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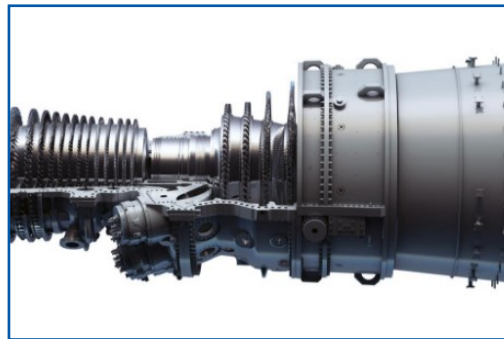
The UPM Market Informer

GE Unveils New H-Class Gas Turbine —And Already Has First Order

GE on Oct. 1 unveiled the 7HA.03, the newest model in its 2014-launched high efficiency air-cooled gas turbine line. On Oct. 2, it also announced that Florida Power and Light’s Dania Beach Clean Energy Center will be the first to showcase two of the “world’s largest, most efficient, and flexible gas turbines” for the 60-Hz market when they begin commercial operation in 2022.

GE officials told *POWER* the 7HA.03 will have a single-cycle net output of 430 MW—a sizable boost compared to its forerunner, the 7HA.02, which is rated at 384 MW, and the first-generation gas turbine in the HA class, the 7HA.01, which is rated at 290 MW. In combined cycle, a 1x1 7HA.03 plant could offer 640 MW, and in 2x1, 1,282 MW.

Like previous HA models, the 7HA.03 features a 10-minute start-up, but remarkably, it intensifies the ramp rate to 75 MW per minute. “That’s world-class,” Tom Dreisbach, GE Power 7HA Platform Leader, told *POWER* on Tuesday.



Company officials also said the 7HA.03 will shatter GE’s previous combined cycle gas turbine (CCGT) efficiency records—both the 62.22% net efficiency held by the 50-Hz 9HA.01 at EDF’s Bouchain plant, and the 63.08% gross efficiency of the 7HA.01 at Chubu Electric’s Nishi Nagoya plant. Because it integrates the latest advancements in manufacturing technology, and benefits from refined technology from previous models, the 7HA.03 will have a net combined cycle efficiency of 63.9%, which is a 0.4 percentage increase over its forerunner, the 7HA.02. That efficiency increase could translate into savings of an estimated \$900,000 for U.S. baseload power plant operators, officials said.

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Honeywell Forecasts 7,600 New Business Jet Deliveries Over Next Decade Valued at \$248 Billion

The business jet industry is expected to see strong growth in the short to medium term, supported by several new airplane models coming to the market, according to Honeywell's 28th annual Global Business Aviation Outlook. Released today, the Global Business Aviation Outlook forecasts up to 7,600 new business jet deliveries worth \$248 billion from 2020 to 2029, down 1 to 2 percentage points from the 2018 10-year forecast.



"Production ramp up on many new business jet platforms are expected to lead to a 7% increase in deliveries in 2020, following a strong projected growth in 2019 over 2018 aircraft deliveries," said Heath Patrick, president, Americas Aftermarket, Honeywell Aerospace. "We are confident that these new and innovative aircraft models will support solid growth in the short term and have a continuing impact on new business jet purchases in the midterm and long term." Key findings in the 2019 Honeywell global outlook include:

- Operators plan to make new jet purchases equivalent to about 17% of their fleets over the next five years as replacements or additions to their current fleet, a decrease of 3 percentage points compared with 2018 survey results.
- Of the total purchase plans for new business jets over the next 5 years, 35% are expected to occur in the first two years of the survey, with 57% of purchase plans realized by year three. This is 5 percentage points higher than last year's survey.
- Operators continue to focus on larger-cabin aircraft classes, from large cabin through ultralong-range aircraft, which are expected to account for more than 71% of all expenditures of new business jets in the next five years.
- The longer-range forecast through 2029 projects a 2% to 3% average annual growth rate in line with expected worldwide economic growth and supported by the current and expected introduction of new models throughout the forecast period.
- Purchase plans for used jets are significantly higher in this year's survey. Operators worldwide indicated that 32% of their fleet is expected to be replaced or expanded by used jets over the next five years, up 8 percentage points compared with survey results from 2018.

The main factors that influence purchasing decisions are aircraft performance, followed by brand experience, cabin and range. Survey participants also cited direct operating costs and customer support experience as elements that will influence their decision on which aircraft to buy. *Source: Honeywell Aerospace* Follow this link for more on this story <http://bit.ly/2BKWcfz>

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Designing the new turbine for flexibility and efficiency will be key to boost GE's standing in a cutthroat heavy duty gas turbine market, where it is fiercely vying with competitors Mitsubishi Hitachi Power Systems (MHPs) and Siemens Gas and Power for market share, noted Amit Kulkarni, senior executive and general manager for GE Power's Power Services' F/H-class product line.

The 7HA.03, for example, promises to nearly double the fuel flexibility currently offered in the previous 7HA model (7HA.02), giving it more clout in a changing energy landscape. The enhanced fuel flexibility means "you can burn a variety of fuels, and this unit gets you to be hydrogen-ready as well," he said.

GE also took into account the increased variability of gas in the marketplace and wanted to ensure global customers had the "best optionality for where they buy their gas, at the cheapest price," as David Walker, senior product manager at GE Power's Gas Power Systems division, explained to *POWER*. "So a customer somewhere in Asia can buy [liquefied natural gas] from all over the world and doesn't really have to worry about the amount of methane versus propane or butane, and be concerned about [changing] hardware," he said.

Finally, the 7HA.03's designers also focused heavily on "modularization packaging" to help plant builders shorten critical path installation by eight weeks, said Kulkarni. "Think of it more as more of a plug-and-play kind of option. The interconnect piping that you will do was very customized in previous years has become somewhat standardized, and that reduces installation time for the [engineering, procurement, and construction (EPC) contractor] and the customer," he said. *Source: Power, Sonal Patel*

FABTECH is November 11-14 in Chicago

FABTECH hosts more than 1700 exhibiting companies and 48,000 attendees as they gather to celebrate metal manufacturing at its best. Educational sessions and expert-led presentations on the latest trends and technology in the metal forming, fabricating, welding and finishing industries round out the wealth of innovation and technology solutions presented at McCormick Place.

United Performance Metals will once again be exhibiting at FABTECH. Look for us in Booth #D46255.



Next Generation Power for Next Generation Combat Vehicles

The Army's Next Generation Combat Vehicle (NGCV) program has ambitious goals that will require development of new technological capability that ranges from autonomous operations to advanced materials. Less discussed but equally important will be the need for new capabilities in power generation and management to facilitate active protection systems, directed energy weapons, and tactical networking. The Army's NGCV power challenge is four-fold:



1. To provide power to all NGCV variants through alternative energy, including hybrids, fuel cells, and all-electric in order to increase operational range, serve advanced platform requirements, and accommodate future upgrades and modernization;
2. To innovate power generation and management in order to increase fuel efficiency and thus operational range, permit operations in electric-only silent watch and silent mobility modes, and provide battery backup so crews can operate vehicle systems without having to turn over the engine;
3. To improve component and system reliability, and reduce reliance on consumable fuels, lowering impact on sustainment and supply chain; and
4. To enable situational power generation for off-vehicle applications, to light up tactical operations centers in combat and hospitals in disaster relief scenarios.

"The Army is working with industry to plan ahead for upgrades in the design and development of the next generation of combat vehicles," said Brig. Gen. Ross Coffman, director of the Next Generation Combat Vehicle Cross Functional Team (CFT) in an article published by the U.S. Army Acquisition Support Center. "We need not only our (vehicles) capable of handling increased weights, but we need electrical upgradability. As technologies advance and we want to put additional systems onto an existing vehicle, we have to have the reserve power onboard to be able to handle multiple electrical requirements from these systems."

"What we really have to decide as an Army is which technology provides the logistics at range and the ready-now capability for our soldiers that we want on the next battlefield," Coffman added. "For instance, if you went totally electric, it takes time to recharge a battery. It takes about seven minutes to refuel a tank. So if you can't recharge the battery in under seven minutes, I'm not sure that's a technology that is going to make us better on the battlefield."

The NGCV is not just a single combat vehicle, but rather a suite of five new platforms that address different needs for different types of ground combat units. They are: 1. Optionally Manned Fighting Vehicle (OMFV), a replacement for the M2 Bradley Infantry Fighting Vehicle; 2. Armored Multi-Purpose Vehicle (AMPV), to replace the M113 armored personnel carrier; 3. Mobile Protected Firepower (MPF), which is a light tank for Infantry Brigade Combat Teams and will replace the 1960's-era M551 light Sheridan tank; 4. Robotic Combat Vehicles (RCVs), which will operate autonomously in manned-unmanned arrangements and come in light, medium, and heavy variants; and 5. Decisive Lethality Platform (DLP): the M1 Abrams tank replacement.

Read more on this story from Breaking Defense here: <http://bit.ly/2NcDcfh>

Alloy Spotlight!



United Performance Metals supplies 718 Nickel Alloy in bar, sheet and plate to support the aerospace and power generation industries.

- ◆ 718 Bar AMS 5662 in stock .250" - 10.000"
- ◆ 718 Bar B50A809D in stock 1.072" - 7.125"
- ◆ 718 Sheet AMS 5596 in stock .016" - .165"
- ◆ 718 Plate AMS5596 in stock .1875" - 2.000"

Designed for high stress resistance, 718 nickel alloy is ideal for engines, turbines and heat exchangers.

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For more information, visit our website at www.upmet.com.



Surcharge Totals August 2019 - January 2020

	Aug	Sept	Oct	Nov	Dec	Jan
15-5	0.4521	0.4978	0.5231	0.5117	*	
15-7	0.7056	0.7899	0.8535	0.8339	*	
17-4	0.4432	0.4828	0.5015	0.4897	*	
17-7	0.5483	0.6380	0.7106	0.7036	*	
201	0.4434	0.4998	0.5365	0.5250	*	
301 7.0%	0.5416	0.6290	0.6989	0.6918	*	
302/304/304L	0.5945	0.6933	0.7759	0.7699	*	
304-8.5%	0.6172	0.7218	0.8106	0.8052	*	
305	0.7799	0.9245	1.0576	1.0559	*	
309	0.8067	0.9510	1.0839	1.0829	*	
310	1.1396	1.3639	1.5853	1.5918	*	
316/316L	0.8798	1.0040	1.1117	1.0960	*	
316LS/316LVM	1.2700	1.4600	1.6200	*	*	
317L	1.0453	1.1818	1.3022	1.2821	*	
321	0.6321	0.7424	0.8377	0.8327	*	
347	0.9419	1.0522	1.1476	1.1426	*	
409/409 Mod	0.1759	0.1836	0.1655	0.1500	*	
410/410S	0.1818	0.1895	0.1713	0.1559	*	
430	0.2163	0.2236	0.2050	0.1904	*	
434	0.2949	0.3030	0.2844	0.2655	*	
439	0.2237	0.2309	0.2124	0.1980	*	
440A	0.2163	0.2236	0.2050	0.1904	*	
2205	0.8206	0.8909	0.9384	0.9128	*	
263	5.2572	5.2387	4.9046	4.8125	5.7479	6.8100
276	5.4513	5.2053	5.1636	5.5403	6.2513	6.8100
A286	1.4536	1.3368	1.2892	1.4758	1.7724	2.0100
330	1.7842	1.6226	1.5670	1.8453	2.2659	2.6200
400	3.2392	2.8939	2.8496	3.3721	4.0981	4.7800
455	0.7100	0.8300	0.9100	*	*	
465	0.8700	1.0400	1.1500	*	*	
600	3.4326	3.1096	3.0577	3.6423	4.5129	5.2800
601	2.9927	2.7267	2.6601	3.1387	3.8529	4.4700
617	5.1436	4.9959	4.7931	4.9728	5.8546	6.7400
625	5.6646	5.4098	5.3503	5.7753	6.4882	7.0900
718	5.4121	5.1871	5.1290	5.5170	6.1274	6.6500
X-750	4.0001	3.6859	3.6326	4.2008	5.0473	5.7900
825	2.4417	2.2649	2.2047	2.4954	2.9598	3.3500
HX	3.4849	3.2866	3.2225	3.5368	4.1138	4.6000
188	6.0800	7.2100	8.6600	*		
CCM	5.4200	7.4300	10.5000	*		
L-605	6.7300	7.9700	9.6900	*		

*Surcharge currently not available