500.000**	**kg (17.5 deg)**	
Lcg		**6.000**	**ft**	**1.829**	**Metre**	

Lcg/B = 1.0000 **Lcg/Lpx = 0.340**

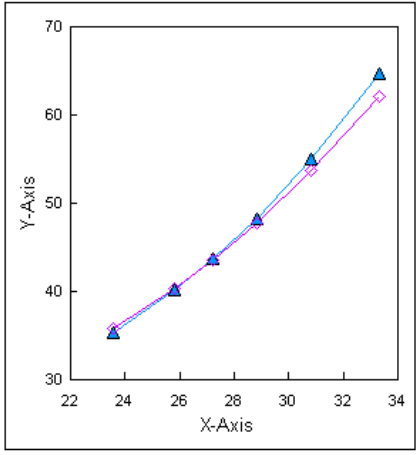
Cv	Rbh/Dep	Rbh - kg	Rbh - Libre	Vsel-knots	Hull-E Power HP
0.060	*0.14753560*	221.30	487.89	23.56	35.296
0.050	*0.15305992*	229.59	506.16	25.81	40.113
0.045	*0.15793878*	236.91	522.29	27.20	43.630
0.040	*0.16457463*	246.86	544.24	28.85	48.221
0.035	*0.17550305*	263.25	580.38	30.84	54.974
0.030	*0.19126503*	286.90	632.50	33.32	64.711
0.025	*0.00000000*	0.00	0.00	36.50	0.000
0.000	*0.00000000*	0.00	0.00	ERR	ERR
0.000	*0.00000000*	0.00	0.00	ERR	ERR
0.000	*0.00000000*	0.00	0.00	ERR	ERR

KARŞILAŞTIRMA
NSMET Model Sonuçuyla Savitsky+ Blount Hesaplama

Tekne Hızı	Nsmet Rbh	Savitsky Rbh
23.56	487.89	494.91
25.81	506.16	508.25
27.20	522.29	520.85
28.85	544.24	539.40
30.84	580.38	566.88
33.32	632.50	607.98
Knot	Libre	Libre



Tekne Hızı	Nsmet Ehp	Savitsky Ehp
23.56	35.30	35.78
25.81	40.11	40.26
27.20	43.63	43.48
28.85	48.22	47.76
30.84	54.97	53.65
33.32	64.71	62.17
Knot	HP	HP



POWERING OF PLANING CHINE HULLS

17.50 ve 22.50 Derece Tekne değişik LCG Merkezlerindeki Güç değer 24-Mar-2007
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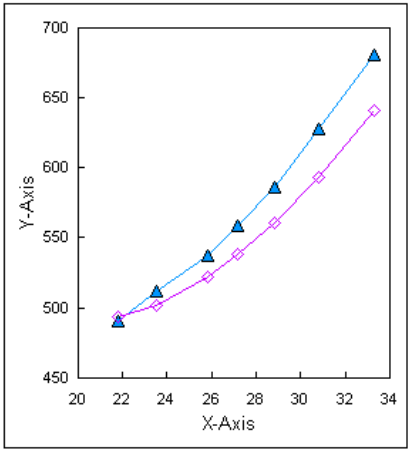
Lpx	**17.636**	**ft**	**5.375**	**Metre**	**Lpx/Bpx=**	**2.939**
Bpx	**6.000**	**ft**	**1.829**	**Metre**		
Tpx - 22.50	**1.243**	**ft**	**0.379**	**Metre**		
17.50	**0.946**	**ft**	**0.288**	**Metre**		
Deplasman	**2000.000**	**(22.5 deg)**	**1500.000**	**kg**	**(17.5 deg)**	
Lcg	**6.600**	**ft**	**2.012**	**Metre**		

Lcg/B = **1.1000** **Lcg/Lpx =** **0.374**

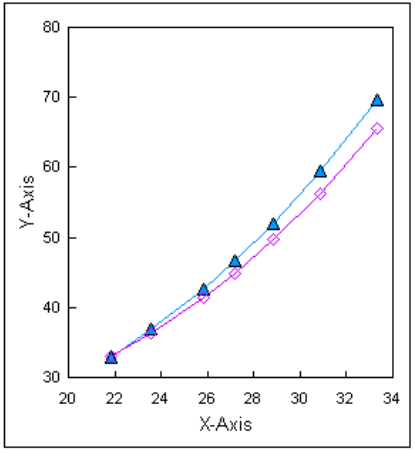
Cv	Rbh/Dep	Rbh - kg	Rbh - Libre	Vsel-knots	Hull-E Power HP
0.070	*0.14832661*	222.49	490.51	21.81	32.853
0.060	*0.15463770*	231.96	511.38	23.56	36.995
0.050	*0.16254400*	243.82	537.52	25.81	42.598
0.045	*0.16901337*	253.52	558.92	27.20	46.690
0.040	*0.17725199*	265.88	586.16	28.85	51.936
0.035	*0.18978616*	284.68	627.61	30.84	59.448
0.030	*0.20582637*	308.74	680.65	33.32	69.638
0.000	*0.00000000*	0.00	0.00	ERR	ERR
0.000	*0.00000000*	0.00	0.00	ERR	ERR
0.000	*0.00000000*	0.00	0.00	ERR	ERR

KARŞILAŞTIRMA
NSMET Model Sonuçuyla Savitsky+ Blount Hesaplama

Tekne Hızı	Nsmet Rbh	Savitsky Rbh
21.81	490.51	493.19
23.56	511.38	502.04
25.81	537.52	521.67
27.20	558.92	538.02
28.85	586.16	560.86
30.84	627.61	593.43
33.32	680.65	640.73
Knot	Libre	Libre



Tekne Hızı	Nsmet Ehp	Savitsky Ehp
21.81	32.85	33.00
23.56	37.00	36.30
25.81	42.60	41.32
27.20	46.69	44.90
28.85	51.94	49.66
30.84	59.45	56.16
33.32	69.64	65.52
Knot	HP	HP



POWERING OF PLANING CHINE HULLS

17.50 ve 22.50 Derece Tekne değişik LCG Merkezlerindeki Güç değer 24-Mar-2007
09:19:27 AM

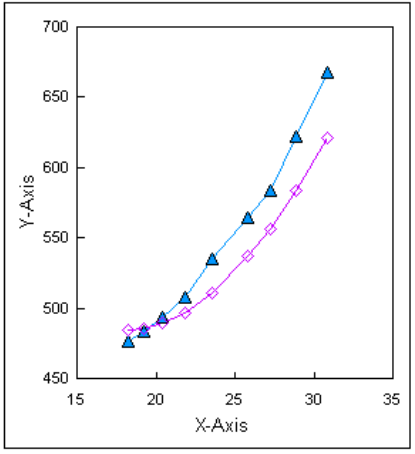
Lpx	**17.636**	**ft**	**5.375**	**Metre**	**Lpx/Bpx=**	**2.939**
Bpx	**6.000**	**ft**	**1.829**	**Metre**		
Tpx - 22.50	**1.243**	**ft**	**0.379**	**Metre**		
17.50	**0.946**	**ft**	**0.288**	**Metre**		
Deplasman	**2000.000**	**(22.5 deg)**	**1500.000**	**kg**	**(17.5 deg)**	
Lcg	**7.200**	**ft**	**2.195**	**Metre**		

Lcg/B = **1.2000** **Lcg/Lpx =** **0.408**

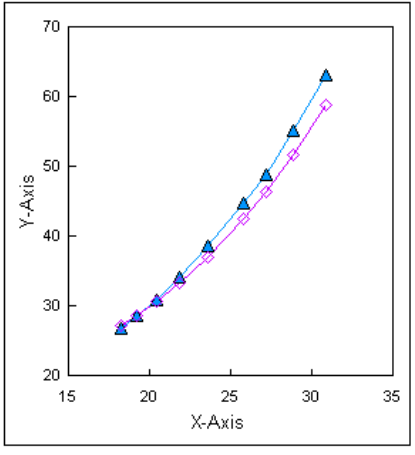
Cv	Rbh/Dep	Rbh - kg	Rbh - Libre	Vsel-knots	Hull-E Power HP
0.100	*0.14411341*	216.17	476.57	18.25	26.706
0.090	*0.14631623*	219.47	483.86	19.23	28.581
0.080	*0.14917326*	223.76	493.31	20.40	30.907
0.070	*0.15357912*	230.37	507.88	21.81	34.016
0.060	*0.16173703*	242.61	534.85	23.56	38.694
0.050	*0.17056622*	255.85	564.05	25.81	44.701
0.045	*0.17655546*	264.83	583.86	27.20	48.773
0.040	*0.18808681*	282.13	621.99	28.85	55.110
0.035	*0.20166593*	302.50	666.90	30.84	63.169
0.000	*0.00000000*	0.00	0.00	ERR	ERR

KARŞILAŞTIRMA
NSMET Model Sonuçuyla Savitsky+ Blount Hesaplama

Tekne Hızı	Nsmet Rbh	Savitsky Rbh
18.25	476.57	484.78
19.23	483.86	485.70
20.40	493.31	489.17
21.81	507.88	497.00
23.56	534.85	511.06
25.81	564.05	536.80
27.20	583.86	556.66
28.85	621.99	583.66
30.84	666.90	621.15
Knot	Libre	Libre



Tekne Hızı	Nsmet Ehp	Savitsky Ehp
18.25	26.71	27.15
19.23	28.58	28.66
20.40	30.91	30.62
21.81	34.02	33.26
23.56	38.69	36.95
25.81	44.70	42.52
27.20	48.77	46.46
28.85	55.11	51.67
30.84	63.17	58.79
Knot	HP	HP



POWERING OF PLANING CHINE HULLS

17.50 ve 22.50 Derece Tekne değişik LCG Merkezlerindeki Güç değer 24-Mar-2007
09:19:59 AM

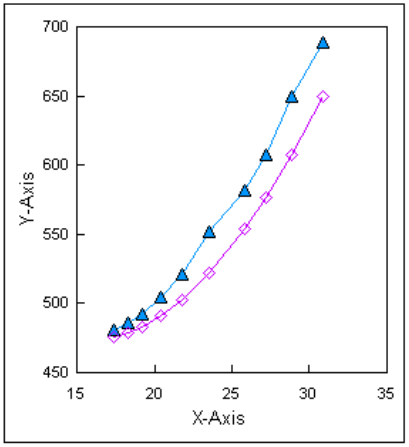
Lpx	**17.636**	**ft**	**5.375**	**Metre**	**Lpx/Bpx=**	**2.939**
Bpx	**6.000**	**ft**	**1.829**	**Metre**		
Tpx - 22.50	**1.243**	**ft**	**0.379**	**Metre**		
17.50	**0.946**	**ft**	**0.288**	**Metre**		
Deplasman	**2000.000**	**(22.5 deg)**	**1500.000**	**kg**	**(17.5 deg)**	
Lcg	**7.800**	**ft**	**2.377**	**Metre**		

Lcg/B = **1.3000** **Lcg/Lpx =** **0.442**

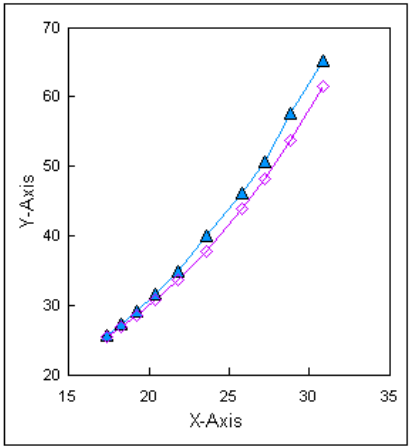
Cv	Rbh/Dep	Rbh - kg	Rbh - Libre	Vsel-knots	Hull-E Power HP
0.110	*0.14537476*	218.06	480.74	17.40	25.686
0.100	*0.14684229*	220.26	485.60	18.25	27.212
0.090	*0.14875333*	223.13	491.92	19.23	29.057
0.080	*0.15259259*	228.89	504.61	20.40	31.615
0.070	*0.15759192*	236.39	521.15	21.81	34.905
0.060	*0.16697664*	250.46	552.18	23.56	39.947
0.050	*0.17602008*	264.03	582.09	25.81	46.130
0.045	*0.18373265*	275.60	607.59	27.20	50.756
0.040	*0.19647870*	294.72	649.74	28.85	57.569
0.035	*0.20821846*	312.33	688.56	30.84	65.221

KARŞILAŞTIRMA
NSMET Model Sonuçuyla Savitsky+ Blount Hesaplama

Tekne Hızı	Nsmet Rbh	Savitsky Rbh
17.40	480.74	475.03
18.25	485.60	478.22
19.23	491.92	482.95
20.40	504.61	490.48
21.81	521.15	502.73
23.56	552.15	521.79
25.81	582.09	553.36
27.20	607.59	576.68
28.85	649.74	607.70
30.84	688.56	649.98
Knot	Libre	Libre



Tekne Hızı	Nsmet Ehp	Savitsky Ehp
17.40	25.69	25.37
18.25	27.21	26.78
19.23	29.06	28.50
20.40	31.62	30.70
21.81	34.91	33.65
23.56	39.95	37.73
25.81	46.13	43.83
27.20	50.76	48.14
28.85	57.57	53.80
30.84	65.22	61.51
Knot	HP	HP



POWERING OF PLANING CHINE HULLS

17.50 ve 22.50 Derece Tekne değişik LCG Merkezlerindeki Güç değer

24-Mar-2007
09:20:37 AM

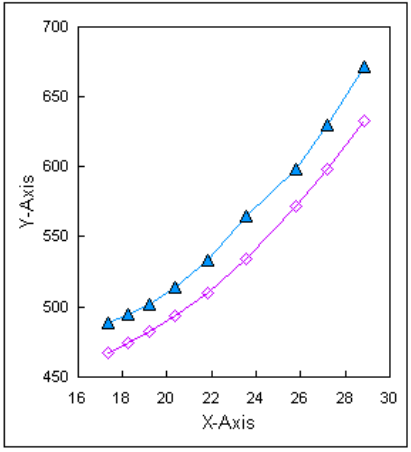
Lpx		**17.636**	**ft**	**5.375**	**Metre**	**Lpx/Bpx=** **2.939**
Bpx		**6.000**	**ft**	**1.829**	**Metre**	
Tpx -	**22.50**	**1.243**	**ft**	**0.379**	**Metre**	
	17.50	**0.946**	**ft**	**0.288**	**Metre**	
Deplasman		**2000.000**	**(22.5 deg)**	**1500.000**	**kg**	**(17.5 deg)**
Lcg		**8.400**	**ft**	**2.560**	**Metre**	

Lcg/B = **1.4000** **Lcg/Lpx =** **0.476**

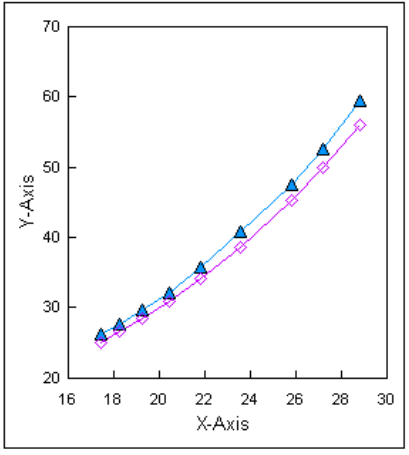
Cv	Rbh/Dep	Rbh - kg	Rbh - Libre	Vsel-knots	Hull-E Power HP
0.110	*0.14786316*	221.79	488.97	17.40	26.126
0.100	*0.14943579*	224.15	494.17	18.25	27.692
0.090	*0.15157244*	227.36	501.24	19.23	29.608
0.080	*0.15523056*	232.85	513.34	20.40	32.162
0.070	*0.16119631*	241.79	533.06	21.81	35.704
0.060	*0.17064907*	255.97	564.32	23.56	40.826
0.050	*0.18087121*	271.31	598.13	25.81	47.401
0.045	*0.19034107*	285.51	629.44	27.20	52.581
0.040	*0.20295645*	304.43	671.16	28.85	59.467
0.035	*0.00000000*	0.00	0.00	30.84	0.000

KARŞILAŞTIRMA
NSMET Model Sonuçuyla Savitsky+ Blount Hesaplama

Tekne Hızı	Nsmet Rbh	Savitsky Rbh
17.40	488.97	467.30
18.25	494.17	474.00
19.23	501.24	482.38
20.40	513.34	493.83
21.81	533.06	510.26
23.56	564.32	534.06
25.81	598.13	571.35
27.20	629.44	597.67
28.85	671.16	633.12
Knot	Libre	Libre



Tekne Hızı	Nsmet Ehp	Savitsky Ehp
17.40	26.13	24.95
18.25	27.69	26.55
19.23	29.61	28.47
20.40	32.16	30.92
21.81	35.70	34.15
23.56	40.83	38.61
25.81	47.40	45.25
27.20	52.58	49.91
28.85	59.47	56.06
Knot	HP	HP



POWERING OF PLANING CHINE HULLS

17.50 ve 22.50 Derece Tekne değişik LCG Merkezlerindeki Güç değer 24-Mar-2007
09:20:59 AM

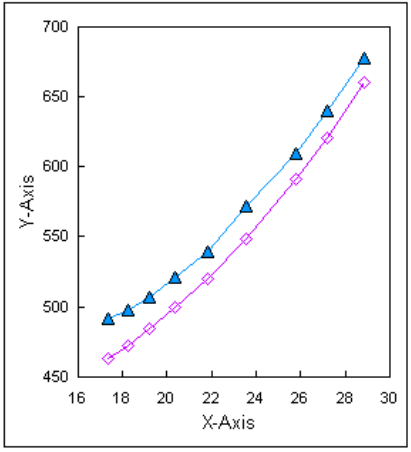
Lpx	**17.636**	**ft**	**5.375**	**Metre**	**Lpx/Bpx=**	**2.939**
Bpx	**6.000**	**ft**	**1.829**	**Metre**		
Tpx - 22.50	**1.243**	**ft**	**0.379**	**Metre**		
17.50	**0.946**	**ft**	**0.288**	**Metre**		
Deplasman	**2000.000**	**(22.5 deg)**	**1500.000**	**kg**	**(17.5 deg)**	
Lcg	**9.000**	**ft**	**2.743**	**Metre**		

Lcg/B = **1.5000** **Lcg/Lpx =** **0.510**

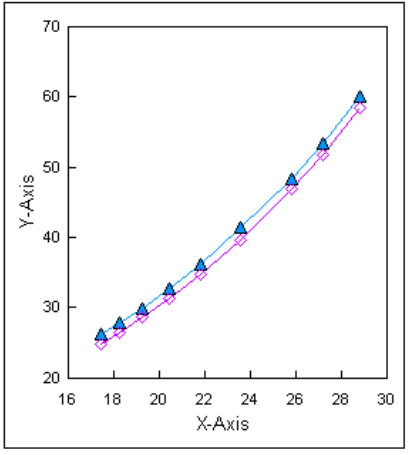
Cv	Rbh/Dep	Rbh - kg	Rbh - Libre	Vsel-knots	Hull-E Power HP
0.110	*0.14855182*	222.83	491.25	17.40	26.247
0.100	*0.15054661*	225.82	497.85	18.25	27.898
0.090	*0.15318309*	229.77	506.57	19.23	29.922
0.080	*0.15756216*	236.34	521.05	20.40	32.645
0.070	*0.16305511*	244.58	539.21	21.81	36.115
0.060	*0.17282357*	259.24	571.52	23.56	41.346
0.050	*0.18409729*	276.15	608.80	25.81	48.247
0.045	*0.19337701*	290.07	639.48	27.20	53.420
0.040	*0.20493762*	307.41	677.71	28.85	60.048
0.035	*0.00000000*	0.00	0.00	30.84	0.000

KARŞILAŞTIRMA
NSMET Model Sonuçuyla Savitsky+ Blount Hesaplama

Tekne Hızı	Nsmet Rbh	Savitsky Rbh
17.40	491.25	462.54
18.25	497.85	472.42
19.23	506.57	484.28
20.40	521.05	499.33
21.81	539.21	519.81
23.56	571.52	548.24
25.81	608.80	591.00
27.20	639.48	620.94
28.85	677.71	659.62
Knot	Libre	Libre



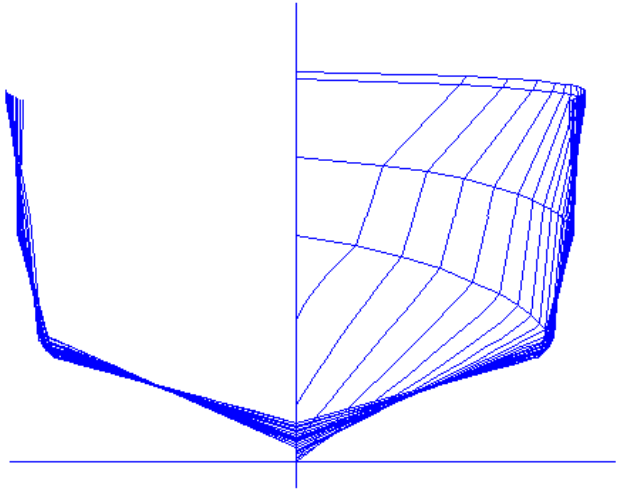
Tekne Hızı	Nsmet Ehp	Savitsky Ehp
17.40	26.25	24.70
18.25	27.90	26.46
19.23	29.92	28.58
20.40	32.65	31.26
21.81	36.12	34.79
23.56	41.35	39.64
25.81	48.25	46.81
27.20	53.42	51.83
28.85	60.05	58.40
Knot	HP	HP



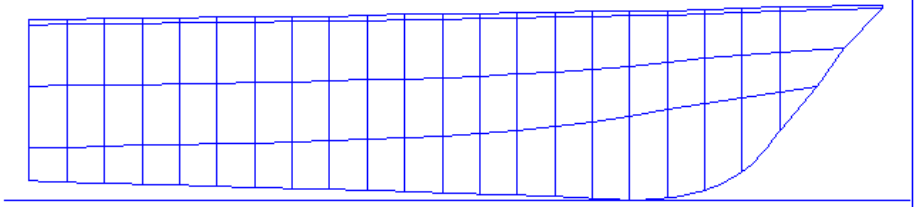
TEKNENİN BOYUTLARI

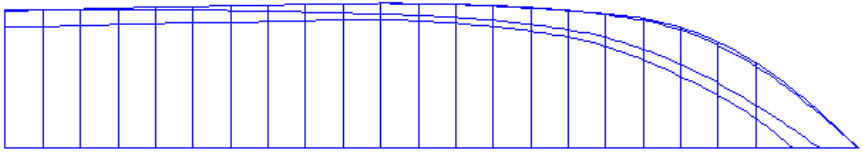
Loa TAM BOYU		*5.900*	*metre*
Lpx CENE BOYU		*5.450*	*metre*
Lwl SU HATTI BOYU		*5.192*	*metre*
Boa TAM ENI		*2.060*	*metre*
Bpx CENE GENİŞLİĞİ		*1.829*	*metre*
Bwl SU HATTI ENİ		*1.841*	*metre*
Twl CENE BOYU ORTASINDAKİ SU KESİMİ		*0.379*	*metre*
TEKNE SU HATTINDAKİ AĞIRLIĞI	*Dep*	*2000.0*	*kg*
CENE BOYU ORTASINDAKİ KALKINTI AÇISI		*22.5*	*derece*

Kalkinti Acisi 22.50 Derece Model



Tekne Ağırlığı 2000 kg





POWERING OF PLANING CHINE HULLS

17.50 ve 22.50 Derece Tekne değişik LCG Merkezlerindeki Güç değer 24-Mar-2007
12:18:55 PM

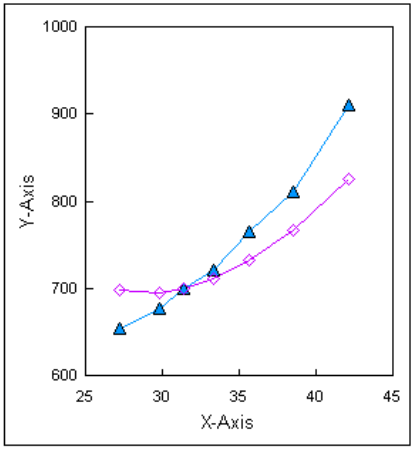
Lpx		**17.881**	**ft**		**5.450**	**Metre**	**Lpx/Bpx=** **2.980**
Bpx		**6.000**	**ft**		**1.829**	**Metre**	
Tpx -	**22.50**	**1.243**	**ft**		**0.379**	**Metre**	
	17.50	**0.946**	**ft**		**0.288**	**Metre**	
Deplasman		**2000.000**		**(22.5 deg)**	**1500.000**	**kg**	**(17.5 deg)**
Lcg		**4.800**	**ft**		**1.463**	**Metre**	

Lcg/B = **0.8000** **Lcg/Lpx =** **0.268**

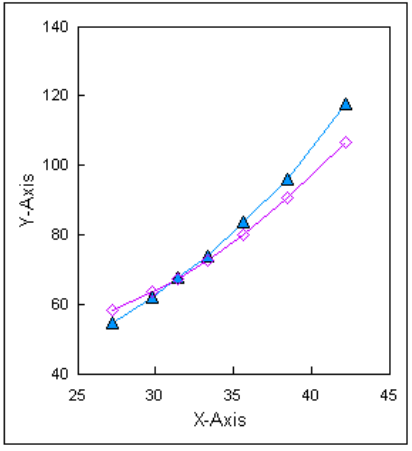
Cv	Rbh/Dep	Rbh - kg	Rbh - Libre	Vsel-knots	Hull-E Power HP
0.060	*0.14829744*	296.59	653.88	27.20	54.622
0.050	*0.15361087*	307.22	677.31	29.80	61.980
0.045	*0.15885075*	317.70	700.41	31.41	67.561
0.040	*0.16357249*	327.14	721.23	33.32	73.789
0.035	*0.17344989*	346.90	764.78	35.62	83.648
0.030	*0.18401386*	368.03	811.36	38.47	95.852
0.025	*0.20653198*	413.06	910.65	42.14	117.850

KARŞILAŞTIRMA
NSMET Model Sonuçuyla Savitsky+ Blount Hesaplama

Tekne Hızı	Nsmet Rbh	Savitsky Rbh
27.20	653.88	697.82
29.80	677.31	694.68
31.41	700.41	699.73
33.32	721.23	711.10
35.62	764.78	732.21
38.47	811.36	767.43
42.14	910.65	826.17
Knot	Libre	Libre



Tekne Hızı	Nsmet Ehp	Savitsky Ehp
27.20	54.62	58.25
29.80	61.98	63.53
31.41	67.56	67.45
33.32	73.79	72.71
35.62	83.65	80.04
38.47	95.88	90.60
42.14	117.85	106.84
Knot	HP	HP



POWERING OF PLANING CHINE HULLS

17.50 ve 22.50 Derece Tekne değişik LCG Merkezlerindeki Güç değer 24-Mar-2007
09:01:39 AM

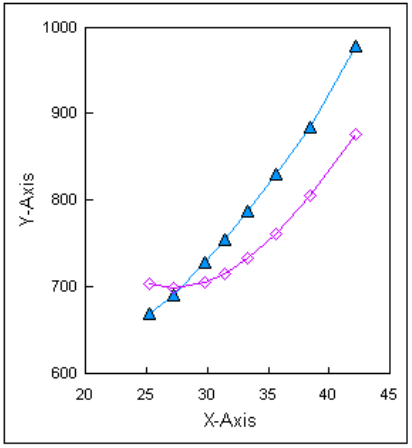
Lpx		**17.881**	**ft**	**5.450**	**Metre**	**Lpx/Bpx= 2.980**
Bpx		**6.000**	**ft**	**1.829**	**Metre**	
Tpx -	**22.50**	**1.243**	**ft**	**0.379**	**Metre**	
	17.50	**0.946**	**ft**	**0.288**	**Metre**	
Deplasman		**2000.000**	**(22.5 deg)**	**1500.000**	**kg (17.5 deg)**	
Lcg		**5.400**	**ft**	**1.646**	**Metre**	

Lcg/B = 0.9000 **Lcg/Lpx = 0.302**

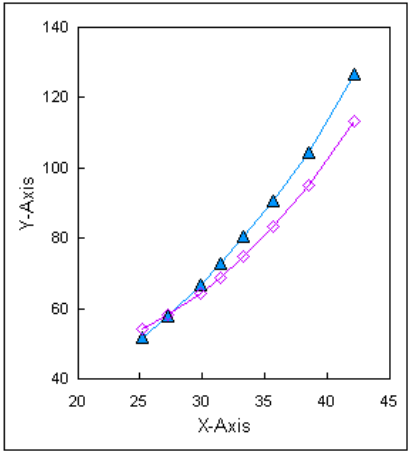
Cv	Rbh/Dep	Rbh - kg	Rbh - Libre	Vsel-knots	Hull-E Power HP
0.070	*0.15179889*	303.60	669.32	25.18	51.765
0.060	*0.15679661*	313.59	691.35	27.20	57.753
0.050	*0.16521293*	330.43	728.46	29.80	66.661
0.045	*0.17126491*	342.53	755.15	31.41	72.841
0.040	*0.17841023*	356.82	786.65	33.32	80.483
0.035	*0.18809756*	376.20	829.37	35.62	90.712
0.030	*0.20054261*	401.09	884.24	38.47	104.462
0.025	*0.22174407*	443.49	977.72	42.14	126.531
0.000	*0.00000000*	0.00	0.00	ERR	ERR
0.000	*0.00000000*	0.00	0.00	ERR	ERR

KARŞILAŞTIRMA
NSMET Model Sonuçuyla Savitsky+ Blount Hesaplama

Tekne Hızı	Nsmet Rbh	Savitsky Rbh
25.18	669.32	704.00
27.20	691.35	699.42
29.80	728.46	705.29
31.41	755.15	715.65
33.32	786.65	733.17
35.62	829.37	761.56
38.47	884.24	805.78
42.14	977.72	876.38
Knot	Libre	Libre



Tekne Hızı	Nsmet Ehp	Savitsky Ehp
25.18	51.77	54.40
27.20	57.75	58.38
29.80	66.66	64.50
31.41	72.84	68.98
33.32	80.48	74.97
35.62	90.71	83.25
38.47	104.46	95.13
42.14	126.53	113.33
Knot	HP	HP



POWERING OF PLANING CHINE HULLS

17.50 ve 22.50 Derece Tekne değişik LCG Merkezlerindeki Güç değer 24-Mar-2007
09:02:53 AM

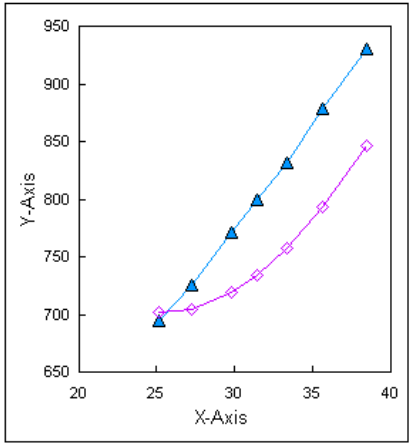
Lpx		**17.881**	**ft**	**5.450**	**Metre**	**Lpx/Bpx= 2.980**
Bpx		**6.000**	**ft**	**1.829**	**Metre**	
Tpx -	**22.50**	**1.243**	**ft**	**0.379**	**Metre**	
	17.50	**0.946**	**ft**	**0.288**	**Metre**	
Deplasman		**2000.000**	**(22.5 deg)**	**1500.000**	**kg (17.5 deg)**	
Lcg		**6.000**	**ft**	**1.829**	**Metre**	

Lcg/B = 1.0000 **Lcg/Lpx = 0.336**

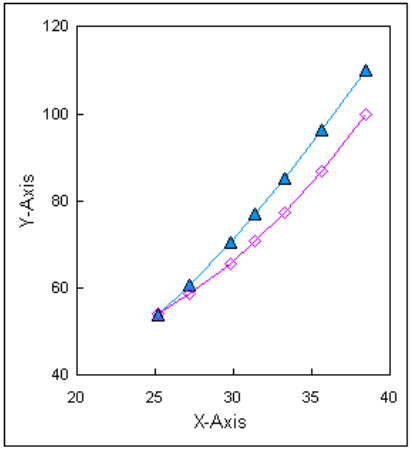
Cv	Rbh/Dep	Rbh - kg	Rbh - Libre	Vsel-knots	Hull-E Power HP
0.070	*0.15765359*	315.31	695.13	25.18	53.761
0.060	*0.16460089*	329.20	725.76	27.20	60.628
0.050	*0.17478374*	349.57	770.66	29.80	70.523
0.045	*0.18123834*	362.48	799.12	31.41	77.083
0.040	*0.18869477*	377.39	832.00	33.32	85.122
0.035	*0.19943596*	398.87	879.36	35.62	96.180
0.030	*0.21104775*	422.10	930.56	38.47	109.934
0.025	*0.00000000*	0.00	0.00	42.14	0.000
0.000	*0.00000000*	0.00	0.00	ERR	ERR
0.000	*0.00000000*	0.00	0.00	ERR	ERR

KARŞILAŞTIRMA
NSMET Model Sonuçuyla Savitsky+ Blount Hesaplama

Tekne Hızı	Nsmet Rbh	Savitsky Rbh
25.18	695.13	701.88
27.20	725.76	704.44
29.80	770.66	718.94
31.41	799.12	734.39
33.32	832.00	757.92
35.62	879.36	793.34
38.47	930.56	846.27
Knot	Libre	Libre



Tekne Hızı	Nsmet Ehp	Savitsky Ehp
25.18	53.76	54.24
27.20	60.63	58.80
29.80	70.52	65.75
31.41	77.08	70.79
33.32	85.12	77.50
35.62	96.18	86.72
38.47	109.93	99.91
Knot	HP	HP



POWERING OF PLANING CHINE HULLS

17.50 ve 22.50 Derece Tekne değişik LCG Merkezlerindeki Güç değer 24-Mar-2007
09:03:29 AM

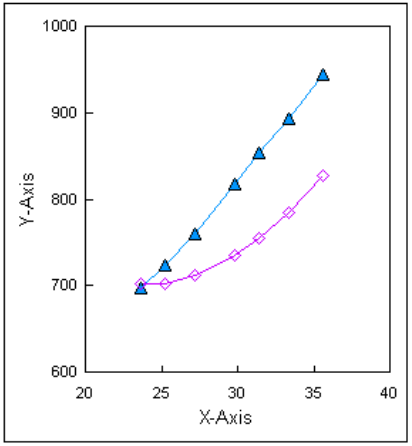
Lpx	**17.881**	**ft**	**5.450**	**Metre**	**Lpx/Bpx=**	**2.980**
Bpx	**6.000**	**ft**	**1.829**	**Metre**		
Tpx - 22.50	**1.243**	**ft**	**0.379**	**Metre**		
17.50	**0.946**	**ft**	**0.288**	**Metre**		
Deplasman	**2000.000**	**(22.5 deg)**	**1500.000**	**kg**	**(17.5 deg)**	
Lcg	**6.600**	**ft**	**2.012**	**Metre**		

Lcg/B = **1.1000** **Lcg/Lpx =** **0.369**

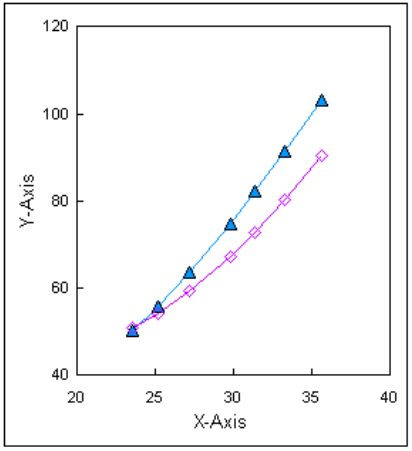
Cv	Rbh/Dep	Rbh - kg	Rbh - Libre	Vsel-knots	Hull-E Power HP
0.080	*0.15798397*	315.97	696.59	23.56	50.394
0.070	*0.16411849*	328.24	723.64	25.18	55.966
0.060	*0.17255164*	345.10	760.82	27.20	63.556
0.050	*0.18537412*	370.75	817.36	29.80	74.796
0.045	*0.19359973*	387.20	853.63	31.41	82.340
0.040	*0.20248226*	404.96	892.79	33.32	91.342
0.035	*0.21421628*	428.43	944.53	35.62	103.308
0.025	*0.00000000*	0.00	0.00	42.14	0.000
0.000	*0.00000000*	0.00	0.00	ERR	ERR
0.000	*0.00000000*	0.00	0.00	ERR	ERR

KARŞILAŞTIRMA
NSMET Model Sonuçuyla Savitsky+ Blount Hesaplama

Tekne Hızı	Nsmet Rbh	Savitsky Rbh
23.56	696.59	702.92
25.18	723.64	702.79
27.20	760.82	712.29
29.80	817.36	735.14
31.41	853.63	755.51
33.32	892.79	784.68
35.62	944.53	826.89
Knot	Libre	Libre



Tekne Hızı	Nsmet Ehp	Savitsky Ehp
23.56	50.39	50.82
25.18	55.97	54.31
27.20	63.56	59.46
29.80	74.80	67.23
31.41	82.34	72.82
33.32	91.34	80.23
35.62	103.31	90.39
Knot	HP	HP



POWERING OF PLANING CHINE HULLS

17.50 ve 22.50 Derece Tekne değişik LCG Merkezlerindeki Güç değer 24-Mar-2007
09:04:39 AM

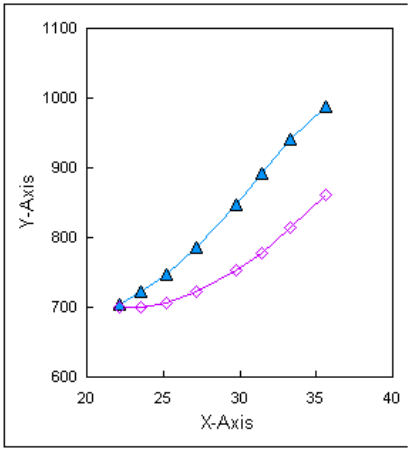
Lpx		**17.881**	**ft**	**5.450**	**Metre**	**Lpx/Bpx= 2.980**
Bpx		**6.000**	**ft**	**1.829**	**Metre**	
Tpx -	**22.50**	**1.243**	**ft**	**0.379**	**Metre**	
	17.50	**0.946**	**ft**	**0.288**	**Metre**	
Deplasman		**2000.000**	**(22.5 deg)**	**1500.000**	**kg (17.5 deg)**	
Lcg		**7.200**	**ft**	**2.195**	**Metre**	

Lcg/B = 1.2000 **Lcg/Lpx = 0.403**

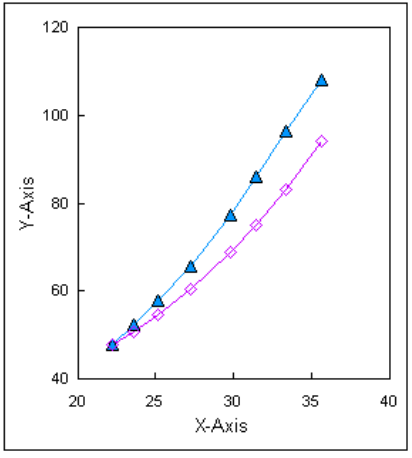
Cv	Rbh/Dep	Rbh - kg	Rbh - Libre	Vsel-knots	Hull-E Power HP
0.090	*0.15965181*	319.30	703.94	22.21	48.014
0.080	*0.16404048*	328.08	723.29	23.56	52.326
0.070	*0.16941905*	338.84	747.01	25.18	57.773
0.060	*0.17829207*	356.58	786.13	27.20	65.670
0.050	*0.19192341*	383.85	846.24	29.80	77.438
0.045	*0.20215181*	404.30	891.34	31.41	85.977
0.040	*0.21342163*	426.84	941.03	33.32	96.277
0.035	*0.22394845*	447.90	987.44	35.62	108.001
0.000	*0.00000000*	0.00	0.00	ERR	ERR
0.000	*0.00000000*	0.00	0.00	ERR	ERR

KARŞILAŞTIRMA
NSMET Model Sonuçuyla Savitsky+ Blount Hesaplama

Tekne Hızı	Nsmet Rbh	Savitsky Rbh
22.21	703.94	700.18
23.56	723.29	700.49
25.18	747.01	706.13
27.20	786.13	722.50
29.80	846.24	753.61
31.41	891.34	778.52
33.32	941.03	813.25
35.62	987.44	862.07
Knot	Libre	Libre



Tekne Hızı	Nsmet Ehp	Savitsky Ehp
22.21	48.01	47.72
23.56	52.33	50.65
25.18	57.77	54.58
27.20	65.67	60.31
29.80	77.44	68.92
31.41	85.98	75.04
33.32	96.28	83.16
35.62	108.00	94.23
Knot	HP	HP



POWERING OF PLANING CHINE HULLS

17.50 ve 22.50 Derece Tekne değişik LCG Merkezlerindeki Güç değer

24-Mar-2007
09:05:25 AM

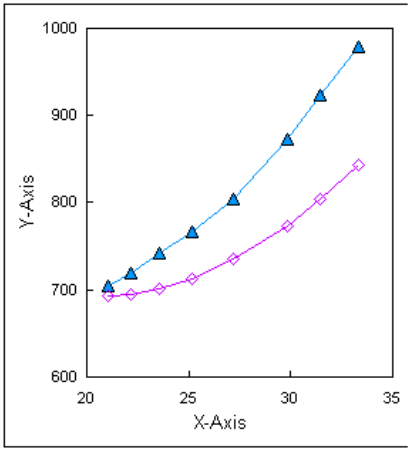
Lpx		**17.881**	**ft**		**5.450**	**Metre**	**Lpx/Bpx= 2.980**
Bpx		**6.000**	**ft**		**1.829**	**Metre**	
Tpx -	**22.50**	**1.243**	**ft**		**0.379**	**Metre**	
	17.50	**0.946**	**ft**		**0.288**	**Metre**	
Deplasman		**2000.000**		**(22.5 deg)**	**1500.000**	**kg**	**(17.5 deg)**
Lcg		**7.800**	**ft**		**2.377**	**Metre**	

Lcg/B = **1.3000** **Lcg/Lpx =** **0.436**

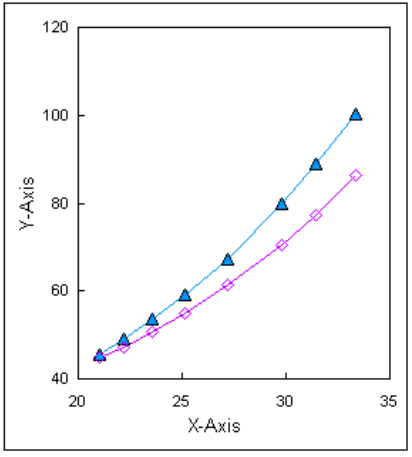
Cv	Rbh/Dep	Rbh - kg	Rbh - Libre	Vsel-knots	Hull-E Power HP
0.100	*0.15980696*	319.61	704.63	21.07	45.594
0.090	*0.16321587*	326.43	719.66	22.21	49.086
0.080	*0.16837260*	336.75	742.40	23.56	53.708
0.070	*0.17389675*	347.79	766.75	25.18	59.300
0.060	*0.18240950*	364.82	804.29	27.20	67.187
0.050	*0.19802039*	396.04	873.12	29.80	79.898
0.045	*0.20922532*	418.45	922.52	31.41	88.986
0.040	*0.22198631*	443.97	978.79	33.32	100.140
0.000	*0.00000000*	0.00	0.00	ERR	ERR
0.000	*0.00000000*	0.00	0.00	ERR	ERR

KARŞILAŞTIRMA
NSMET Model Sonuçuyla Savitsky+ Blount Hesaplama

Tekne Hızı	Nsmet Rbh	Savitsky Rbh
21.07	704.63	693.09
22.21	719.66	694.96
23.56	742.40	700.56
25.18	766.75	712.29
27.20	804.29	734.78
29.80	873.12	773.67
31.41	922.52	803.22
33.32	978.79	843.34
Knot	Libre	Libre



Tekne Hızı	Nsmet Ehp	Savitsky Ehp
21.07	45.59	44.81
22.21	49.09	47.37
23.56	53.71	50.65
25.18	59.30	55.04
27.20	67.19	61.33
29.80	79.90	70.35
31.41	88.99	77.42
33.32	100.14	86.23
Knot	HP	HP



POWERING OF PLANING CHINE HULLS

17.50 ve 22.50 Derece Tekne değişik LCG Merkezlerindeki Güç değer 24-Mar-2007
09:06:08 AM

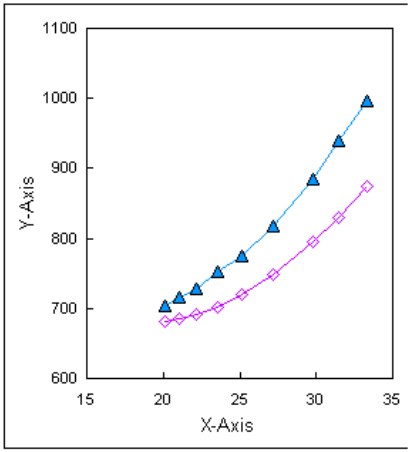
Lpx		**17.881**	**ft**	**5.450**	**Metre**	**Lpx/Bpx= 2.980**
Bpx		**6.000**	**ft**	**1.829**	**Metre**	
Tpx -	**22.50**	**1.243**	**ft**	**0.379**	**Metre**	
	17.50	**0.946**	**ft**	**0.288**	**Metre**	
Deplasman		**2000.000**	**(22.5 deg)**	**1500.000**	**kg (17.5 deg)**	
Lcg		**8.400**	**ft**	**2.560**	**Metre**	

Lcg/B = 1.4000 **Lcg/Lpx = 0.470**

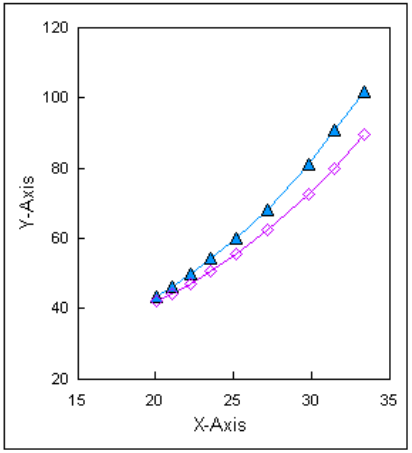
Cv	Rbh/Dep	Rbh - kg	Rbh - Libre	Vsel-knots	Hull-E Power HP
0.110	*0.15949537*	318.99	703.25	20.09	43.388
0.100	*0.16226288*	324.53	715.46	21.07	46.295
0.090	*0.16530208*	330.60	728.86	22.21	49.713
0.080	*0.17056755*	341.14	752.07	23.56	54.408
0.070	*0.17590394*	351.81	775.60	25.18	59.985
0.060	*0.18530425*	370.61	817.05	27.20	68.253
0.050	*0.20078298*	401.57	885.30	29.80	81.013
0.045	*0.21331095*	426.62	940.54	31.41	90.724
0.040	*0.22601560*	452.03	996.56	33.32	101.958
0.000	*0.00000000*	0.00	0.00	ERR	ERR

KARŞILAŞTIRMA
NSMET Model Sonuçuyla Savitsky+ Blount Hesaplama

Tekne Hızı	Nsmet Rbh	Savitsky Rbh
20.09	703.25	681.74
21.07	715.46	685.60
22.21	728.86	692.21
23.56	752.07	702.90
25.18	775.60	720.17
27.20	817.05	748.92
29.80	885.30	795.61
31.41	940.54	829.70
33.32	996.56	875.07
Knot	Libre	Libre



Tekne Hızı	Nsmet Ehp	Savitsky Ehp
20.09	43.39	42.03
21.07	46.30	44.33
22.21	49.71	47.18
23.56	54.41	50.82
25.18	59.99	55.65
27.20	68.25	62.51
29.80	81.01	72.76
31.41	90.72	79.97
33.32	101.96	89.48
Knot	HP	HP



POWERING OF PLANING CHINE HULLS

17.50 ve 22.50 Derece Tekne değişik LCG Merkezlerindeki Güç değer 24-Mar-2007
09:06:37 AM

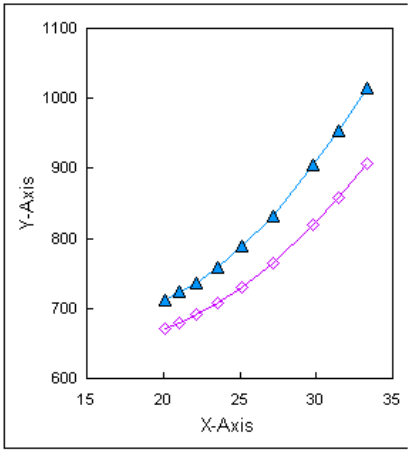
Lpx		**17.881**	**ft**	**5.450**	**Metre**	**Lpx/Bpx= 2.980**
Bpx		**6.000**	**ft**	**1.829**	**Metre**	
Tpx -	**22.50**	**1.243**	**ft**	**0.379**	**Metre**	
	17.50	**0.946**	**ft**	**0.288**	**Metre**	
Deplasman		**2000.000**	**(22.5 deg)**	**1500.000**	**kg (17.5 deg)**	
Lcg		**9.000**	**ft**	**2.743**	**Metre**	

Lcg/B = 1.5000 **Lcg/Lpx = 0.503**

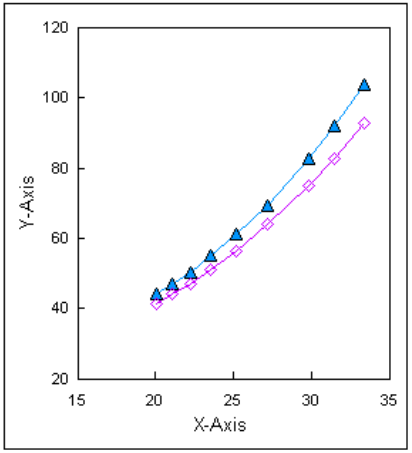
Cv	Rbh/Dep	Rbh - kg	Rbh - Libre	Vsel-knots	Hull-E Power HP
0.110	*0.16165246*	323.30	712.76	20.09	43.974
0.100	*0.16405046*	328.10	723.34	21.07	46.805
0.090	*0.16683533*	333.67	735.62	22.21	50.174
0.080	*0.17230553*	344.61	759.74	23.56	54.963
0.070	*0.17892678*	357.85	788.93	25.18	61.015
0.060	*0.18843051*	376.86	830.84	27.20	69.405
0.050	*0.20548695*	410.97	906.04	29.80	82.911
0.045	*0.21639576*	432.79	954.14	31.41	92.036
0.040	*0.23010808*	460.22	1014.60	33.32	103.804
0.000	*0.00000000*	0.00	0.00	ERR	ERR

KARŞILAŞTIRMA
NSMET Model Sonuçuyla Savitsky+ Blount Hesaplama

Tekne Hızı	Nsmet Rbh	Savitsky Rbh
20.09	712.76	672.33
21.07	723.34	680.59
22.21	735.62	691.83
23.56	759.74	707.50
25.18	788.93	730.18
27.20	830.84	765.11
29.80	906.04	818.94
31.41	954.14	857.43
33.32	1014.60	907.89
Knot	Libre	Libre



Tekne Hızı	Nsmet Ehp	Savitsky Ehp
20.09	43.97	41.45
21.07	46.81	44.00
22.21	50.17	47.15
23.56	54.96	51.15
25.18	61.02	56.42
27.20	69.41	63.86
29.80	82.91	74.89
31.41	92.04	82.65
33.32	103.80	92.83
Knot	HP	HP



HERHANGİ BİR BOYUT ALINARAK HESAPLAMA SONUÇLARI

Teknemiz Mevcut modelimizin değişik boyutlandırmasıdır.
Kalkıntı açısı 22.5 derece olarak hazırlanmıştır.
Yanlız teknemiz yüksek hızda seyrettiği için bu hesaplamada
Teknemizin stable olup olmadığını bilemiyoruz.Bilebilmek
İçin Savitsky Yöntemiyle hesaplamak gerekmektedir.
Efektif Güç sonuçlarına bakarak az bir fark görülmektedir.
OPC Toplam verimi % 65 olarak alırsak 33 knot sürat elde
Etmek istersek 175/0.65=270 hp + %3 Şaft Kaybı + % 10 güç
Toleransı toplam 310 hp gerekmektedir.
Savitskye göre ise 310 hp ile bu tekne 35 knot yapması
Gerekmektedir.

POWERING OF PLANING CHINE HULLS

17.50 ve 22.50 Derece Tekne değişik LCG Merkezlerindeki Güç değer

24-Mar-2007
12:51:43 PM

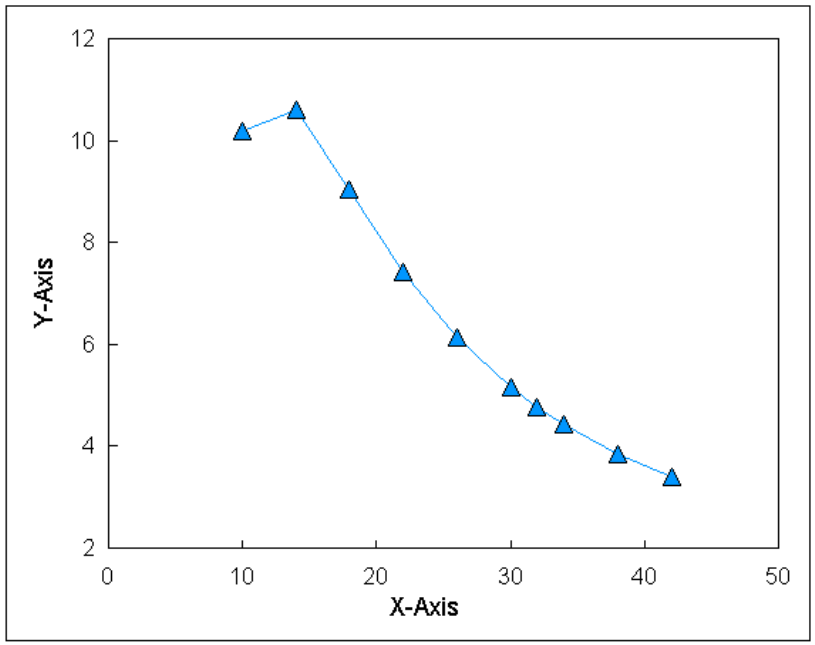
Lpx	22.000	ft	6.706	Metre	Lpx/Bpx=	2.716
Bpx	8.100	ft	2.469	Metre		
Tpx - 22.50	1.678	ft	0.511	Metre		
17.50	1.277	ft	0.389	Metre		
Deplasman	4487.455	kg				
Lcg	8.100	ft	2.469	Metre		

Lcg/B = 1.0000 **Lcg/Lpx =** 0.368

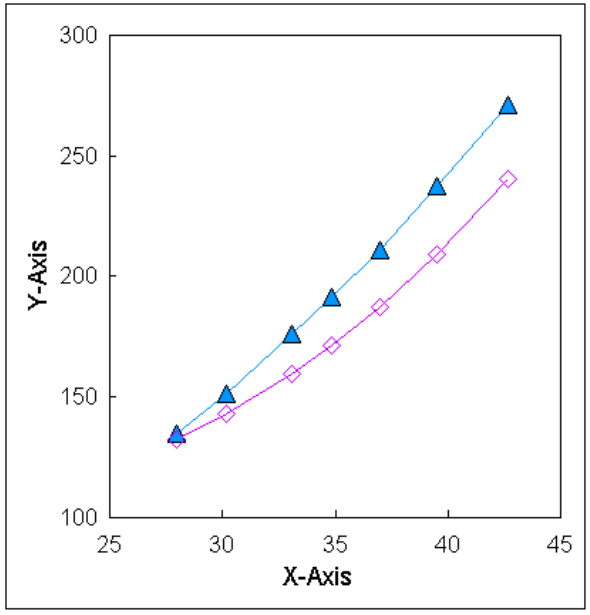
Cv	Rbh/Dep	Rbh - kg	Rbh - Libre	Vsel-knots	Hull-E Power HP
0.070	*0.15823596*	710.08	1565.45	27.94	134.336
0.060	*0.16492906*	740.11	1631.67	30.18	151.236
0.050	*0.17502070*	785.40	1731.50	33.06	175.808
0.045	*0.18087556*	811.67	1789.43	34.85	191.517
0.040	*0.18768112*	842.21	1856.75	36.97	210.778
0.035	*0.19753938*	886.45	1954.28	39.52	237.167
0.030	*0.20883278*	937.13	2066.01	42.68	270.815
0.000	*0.00000000*	0.00	0.00	ERR	ERR
0.000	*0.00000000*	0.00	0.00	ERR	ERR
0.000	*0.00000000*	0.00	0.00	ERR	ERR

KARŞILAŞTIRMA
NSMET Model Sonuçuyla Savitsky+ Blount Hesaplama

Tekne Hızı	Trim Savitsky
10.00	10.19
14.00	10.62
18.00	9.06
22.00	7.43
26.00	6.14
30.00	5.17
32.00	4.77
34.00	4.43
38.00	3.85
42.00	3.40
Knot	degree



Tekne Hızı	Nsmet Ehp	Savitsky Ehp
27.94	134.34	132.19
30.18	151.24	142.97
33.06	175.81	159.43
34.85	191.52	171.33
36.97	210.78	187.19
39.52	237.17	209.01
42.68	270.82	240.20
Knot	HP	HP



AYNI BOYLARDA AYNI AĞIRLIKTA OLAN İKİ TEKNENİN FARKLI KALKINTI AÇILARINA GÖRE KARŞILAŞTIRILMASI

POWERING OF PLANING CHINE HULLS

17.50 ve 22.50 Derece Tekne değişik LCG Merkezlerindeki Güç değe

05-Apr-2007
08:44:58 AM

Lpx		**17.000**	**ft**	**5.182**	**Metre**	**Lpx/Bpx=** **2.764**
Bpx		**6.150**	**ft**	**1.875**	**Metre**	
Tpx	**22.50**	**1.274**	**ft**	**0.388**	**Metre**	
	17.50	**0.970**	**ft**	**0.296**	**Metre**	
Deplasman		**1998.971**	**kg**			
Lcg		**6.150**	**ft**	**1.875**	**Metre**	

Lcg/B = **1.0000**

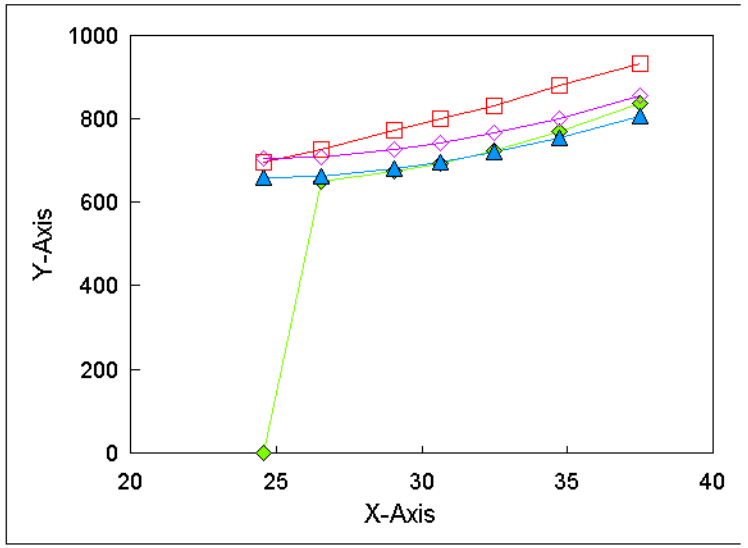
Lcg/Lpx = **0.362**

Cv	Rbh/Dep	Rbh - kg	Rbh - Libre	Vsel-knots	Hull-E Power HP

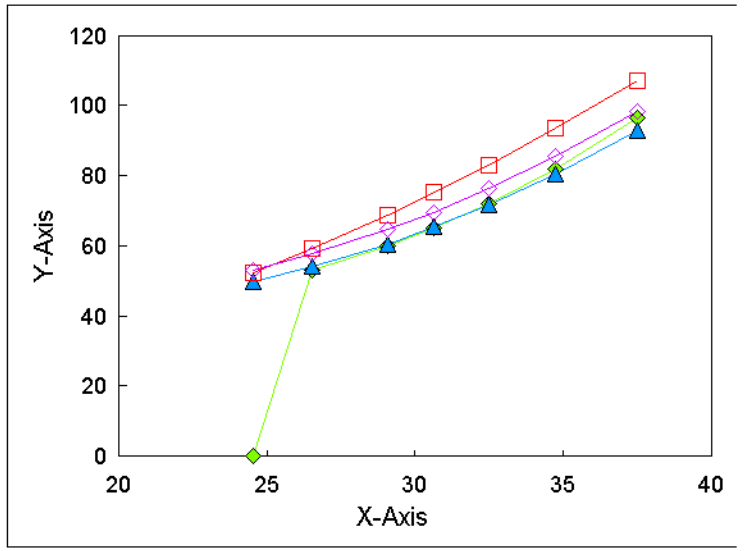
KARŞILAŞTIRMA
NSMET 17.5 ile 22.5 Modellerin Sonuçuyla Savitsky+ Blount Hesaplama

05-Apr-2007

Tekne Hızı	Nsmet Rbh 17.5 deg	Savitsky Rbh 17.5 deg	Nsmet Rbh 22.5 deg	Savitsky Rbh 22.5 deg
24.56	0.00	659.90	694.77	704.24
26.53	649.59	662.87	725.39	708.51
29.06	673.08	678.70	770.27	724.64
30.64	692.92	694.56	798.71	740.61
32.50	722.30	718.28	831.57	764.77
34.74	768.47	753.68	878.91	800.63
37.52	836.55	806.70	930.00	854.55
Knot	Libre	Libre	Libre	Libre



Tekne Hızı	Nsmet Ebh 17.5 deg	Savitsky Ebh 17.5 deg	Nsmet Ebh 22.5 deg	Savitsky Ebh 22.5 deg
24.56	0.00	49.74	52.41	53.08
26.53	52.93	53.97	59.10	57.68
29.06	60.08	60.52	68.75	64.62
30.64	65.19	65.31	75.15	69.64
32.50	72.08	71.64	82.98	76.27
34.74	81.98	80.35	93.76	85.38
37.52	96.39	92.88	107.17	98.39
Knot	HP	HP	HP	HP



POWERING OF PLANING CHINE HULLS

by PER WERENSKIOLD

DURING THE WINTER 1969 THE NORWEGIAN SHIP Model Experiment Tank has towed a series of planing craft in smooth water to determine resistance, trim angle, wetted lengths and wetted surface. The model series consisted of two families with deadrise of 17.5 deg. and 22.5 deg. Each family had two members with $L_{OA}/B = 2.25$ and 3.2. The series was planned so as to explore in a systematic way the effects of variation in the three variables: deadrise, length-beam ratio and longitudinal centre of gravity location. The models were also tested with a variation in transom breadth at bow design.

The model results were compared with those of full scale planing crafts of length ranging from 17 to 30 ft. Using a total propulsive efficiency between 0.43 and 0.45, the difference between the predicted and the full scale resistance, was determined to be between plus or minus 5 per cent.

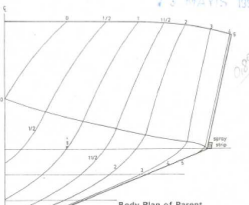


Fig 1

TEST PROCEDURE AND RESULTS

The models used for the tests represented a 30-ft. (9.14-m.) boat to a scale of 1/23. They were fitted with spray strips along the chines.

Fig. 1 shows the body plan of the parent model. Essentially, the three additional models of the series were derived from the parent by maintaining the same shape of body plan but adjusting the deadrise and the station spacing of the body plan. Particulars of the models are given in Table 1.

The dependence of drag resistance on different turbulence devices and on towing angles was thoroughly tested. The two model families were tested as proposed in Ref. 1. This is a test procedure based on relatively few tests, but giving all the required resistance data. Ref. 1 shows that at

TABLE: 1

Model	L_{OA}/B	L_P/B_X	L_P/B_{PA}	$\beta°$	$A_P/\frac{L}{B}$	A_P Amid-ships
Parent	2.25	2.42	2.95	22.5	9.55	43.1
Model Ia	3.2	3.5	3.96	22.5	6.8	44.5
Model IIa	2.25	2.42	2.95	17.5	9.55	43.1
Model IIb	3.2	3.5	3.96	17.5	6.8	44.5

A_P midships: centroid of A_P as percentage of L_P from transom

high speed the resistance of a planing hull of given weight can be presented as a function of only three variables:

$$C_\Delta = \frac{1}{2}\rho V^2 \frac{1}{\Delta}$$

In **Fig. 3** the enlarged and revised model results are presented. These graphs can be used for calculating the high-speed resistance of any planing hull with convex bow and constant deadrise. **Fig. 4** gives correction curves for: a) variations in transom breadth **(Fig. 2),** b) variations in bow design **(Fig. 2),** c) use of longitudinal spray strips (Ref. 2) **(Fig. 2). Fig. 5** is a graps of volume Froude number (F_∇) as a function of boat speed and weight.

Fig. 6 is a graph showing the relationship of boat length and displacement. Well known designs were used for drawing up this curve.

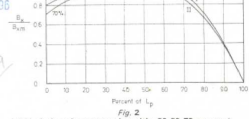


Fig. 2

(a) Variations in transom breadth: 90-80-70 per cent
(b) Variations in bow design: I convex bow sections (parent)
IIa convex bow sections
IIb straight bow sections
(c) (Ref. 2) Use of spray strips: 0 none
I 70 per cent of hull length, with slightly rounded edges
II 70 per cent of hull length, with sharpened edges
III Forward of high speed stagn. line

Use of Figs. 3-4-5-6 for drag Resistance calculations

The procedure for carrying out this calculation is as follows: Assume that the resistance in the high-speed range is to be determined for a 30-ft. boat having gross weight of 4,500 kg., a width over the spray strips of 2.90 m. (9.52 ft.) and a centre of gravity located 3.20 m. (10.5 ft.) forward of the transom. The boat will also have: deadrise 22.5 deg., transom breadth 90 per cent of max. chine breadth, spray rails III and bow design IIa.

Thus: $l_P/b = 3.20/2.90 = 1.1$

(**Fig. 6**) L_{OA} = 30 ft. : Δ = 4,700 kg.

The succeeding steps are shown in the tables of calculations, Table 2. First the values of C_Δ for which the curves

TABLE 2

A	B	C	D	E
C_Δ	R/Δ	R	$(1/C_\Delta)^2$	^{1} v
.030	.224	1010	5.773	37.2
.035	.211	947	5.350	34.4
.040	.200	900	5.000	32.2
.050	.184	828	4.472	28.8
.060	.171	769	4.088	27.3
.070	.164	738	3.780	24.3
.080	.158	711	3.536	22.7

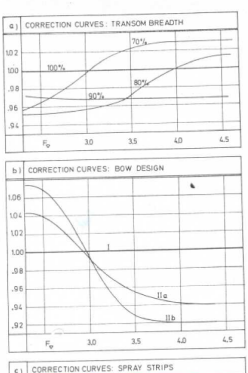


Fig. 4

in **Fig 3** were prepared are entered in Column A. Next, **Fig 3** is entered with the boat weight of 4,700 kg. and deadrise of 22.5 deg. A value of $R/\triangle$ is read off at each value of C_v. These values are entered in Column B. $R/\triangle$ for other deadrise angles may be found by linear interpolation between 17.5 deg. and 22.5 deg. Next, multiplying the values of $R/\triangle$ by the boat weight, which is 4,500 kg., gives the values of a boat resistance in kg. These values are in Column C. The next step is to solve for the corresponding values of boat speed in the relationship:

$$C_v = \triangle/\tfrac{1}{2} \cdot v^2 \cdot b^2 \cdot \rho, \quad v \text{ (m/s)}$$

$$v = \frac{1}{b}\,(\triangle\ (2/\rho)\ (1/C_v))^{\frac{1}{2}} \frac{1}{0.514} \text{ (knots)}$$

Since: $\triangle/\tfrac{1}{2} = 68.5$, $b = 2.90$, $0.514\ \sqrt{\tfrac{1}{2} \cdot \rho} = 3.67$

Then: $v = 6.436\ (1/C_v)^{\frac{1}{2}}$ (knots)

Values of v are entered in Column E, intermediate step

TABLE 3:

A	B	C	D	E
F	R	F_1	F_2 F_3 R	d.h.p.
4.5	970	.97	.94 .94 831	202
4.0	870	.97	.94 .94 746	161
3.5	794	.97	.96 .94 691	130
3.0	726	.97	.98 .97 670	108

is given in Column D. In **Fig. 7** the boat resistance R is plotted against speed in knots and the corresponding volume Froude number is determined from **Fig. 5.**

The remaining step is to change the resistance in kg. to horsepower and then correct for design changes from the parent. These calculations have been carried out in Table 3. The volume Froude number in **Fig. 5** are entered in Column A. The corresponding resistance R in kg. are entered in Column B. The correction factors from **Fig. 4** are entered in Column C. The corrected resistance R_c (kg.)

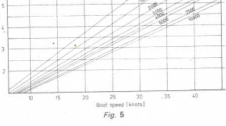


Fig. 5

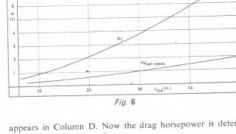


Fig. 6

appears in Column D. Now the drag horsepower is determined from the expression:

$$\text{d.h.p.} = \frac{R_c\, v}{75}\ (v \text{ (m/s)})$$

$$\text{d.h.p.} = 0.514\,\frac{R_c\, v}{75}\ v \text{ (knots)}$$

Values of d.h.p. are entered in Column E and plotted in **Fig. 7.**

Dividing the drag horsepower by 0.45 the brake horsepower is obtained. This total propulsive efficiency has been

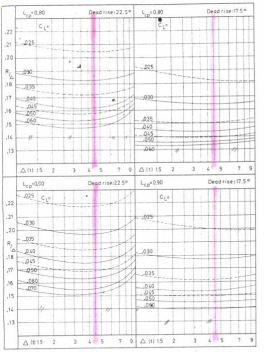


Fig. 3a

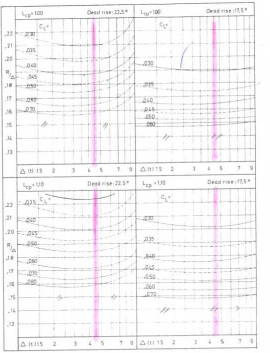


Fig. 3b

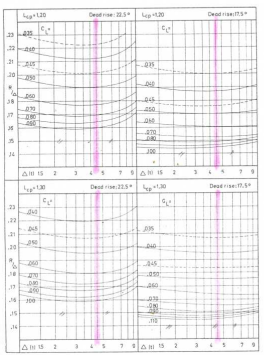


Fig. 3c

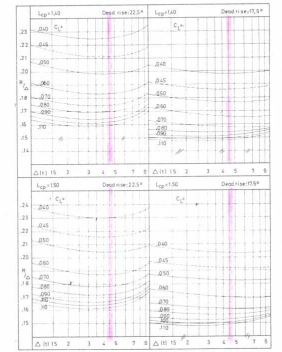


Fig. 3d

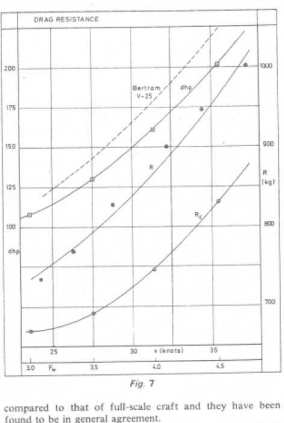


Fig. 7

compared to that of full-scale craft and they have been found to be in general agreement.

[In **Fig. 7** the d.h.p. of a Bertram V-25 is shown (Ref. 1). Here the b.h.p. is multiplied with $\eta_t = 0.45$ and corresponds to a craft weighing 4,540 kg. (10,000 lb.).]

From the close agreement (plus or minus 5 per cent) between the resistance predicted from **Figs. 3-4** and the corresponding full scale resistance, it is concluded that the graphs presented here will give accurate predictions of the high-speed resistance of planing craft of sizes and proportions in general use.

NOTATION

A_p = projected planing bottom area, excluding area of external spray strips
B = maximum breadth
B_{pa} = mean breadth over chine, A_p / L_p
B_x = breadth over chines, excluding external spray strips
B_{xm} = maximum breadth over chines, excluding external spray strips
b = breadth over spray strips, at longitudinal location of centre of gravity
CG = centre of gravity
C_L = lift coefficient, $\Delta / \frac{1}{2}\rho\ v^2\ b^2$
F_∇ = Froude number based on volume, $v / \sqrt{g\ \nabla^{\frac{1}{3}}}$
L_{wx} = maximum length
L_p = projected chine length
LCG = longitudinal centre of gravity location
l_{cp} = distance of centre of pressure forward of transom
R = total resistance
v = speed
d.h.p. = drag horsepower
b.h.p. = brake horsepower
β = deadrise angle of planing bottom
Δ = displacement, weight of
∇ = displacement, volume of

(Ref. 1) E. P. Clement: Resistance Tests of a Systematic Series of Planing Hull Forms. SNAME 1963.
(Ref. 2) E. P. Clement: Analysing the Stepless Planing Boat. DTMB Report 1093.

SECOND ICOMIA BOATING SAFETY CONFERENCE

THE safety and standard committee of the International Council of Marine Industry Associations (representing 18 Associations from 11 countries) met at the Park Avenue Hotel, Gothenburg, at the invitation of the Gothenburg Swedish International Boat Show.

The Conference was opened by the Mayor of Gothenburg, Capt. Hans Hansson, who stressed the need for uniform international standards on safety and construction. He also suggested that consideration of the standards of after sales service and repairing might well be included in the work of the Conference as this matter was also a factor affecting the safety of craft.

The Conference, under the Chairmanship of G. Eriksen (Sweden), then proceeded to review in detail the work carried out over the past three years. Following this an organisational paper presented by P. Selden (Sweden) was considered. This set out the organisational structure required to establish working arrangements between the various countries concerned and to divide the main work into four categories, namely 1) Small Boat Safety Division (up to 5 metres overall); 2) Hull Division; 3) Machinery and Electric Division; 4) Equipment Division (lifesaving and general). The four working committees to be formed would report directly to the main safety committee who in turn would send the recommendations to ICOMIA members. Co-ordinators would be appointed for such special functions as statistics and education.

Among technical papers presented were: Boating Accident Statistics Reports from Member Countries, by R. Lambie (England); Safety Factors in Small Boats up to 5 Metres, by T. Korpivaara (Finland); Standards Practices for Motor Installations,•by D. Reed (U.S.A.); Fuel Tanks, by H. Bordereau (France); Propellers and Steering Gear, by R. Scherman (England); and Steel Construction, by Dr. J. van Vollenhoven (Holland).

Second Southampton Boat Show

SOUTHAMPTON's second Boat Show is to be held from September 28 to October 3, 1970. Once again it will be at Mayflower Park with the background of big liners on nearby quays. There will be extra berthing space this year for boats exhibited afloat: from the show piers yachts can quickly go on trial in Southampton Water and return for inspection by further visitors. Last year this was the most popular feature of the show, where ample outdoor and undercover stands will also be in use on shore.

The show organisers, who have the approval of Southampton Chamber of Commerce and the S.B.B.N.F., are J. E. Artman and Partners.