B20-R

Displacement Hull Resistance

Sea Tech

Report Time: 09 март 2019 г., 15:50:24 ч.

Model Name: D:\MyWorks\Orca3D v1.3 and 1.4-WIP\Sea Tech-Models\B20-R-Models\B20-R-SB-27022019.3dm

Prediction Parameter	Value
Method	Holtrop 1984 (mod)
SpeedCheck	OK
HullCheck	OK
DesignMarginPercent	10
DesignSpeed	13 kt
WaterType	Fresh
WaterDensity	999 kg/m3
WaterViscosity	1,139E-06 m2/s
FormFactor	1,2955
CorrAllowance	0,00053953
Propulsive Efficiency	50 %

Vessel Data	Value
LengthWL	19,605 m
BeamWL	4,887 m
MaxMoldedDraft	1,232 m
DisplacementBare	54,858 tonne-f
WettedSurface	92,933 m^2
MaxSectionArea	4,697 m^2
WaterplaneArea	69,173 m^2
LCBFwdTransom	8,947 m
BulbAreaAtFP	0,018 m^2
BulbCentroidBelowWL	0,899 m
TransomArea	3,35 m^2
HalfEntranceAngle	14,073 deg
SternTypeCoef	-1,023

Parameter Check	Value	Minimum	Maximum	Type
FnMax	0,48232	0	0,74651	Computed
PrismaticCoef	0,6	0,55	0,85	Computed
LwlBwlRatio	4,0117	3,9	14,9	Computed
LambdaCoef	0,74	0	0,99	Computed
BwlDraftRatio	3,97	2,1	4	Computed

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Speed (kt)	Fn	Cf (x 1000)	Cr (x 1000)	Rbare (N)	PEtotal (kW)	Rtotal (N)
5,000	0,186	2,353	6,622	2922,2	8,3	3214,4
6,000	0,223	2,288	6,428	4093,4	13,9	4502,7
7,000	0,260	2,235	6,358	5497,7	21,8	6047,4
8,000	0,297	2,191	6,483	7244,5	32,8	7968,9
9,000	0,334	2,154	6,501	9149,1	46,6	10064,0
10,000	0,371	2,121	6,787	11606,2	65,7	12766,8
11,000	0,408	2,091	7,747	15426,7	96,0	16969,4
12,000	0,445	2,065	8,730	20051,7	136,2	22056,9
13,000	0,482	2,042	9,386	24845,8	182,8	27330,4
14,000	0,519	2,020	9,619	29325,1	232,3	32257,7
15,000	0,557	2,000	9,404	33014,1	280,2	36315,6
16,000	0,594	1,982	8,886	35876,9	324,8	39464,5

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Speed (kt)	Fv	Rbare (N)	PEtotal (kW)	PPtotal (kW)	Prediction Check
5,000	0,421	2922,2	8,3	16,5	OK
6,000	0,506	4093,4	13,9	27,8	OK
7,000	0,590	5497,7	21,8	43,6	OK
8,000	0,674	7244,5	32,8	65,6	OK
9,000	0,758	9149,1	46,6	93,2	OK
10,000	0,843	11606,2	65,7	131,4	OK
11,000	0,927	15426,7	96,0	192,1	OK
12,000	1,011	20051,7	136,2	272,3	OK
13,000	1,095	24845,8	182,8	365,6	OK
14,000	1,180	29325,1	232,3	464,7	OK
15,000	1,264	33014,1	280,2	560,5	OK
16,000	1,348	35876,9	324,8	649,7	OK

Sensitivity Analysis	Index	To Reduce Drag
Max section area	0,15939	Increase
Waterplane area	0,076973	Decrease
Immersed transom area	0,06946	Increase
LCB forward of transom	0,081088	Increase

Prediction Checks

1. The Holtrop prediction method has a defined upper limit of 0.80 for the length-based Froude number (Fn). Extrapolating speed beyond this value is not recommended.

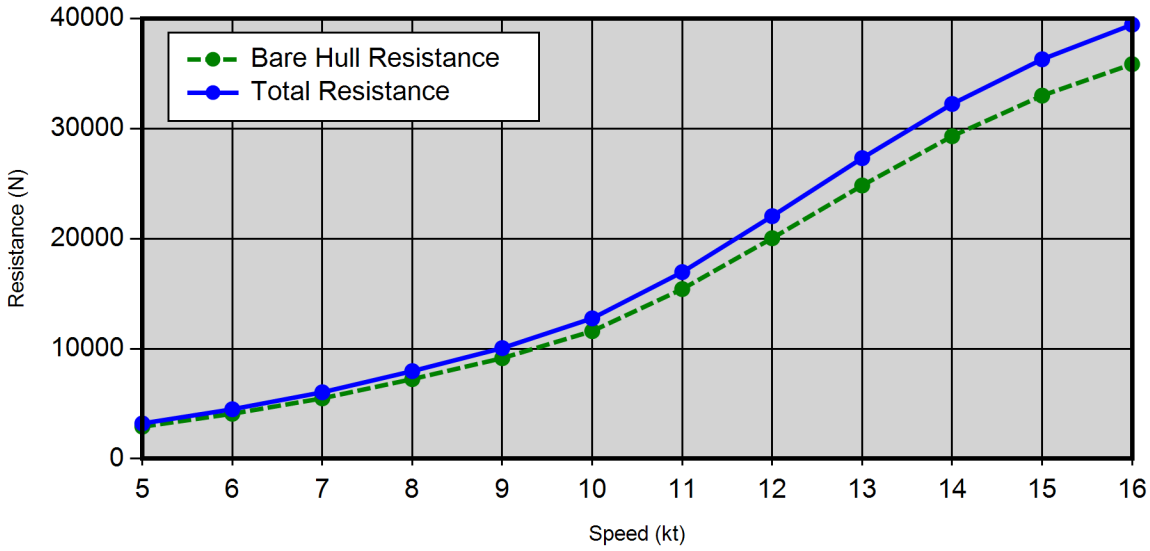
2. The Holtrop prediction method contains a calculation parameter (Lambda) that is used to estimate the humps and hollows in the drag curve. Anecdotal experience and testing by HydroComp have identified combinations of parameters that can produce significant errors with the Holtrop method. The relationship between Lambda and length-based Froude number (Fn) has proven to be one such indicator of potential errors. The prediction results may be unreliable for speeds that exceed this Lambda-Fn relationship.

3. The Holtrop prediction method is based on a variety of hull forms, including collections of transom-stern round-bilge hulls. As part of a broader evaluation of prediction methods for high-speed round-bilge hulls, HydroComp has identified a combination of parameters pertaining to the effect of stern geometry that is an indicator of potential errors. The prediction results may be unreliable for speeds that exceed this indicator.

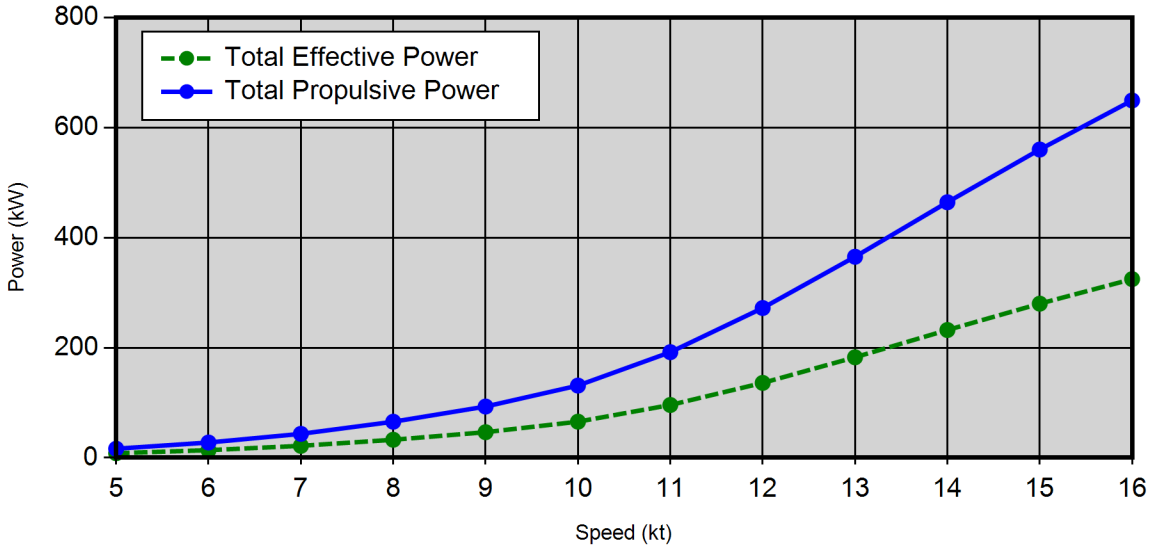
Notes

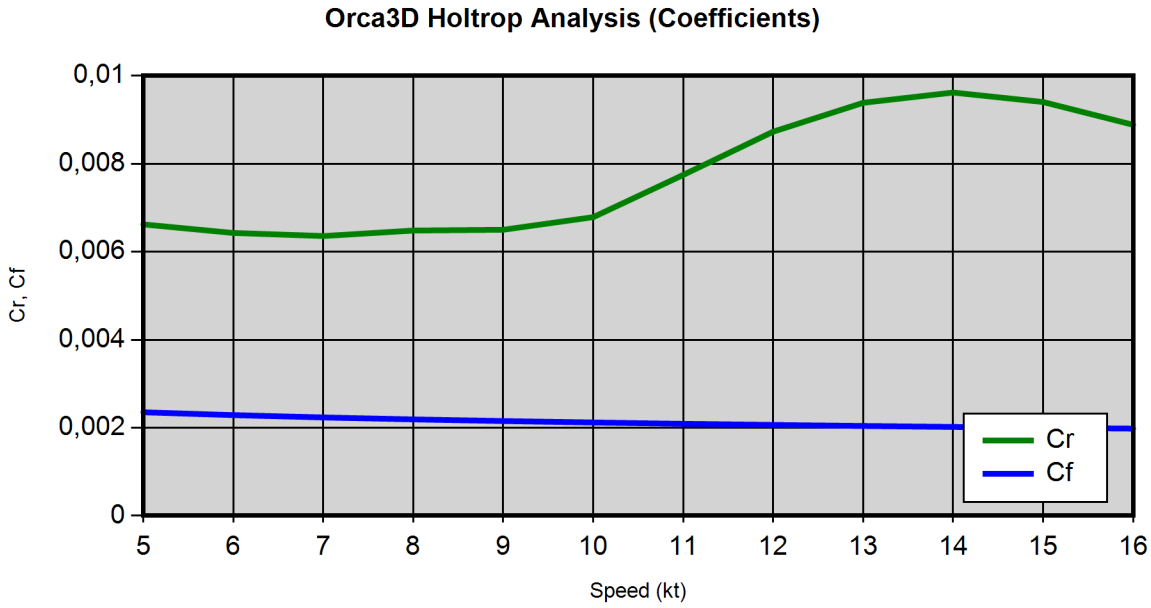
A Sensitivity index with a higher value has a greater influence on drag. Sensitivity values greater than 1.0 are considered significant.

Orca3D Holtrop Analysis (Resistance)



Orca3D Holtrop Analysis (Power)




Orca3D Holtrop Analysis (Coefficients)
0,01
0,008
0,006
0,004
0,002
0
Cr, Cf
5
6
7
8
9
10
11
12
13
14
15
16
Speed (kt)
Cr
Cf