

# EcoOptimizer for CPP systems

Alphatronic 3000 combinator curves  
save up to 6%

As part of our continuous development and constant strive to improve design, operational performance and economy – our fuel-saving EcoOptimizer concept can be offered for propulsion solutions with MAN Alpha Controllable Pitch Propellers.

#### Benefits at a glance

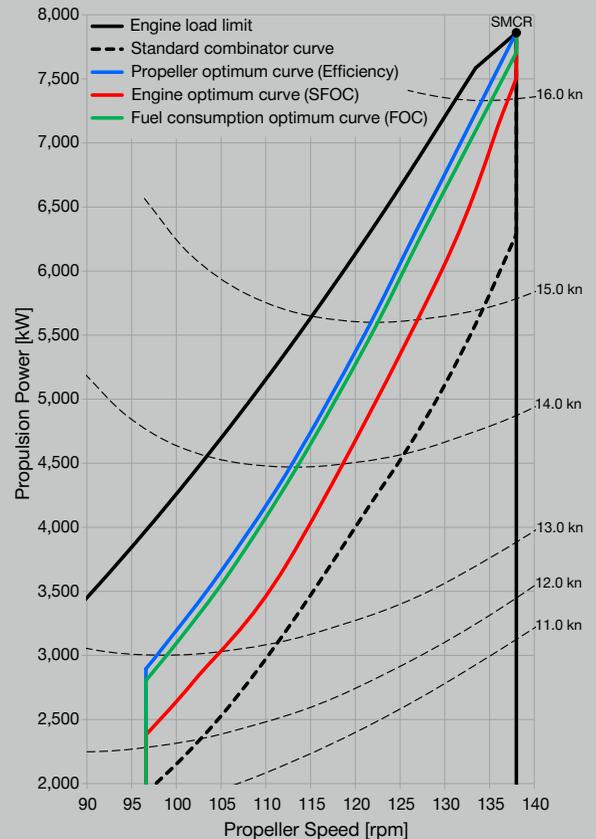
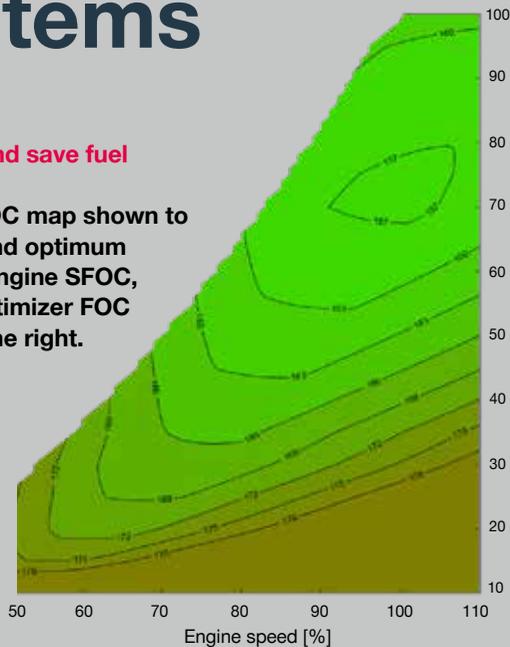
- Fuel saving potential up to 6% compared to standard combinator curves
- Propulsion system optimization
- Overall economy optimization and operational mode setting considering ship speeds, propeller pitch settings and individual main engine SFOC maps
- Performance and consumption visualized via Alphatronic 3000 propulsion control display



# EcoOptimizer for CPP systems

## Optimize and save fuel

Engine SFOC map shown to the left – and optimum propeller, engine SFOC, and EcoOptimizer FOC curves to the right.



## Combine the best of two worlds – save up to 6%

### Propeller optimum operation

A combinator curve is determined from the requirement of having an optimum propeller efficiency at all ship speeds – as shown above by the passing of the blue curve through the minimum or ‘valleys’ of the constant ship speed lines.

The determination of the combinator curve, solely based on the propeller characteristics, does not ensure that the main engine is operating according to its optimum performance, fuel-wise.

### Engine optimum operation

Following the same principle as for the optimum propeller operation, a similar optimum fuel oil curve can be determined. For each constant ship speed, an optimum point is given with respect to achieving the lowest SFOC. A typical engine fuel map is shown with the specific fuel oil consumption figures (SFOC) given as constant lines.

Where the blue curve will ensure that the propeller has the highest efficiency, the red curve will ensure that the engine will achieve the lowest SFOC value for each ship speed.

### The overall optimum operation

Overall, the operation on either of the curves will not result in the lowest possible fuel consumption (e.g. measured in kg/hour or tons/day). The total fuel oil consumption is determined by the product of the power required for propelling the ship and the corresponding SFOC of the main engine.

A comparison of the runs of the optimum propeller and engine curves will reveal that they do not coincide. That is, one curve is optimum for the propeller and one for the engine.

Thus, if for each ship speed the product of the power and SFOC are calculated along each constant ship speed, the optimum setting of the

propeller shaft speed and propeller pitch setting can be determined and used to generate the third and final EcoOptimizer (green color) curve that will result in minimum fuel oil consumption (FOC).



### MAN Energy Solutions

9900 Frederikshavn  
Denmark  
P + 45 9620 4100  
F + 45 9620 4030  
info-frh@man-es.com  
www.manalpha.com  
www.man-es.com