2020 Arctic Cat ZR8000 Ctec2 800…. Jim Czekala

Once again Tom Ferry of Arctic Adventures in Rosendale, NY was first to DTR with the new 2020 ZR 8000 Sno-Pro with a Ctec2 800 engine—slightly revised for 2020 with new cylinders, pistons, head and ECU configuration. To get the ECU out of "breakin mode" Tom ran the engine for five hours at light throttle with track spinning and water pouring on the heat exchangers. 92.9 R+M octane 0% ethanol fuel was used.

Since the Ctec2 800 is being touted as being "in the 165 HP Class", no one should fret about this brand new zero mile being far from 165 HP. This engine is said to utilize plasma coated cylinder bores similar to the Polaris 800 and 850's. If so, expect power to climb after many miles of hard riding, or LOTS of dyno tests. Remember both of the aforementioned Polaris engines gained approximately 7% HP from out of the crate dyno test one to finally broken in rings by long, slow sweep dyno test #80! And the 2018 Ctec800 we used for the NY Shootout, out of the crate but with broken in ECU went from 148 HP on certification dyno test one to 152 HP on test 30! On this dyno day, Tom had a trailer full of sleds to dyno test/ tune for customers so we didn't have the hours necessary to do the brutal ring loading of many dyno tests to see how the Ctec2 800's power might improve.

And while it's normal for us to home in on the peak HP numbers, the torque curve that shows midrange HP is important, especially for trail riders who enjoy accelerating hard out of corners. The broad RPM spread between peak torque and peak HP (=broad HP plateau) is very useful for estimating the ease of obtaining proper clutch calibration. The overlay graph at the end includes the HP and TQ data from the NY Shootout sleds from the prior two years. That midrange HP and TQ advantage of the new engine is significant.

I had planned to use the DTR intake air refrigeration system to test the new engine in dry winter air and winter temp fuel. I put pump gas in a steel can inside the 1000 cubic ft cold room, and turned the system on and let it run all night to be sure the 5 gallons of fuel was chilled to 20F by morning. When I left the room was 18F. But when we were ready to test the three condensers were frosted solid and the air was up to 44F. It takes a day for the condensers to thaw out so winter air test was aborted. I need to upgrade the three compressors/ condensers to automatically keep the condensers free of ice and operate non stop.

There are plans being made to have a 2020 Ctec2 800 here for Precision EFI to come from QC CA to create a reflash like he did for the Ctec 800 (test results posted here on 10/25/18—a must-read—can Precision EFI add a similar 5% HP to the Ctec2 with a reflash?). If it's this sled, we'll be able to make time to fully instrument the engine and be sure to get it fully broken in. And hopefully we can take the time to assess some aftermarket exhausts.

And once again feel free to share torque and horsepower and technical issues we observe and describe here with your internet pals. But please no cutting and pasting!

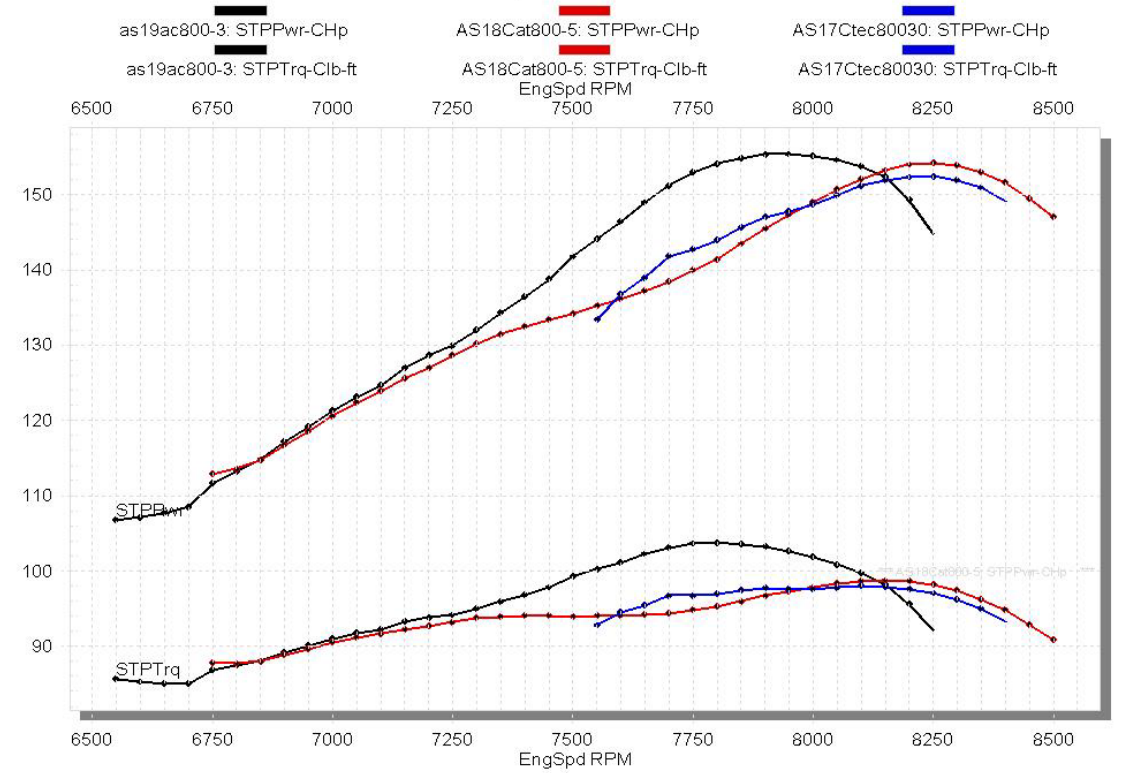
There's more to come.

Ctec2 800 Dyno Test number 3

EngSpd RPM	STPPwr CHp	STPTrq Clb-ft	LamAF1 Ratio	AirInT degF	Baro_P InHga	DenAlt Feet	STPCor Factor	SpcPwr HP/CID
6550	106.8	85.6	14.74	74.3	28.7	2730	1.075	2.20
6600	107.1	85.2	14.69	74.3	28.7	2731	1.075	2.20
6650	107.7	85.0	14.62	74.3	28.7	2731	1.075	2.21
6700	108.5	85.0	14.55	74.3	28.7	2731	1.075	2.23
6750	111.7	86.9	14.32	74.3	28.7	2730	1.075	2.30
6800	113.2	87.4	14.28	74.3	28.7	2730	1.075	2.33
6850	114.8	88.0	14.23	74.3	28.7	2731	1.075	2.36
6900	117.2	89.2	14.15	74.4	28.7	2732	1.075	2.41
6950	119.2	90.0	14.13	74.4	28.7	2734	1.075	2.45
7000	121.3	91.0	14.13	74.4	28.7	2734	1.075	2.49
7050	123.1	91.7	14.16	74.4	28.7	2734	1.075	2.53
7100	124.6	92.2	14.17	74.4	28.7	2734	1.075	2.56
7150	127.0	93.3	14.22	74.4	28.7	2737	1.075	2.61
7200	128.6	93.8	14.24	74.4	28.7	2737	1.075	2.64
7250	129.9	94.1	14.25	74.4	28.7	2737	1.075	2.67
7300	132.0	94.9	14.26	74.5	28.7	2739	1.075	2.71
7350	134.3	95.9	14.24	74.5	28.7	2741	1.075	2.76
7400	136.4	96.8	14.25	74.5	28.7	2741	1.075	2.81
7450	138.7	97.8	14.25	74.5	28.7	2743	1.075	2.85
7500	141.7	99.2	14.21	74.5	28.7	2744	1.076	2.91
7550	144.1	100.2	14.16	74.5	28.7	2744	1.076	2.96
7600	146.3	101.1	14.12	74.5	28.7	2746	1.076	3.01
7650	148.9	102.2	14.06	74.6	28.7	2747	1.076	3.06
7700	151.2	103.1	13.99	74.6	28.7	2747	1.076	3.11
7750	152.9	103.6	13.92	74.6	28.7	2748	1.076	3.14
7800	154.1	103.8	13.82	74.6	28.7	2748	1.076	3.17
7850	154.8	103.6	13.66	74.6	28.7	2750	1.076	3.18
7900	155.3	103.3	13.51	74.6	28.7	2751	1.076	3.19
7950	155.3	102.6	13.38	74.6	28.7	2752	1.076	3.19
8000	155.1	101.8	13.26	74.6	28.7	2754	1.076	3.19
8050	154.6	100.8	13.13	74.7	28.7	2756	1.076	3.18
8100	153.8	99.7	13.05	74.7	28.7	2756	1.076	3.16
8150	152.3	98.2	13.00	74.7	28.7	2757	1.076	3.13
8200	149.3	95.6	13.00	74.7	28.7	2758	1.076	3.07
8250	144.8	92.2	13.00	74.7	28.7	2762	1.076	2.98

Compare new Ctec800s each with 5 hours of light load operation, ECU out of breakin mode

Black 2020, Red 2019, Blue 2018



09/01/19 *SuperFlow WinDyn™ V3.2* *14:34:52*