

## Kerbal Space Program - Bug #9656

### 'Prop. requirement met' value is not proportional to resources used: Dawn electric engine can run on much smaller solar arrays than it should

05/02/2016 11:08 AM - riocrokite

<b>Status:</b>	Updated	<b>Start date:</b>	05/02/2016
<b>Severity:</b>	Low	<b>% Done:</b>	10%
<b>Assignee:</b>			
<b>Category:</b>	Gameplay		
<b>Target version:</b>			
<b>Version:</b>	1.1.0	<b>Language:</b>	English (US)
<b>Platform:</b>	Windows	<b>Mod Related:</b>	No
<b>Expansion:</b>			

#### Description

Example rig:  
pod, xenon tank, sp-l 1x6 panel, dawn xenon engine.

1x6 solar panel is producing about 1.3-1.6 EC/s, dawn engine is consuming 8.74 EC/s so about 5-6 times more energy that is produced.

After electric charge from batteries run out the 'prop. requirement met' is about 57.5% instead of 15%. Therefore any engine that runs on 'massless' resources that are being produced (and demand is greater than production) uses less of them for the same thrust than it should.

For example I can run dawn engine on smaller solar panels than required for almost the same thrust.

Running dawn engine on 2 x oxstat panels yields about 65% thrust (prop.requirement met) (energy produced = 2.6, consumed = 8.74)

Additionally when discrepancy is really big (i.e. production rate = 1 usage rate = 20) engine flickers on/off several times a second so one cannot really achieve stable prop. requirement met values lower than 30% (to reproduce that one can for example try running a dawn engine with a single panel that produces about 0.16 EC/s)

#### History

##### #1 - 07/17/2016 09:56 AM - TriggerAu

- Status changed from New to Needs Clarification

##### #2 - 01/31/2017 03:46 AM - Armisael

- File ionship after burn.png added

- File ionship in deep space before burn.png added

- File ionship in vab.png added

- Status changed from Needs Clarification to Updated

- % Done changed from 0 to 10

There are two related things going on here.

You can power an ion engine with less electricity than it ought to require. For example, in the ship in my pictures, 2 RTGs (1.5 EC/s) are apparently providing enough juice for the engine to operate at 58/99th thrust.

However, you're still consuming xenon at the full rate. This has the effect of reducing your effective Isp by the factor listed as the "Prop. Requirement Met". You can see this effect in the linked deep space pictures, where I don't get nearly the 227 m/s I ought to given the ship.

Note: these pictures are from a modded game, but I have confirmed the effect on a clean install and received confirmation from other people.

#### Files

screenshot32.png	1.45 MB	05/02/2016	riocrokite
ionship after burn.png	776 KB	01/31/2017	Armisael

ionship in deep space before burn.png  
ionship in vab.png

747 KB  
1.87 MB

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