Aduro Clean Technologies

(ACT on Canadian Stock Exchange, ACTHF on OTC, 9D50 on FSE)

Written by Mariusz Skonieczny of MicroCapExplosions.com

SUMMARY

For years, we have been accustomed to the following message:

"No risk, no reward."

However, sometimes an opportunity comes up that truly offers unbelievable upside with very little risk. I believe that Aduro Clean Technologies is one in a million.

With that being said, on the surface, Aduro looks extremely risky. The company generates no revenues and makes a lot of promises. It says that it has groundbreaking technology to solve a major problem for the world. I cannot tell you how many times I hear such statements. That's why I originally didn't want to look at it. I avoid companies like this like the plague especially when they are trading on the Canadian Stock Exchange, TSXV, or OTC. In this case, Aduro is trading on the Canadian Stock Exchange under the ticker symbol ACT, on the OTC under the ticker symbol ACTHF, and on the FSE under the ticker symbol 9D50.

When you go through all the companies listed on these secondary exchanges, they are all disrupting something. They all have groundbreaking technologies. They all have the next world-class gold deposit. All of them. So, it is easy to get excited.

I really didn't want to look at Aduro but a fellow Voxtur investor kept bugging and bugging me to look at it. Then, when I heard how many shares of Aduro he owned, I realized that when someone smart is putting so much money into an investment idea, there is a good chance that there is something there.

The world is facing a major problem. We are drowning in plastic waste. Only about 10 percent of plastic gets recycled. We've all seen pictures like this on the Internet.

Because this problem grew so big and has been so publicized, governments around the world are now forcing plastic producers to solve this problem by 2025. Don't you love deadlines? I don't when I have to stick to them myself, but I love deadlines when others have to follow them. Without deadlines, solutions to problems get pushed into the future.

On January 27, 2021, more than 40 Canadian companies, governments, and environmental groups announced a plan to recycle or compost 50 percent of the country's plastic packaging by 2025[i]. It is called

the Canada Plastics Pact, and other countries, including the US, have similar agreements. Google “circular economy for plastics by 2025” and read up on the subject.

Because of the plastic pollution problem and the 2025 deadline, plastic producers like Dow Chemical Company, ExxonMobil, Shell, and LG Chem, are scrambling to find a solution. They already told the world that they will have a solution or chosen technology by that deadline. Consequently, they are financially backing chemical recycling companies such as Agilyx, Mura Technology, or PureCycle Technologies, in order to achieve that.

They are plowing hundreds of millions of dollars into these chemical recycling companies. Some of these chemical recycling companies are publicly traded. Their market caps are in the hundreds of millions and even billions of dollars without any meaningful revenues. They don’t even have commercial plants. They just have pilot plants.

- PureCycle Technologies (PCT, Nasdaq) = $1.4 billion market cap, no revenues
- Agilyx (AGXXF, OTC Markets; AGLX-ME, Merkur Market) = $200 million market cap, $4.3 million of revenues
- Quantafuel (QNTFF, OTC Markets; QFUEL-ME, Merkur Market) = $200 million market cap, $500k of revenues
- Gevo (GEVO, Nasdaq) = $500 million market cap, $700k of revenues
- Cielo Waste Solutions (CWSFF, OTC Markets; CVE, CMC) = $50 million, no revenues

However, none of their technologies are solving the plastic recycling problem on a major scale.

- They take too much energy
- They are not scalable
- They only work with certain plastics
- They need subsidies from governments
- They are based on decades-old technologies

The company or companies that can fully or partially solve this problem will make an absolute killing. And if you are an owner of such a company, you can benefit tremendously in a financial way.

Aduro claims to have the solution. It successfully developed a technology to chemically recycle plastic by using water. Also, the technology

- operates at lower temperatures than traditional technologies, resulting in less energy use
- has lower OPEX and CAPEX
- works will all types of plastics
- works on a small scale and is scalable on a large scale
- does not need governmental subsidies

The upside of Aduro is absolutely massive. I would say that 50 to 100x is possible.

MARGIN OF SAFETY

I can spend all day long talking about the upside and trying to convince you that Aduro is a fantastic investment, but one of the most important things is that we need to know is the downside. In other words, we need to know our margin of safety.

Here is what happens when there is a big promise and no margin of safety.

Cielo Waste Solutions is a company that went public in 2012. When Aduro went public, Cielo was the darling. Cielo promoted a technology capable of converting municipal waste into renewable diesel. The combination of heavy stock promotion and the market's excitement drove the market cap to CAD $1 billion.

Because the technology did not deliver on its promises and as investors realized that Cielo never owned its IP (rather it was licensed from its founders) and the market cap was $1 billion, the descent from the moon was very painful. The stock price is down 95 percent. The stock is down 50 percent in the last few weeks. When I started studying Aduro, Cielo's market cap was CAD $100 million. Now, literally a few days later, the market cap is CAD $50 million.

Big promise + Lots of Stock Promotion + Large Market Cap = Zero-Margin of Safety

Let's compare this formula to Aduro.

Big promise + Limited Stock Promotion + Tiny Market Cap = Acceptable Margin of Safety

This formula is the reason why I am interested in Aduro. The company appears to have the solution to the plastic recycling problem. They are already in serious talks with major plastic producers who are in desperate need of a solution. The company does almost zero stock promotion. And the market cap is only around CAD $30 million.

I spoke to PennyQueen of the *Stock Therapy with Penny Queen* YouTube channel. She is invested in Aduro. However, she was also invested in Cielo. Here is what she said,

"Cielo was an absolute disaster. They told a lot of lies. A lot of my people lost money. There is a massive difference between Cielo and Aduro. Their character makes a big difference. I met with Aduro's management. The way they set up the compensation plan is a big deal. Ofer [Aduro CEO] is very much against being promotional. If it was up to him, he would prove up the technology and then talk about it. He is not a promotional guy."

The fact that the management is so non-promotional is a huge deal for me especially when the promotion is something that can be improved.

Let's assume that Cielo had the potential to reach CAD $3 billion. Because the company's management was super promotional and the market cap reached CAD $1 billion, the upside was only 3x while the downside was enormous.

Let's assume that Aduro also has the potential to reach a market cap of CAD $3 billion if the technology succeeds and becomes useful in solving the plastic problem for the major plastic producers. What is the upside? Considering that the market cap is around CAD $30 million, the upside is 100x. Of course, I am ignoring future dilution. But I am also ignoring that the upside could easily be CAD $5 billion. When the problem is massive, the problem solver gets rewarded with a huge market cap.

Now just because the market cap is CAD $30 million does not mean the stock cannot go to zero. That's why when I spoke with Ofer Vicus, I asked the following question.

"If something goes wrong and you had to sell your technology right now to somebody, what could you get for it?"

Ofer said that if Aduro went bankrupt, the price would be anywhere between USD $25 to $50 million. If the company went through a licensing assessment and hired McKinsey to do the analysis, the price would probably be around USD $200 million.

So, here is our margin of safety. Of course, this came straight from the CEO's mouth. I do believe this because I did enough due diligence to know that Ofer is trustworthy. If you are not comfortable with this, you have to do your own work to decide if you can trust Ofer or not. I will post two calls on YouTube with the management so hopefully this will help you assess the trustworthiness of the management. The first call will be with the CEO and CFO. The second call will be with the CEO and Dr. Anil Jhawar, Phd in Chemical and Biochemical Engineering from Western University. The second call is about details of the chemistry.

The bottom line is this. The market cap is around CAD $30 million and the upside is CAD $3 billion and probably more. The technology can be fire sold for USD $25 million to $50 million if the company got in trouble. Based on this, Aduro appears to be a very low-risk opportunity with a massive upside.

This is long-term. In the short term, you know that the stock price can go anywhere, especially in this insane market.

ADURO TECHNOLOGY

Plastics are made of long chains called polymers that can be thousands of molecules long. Each plastic type has different polymer chains. Chemical recycling is breaking those chains into individual units called monomers. The monomers can then be refashioned into polymers, creating plastics.

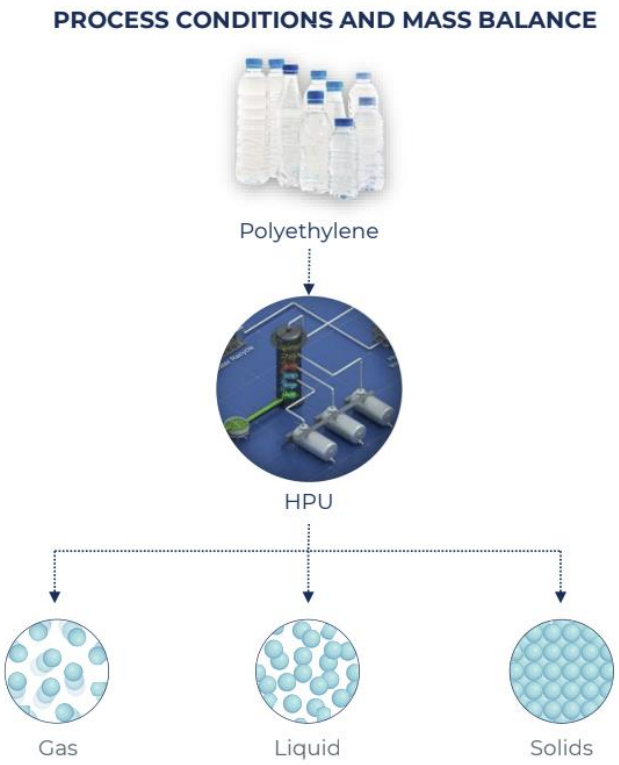
The idea behind chemical recycling is to take physical plastic and break it into chemical components which can be reused for other purposes like other plastic or fuel. While chemically, this is doable as evidenced by lots of companies are doing this, the economic reality is something else.

Some scientists are pointing out that chemical recycling methods use too much energy to be economically viable. It is cheaper to produce plastic from virgin crude oil than it is to produce it from recycled plastic. Also, chemical recycling releases dangerous chemicals during the process. When plastics are broken down, they create monomers, but unfortunately, they also create a variety of chemical byproducts which can pollute the environment.

Aduro developed a new approach to processing waste plastic called chemolysis. The three traditional approaches are thermolysis, solvolysis, and solvation. Here is a partial list of companies that work with these approaches.

Thermolysis (another name is pyrolysis) is the heat transfer to kill the molecules in order to crack them down. Thermolysis is the thermal degradation of plastic waste at different temperatures, in the absence of oxygen, to produce liquid oil. Solvolysis is the process of breaking down polystyrene into monomers using solvents. Solvation is a mechanical activity. This is separating all the dirt and the garbage from the plastic.

Aduro, over the last 13 years, developed a novel chemical conversion process to transform waste plastic into renewable fuels or plastics. In other words, the waste plastic can be converted from plastic to gas, liquid, or solids.



This is exactly what the governments around the world want – a circular economy of plastic. Instead of producing plastic for one-time use, they want plastic to be used and reused over and over again to limit environmental pollution.

Aduro's technology wasn't originally developed for this purpose. Originally, it was developed to upgrade heavy oil. Only later, the technology was redirected and reconfigured to upcycle plastics.

The company started working on research and development in 2009. Two years later, or in 2011, the official formation of the company took place. In April 2021, it went public through a reverse merger.

Some companies in this space are public while others are private. Whether they are private or public, they need financial backing to continue progressing their technologies. Oftentimes, this backing comes from major oil or plastic companies that are desperate for the plastic recycling solution to meet the 2025 deadline.

Aduro was going to stay private longer. It was working with a major oil company to finance the pilot, but then Covid happened. We all know what happened to oil in 2020 – the price of oil went negative. Consequently, the potential backer went on survival mode and Aduro was left with no financing partner and lots of bills to pay. In order to progress its technology, the company went public to get access to capital markets.

Where is the company with its technology now?

Aduro's technology works. It leverages the unique properties of water to accomplish this. It uses cellulose, ethanol, and glycerol as chemical agents and water as the medium to facilitate a chemical reaction. The

technology has been tested in the labs' hundreds of times. It was even validated by a reputable third party, Dr. Paul Charpentier. So, this is not an R&D play.

"We established the underlying Science of Hydrochemolitic technology (HCT) several years ago, so the critical path commercialization does not depend on research and discovery, but on the well-established chemical engineering practices."

The technology is so groundbreaking that Aduro does not even have to advertise too hard. Potential customers are reaching out. Over the last 10 months, potential customer engagement has skyrocketed. This is completely understandable. The plastic companies need to solve a major problem by 2025. They have spent hundreds of millions of dollars on various technologies and now Aduro is the new kid on the block that developed a technology that hasn't been seen in 30 years. Of course, they are going to call and engage.

There are 13 possible engagements from 7 countries. Negotiations are already underway. Major players want this technology because the technology works while consuming less energy and generating lower emissions. Energy consumption and lower emissions are a huge deal. Here is a list of advantages of Aduro's technology.

If Aduro's technology is not about the R&D, then what is everybody waiting for? Everybody is waiting for the pilot plant to be finished and working.

"Achieving the First Milestone really is more of a formality that simply shows the same chemistry we've done a hundred times in small laboratory batch reactors also works in the regime of continuous-flow commercial systems."

Aduro announced two partnerships leading to pilots. One partnership is with Switch Energy from Ontario Canada and another partnership is with Brightlands Chemelot from Nerherlands. Currently, the company is building two sets of pilot plants: R2 and R3. R2 is few kilograms per hour and R3 is three to five tons per day. R2 is expected to be finished in August/September 2022 and R3 in 2023.

Brightlands Chemelot is one of the largest hubs for chemical recycling. Brightlands, one of the most advanced research recycling facilities in the world, was so impressed with Aduro's technology that it is inviting Aduro to build a pilot plant in their facility. According to Aduro's CEO, Brightlands confirmed that they haven't seen anything like what Aduro has for the last 20 to 30 years. They have looked at all the recycling technologies out there for many years and there hasn't been anything like this available for the past 20 to 30 years.

Aduro is building these pilots on its own dime. This is what the April 28, 2022 private placement of CAD $2.3 million was for. As of now, the company has about CAD $2.35 million in the bank. Also, since the latest financials, Aduro has spent CAD $1.2 million outside of their monthly burn of CAD $200k on CAPEX.

Aduro Clean Technologies Inc. (formerly Dimension Five Technologies Inc.)
Consolidated Statements of Financial Position
Expressed in Canadian Dollars

	February 28, 2022	May 31, 2021
	$ 2,350,000 New Cash Balance	
ASSETS	$ 1,200,000 CAPEX Since Latest Financials	
Current	$ 2,350,000 Privte Placement	
Cash and cash equivalents	**$ 1,200,338**	$ 2,860,016
Prepaid expenses	**107,360**	-
Trade and other receivables (Note 8)	**170,729**	76,880
	1,478,427	2,936,896
Non-current		
Property and equipment	**214,410**	55,825
Right of use assets	**-**	15,014
Intangible assets (Note 5)	**8,412**	21,232
	222,822	92,071
Total Assets	**$ 1,701,249**	$ 3,028,967
LIABILITIES AND SHAREHOLDERS' EQUITY		
Current		
Trade payables and other current liabilities	**$ 554,374**	$ 529,135
Project contributions payable	**-**	12,138
Lease liability – current portion	**-**	12,610
Debt - current portion (Note 6)	**30,767**	30,496
	585,141	584,379
Non-current		
Debt – non-current portion (Note 6)	**35,101**	625,816
Shareholders' equity (Note 7)		
Share capital	**5,317,798**	3,483,304
Warrant reserve	**1,606,801**	1,775,651
Contributed surplus	**2,418,023**	1,075,164
Accumulated deficit	**(8,261,615)**	(4,515,347)
	1,081,007	1,818,772
Total Liabilities and Shareholders' Equity	**$ 1,701,249**	$ 3,028,967

Nature and continuance of operations (Note 1)
Subsequent events (Note 17)

The remaining costs of R2 are minimal. The cost of R3 is going to be between CAD $4.5 to CAD $5.5 million. Clearly, there is not enough money in the bank to finish the R3. Additionally, the company will likely need to spend CAD $1 million to finalize the second lab. This means that over the next 12 to 18 months, Aduro would need a total of CAD $6.5 million to reach to semi-commercial stage or R3. Thus, the company will need to raise an extra CAD $5 million over the next 12 months. That's said, Aduro's management expects to get grants and other forms of non-dilutive funding that will minimize their capital needs significantly and they are very confident that as they managed to do so over the past 12 years.

Also, here is how much money Aduro burned over the last 9 months. Keep in mind, there are no revenues. This is an asset play at this point.

Aduro Clean Technologies Inc. (formerly Dimension Five Technologies Inc.)
Consolidated Statements of Cash Flows
Expressed in Canadian Dollars

		Nine months ended February 28, 2022		Nine months ended February 28, 2021
Operating Activities				
Net loss for the period	$	(3,746,268)	$	(470,537)
Items not affecting cash:				
Depreciation and amortization		42,971		42,741
Share-based payment expense (Note 13)		1,342,859		11,073
Interest expense		27,092		34,272
Unrealized gain on derecognition of asset		-		(369)
Loss (Gain) on settlement of debt (Note 6)		245,313		(7,500)
Unrealized foreign exchange (Note 6)		4,061		(3,720)
Changes in non-cash working capital (Note 16)		(186,696)		(20,173)
Cash used in operating activities		(2,270,668)		(414,213)
Financing Activities				
Issue of common shares, net of issuing costs		850,201		-
Loan advance made to legal subsidiary prior to RTO		-		411,300
Finance lease repayments		(17,406)		(34,162)
Term and working capital loan repayments (Note 6)		(52,538)		(1,019)
Cash provided by financing activities		780,257		376,119
Investing activities				
Property and equipment acquired		(169,267)		(14,433)
Cash used by investing activities		(169,267)		(14,433)
Change in cash during the period		(1,659,678)		(52,527)
Cash and cash equivalents, start of period		2,860,016		45,420
Cash and cash equivalents, end of period	$	1,200,338	$	(7,107)
Supplementary disclosure of non-cash activities				
Common shares issued to settle outstanding balance in accounts payable	$	-	$	163,743
Shares issued in exchange for redeeming convertible notes (Note 6)		(558,719)		-
Right of use assets acquired		(4,455)		-
Increase in lease liability from amendment in lease		4,455		-

The last private placement was closed on April 28, 2022. The company raised CAD $2.35 million at CAD $0.70 with a full warrant at CAD $1.00.

Finishing R2 is a game-changer. The company is already engaging with potential customers by using its badge reactors but R2 will unlock a tremendous amount of operational value. This is because there is a pipeline of potential customers waiting. They want Aduro to give them data. They want to provide Aduro with feedstock to process and return data to them.

From Aduro's point of view in the public markets, this is extremely important. This will allow the company to create lots of news flow to engage with the market. I don't know about you but I want to own shares of Aduro before R2 is finished creating all the excitement in the market.

I asked the CEO the following question:

"Aduro is not about R&D anymore. You proved the chemistry. You proved the R&D. So, it is about the engineering. That's why you are building the pilot plant. What is the probability that the plant is not going to work the way your research does?"

He said that there is no such probability at all. It will work. The question is how efficient it will be and he thinks that the probability of high efficiency is fairly high. This is because it is not about the plant. It is about the conditions and chemistry behind it. Because Aduro's process does not involve high temperatures, some of the troubles of other approaches are not there.

Aduro's CFO, Mena Beshay told me that their scientists are beyond confident. He said, "They are scientists, not promoters."

Also, to do the third-party validation, Aduro already proved the successful working for R2 on bitumen and asphaltene. Not only that, the R2 worked even better than the batch system. The process for plastic is almost identical. The only difference is how you feed the material. However, bitumen and asphaltene are much harder to chemically recycle than plastic. This is why Audro's scientists are so confident – they successfully proved R2 on a much harder-to-recycle material. Plastic is easier.

Aduro's approach is completely new. Such an approach was not available in the last 10 years. Nobody has ever done it. Most of the other technologies have DNAs from the last 50 to 100 years. They are decades-old approaches.

Most of the other approaches use a tremendous amount of heat. This is problematic because different plastics react differently to heat. Consequently, this process requires mechanical separation at the beginning. Also, these companies have to be selective what type of plastic they put through the systems. They only allow the best feedstock which is expensive and hard to source.

Aduro doesn't need to do that. It can place all types of plastics into its process consisting of several reactors with different conditions. Imagine, three different plastic types moving through an assembly line. All three are moving through reactor one. The reactor one has certain conditions in order to recycle plastic-type 1. Plastic-type 2 and 3 don't react in reactor number 1 because they don't match the conditions. Both plastic types 2 and 3 move to the second reactor. The second reactor recycles plastic-type number 2 because it matches the conditions. Plastic number 3 continues to reactor 3 where it gets recycled under different conditions. This separation takes place inside the reactors instead of requiring mechanical separation beforehand. Also, Aduro's technology can handle contaminated plastic.

For this reason, companies that use traditional chemical recycling approaches are not even considered Aduro's competitors. They can't even process 80 percent of plastics. They don't accept the majority of

feedstock. Aduro can take what they can't. Also, Aduro can operate in jurisdictions that others cannot because of a lack of subsidies.

ECONOMICS

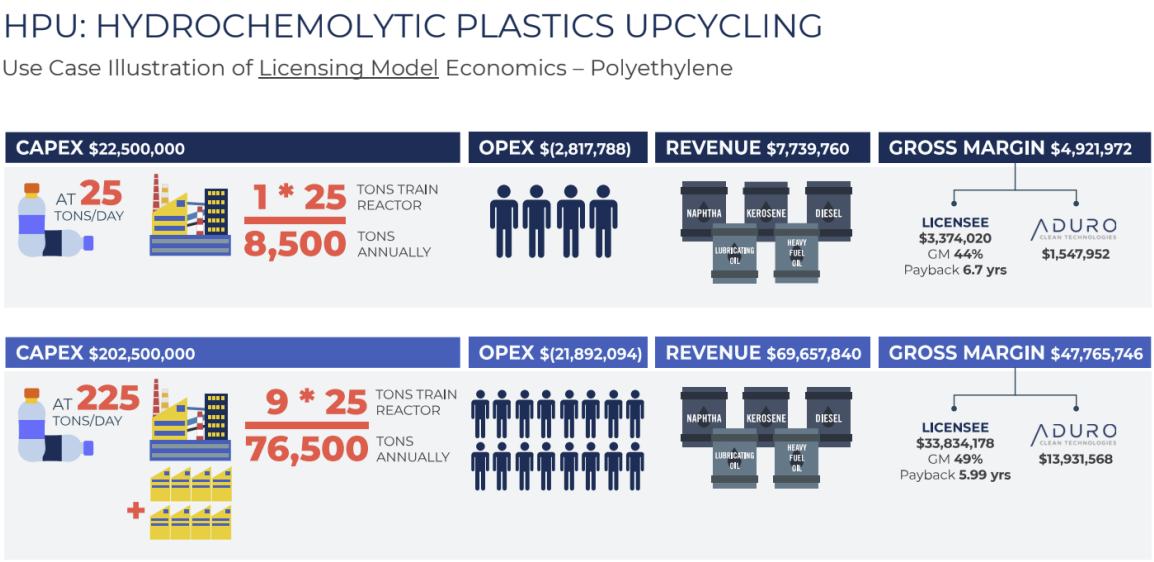
The thesis behind Aduro is pretty simple – show the market that the technology works as promised via R2 and R3 and the stock soars. It is as simple as that. Revenues don't matter. PureCycle Technologies has a market cap of $1.4 billion with no revenues. Cielo Waste Solutions had a market cap of CAD $1 billion with no revenues. It only collapsed because the technology did not deliver on its promises.

In other words, plastic recycling technology is so important to the world that even with no revenues and just a working pilot, Aduro's market cap can reach billions of dollars.

Then, from that point, the company can decide how to monetize this asset. It can sell it to a hungry plastic producer or it can develop a business around it. The good part about Aduro's technology is that it was designed for profitability from the get-go.

To create a business around the assets, the company can go the licensing route, build its own recycling facilities around the world, or use the combination of both.

Here is how the licensing model would work.



Scenarios 1: Customer builds 25 tons per day recycling facility for $22.5 million and Aduro receives $1.5 million of high margin revenues per year.

Scenario 2: Customer builds 225 tons per day recycling facility for $202 million and Aduro receives $14 million of high margin revenues per year.

At first, I wasn't excited about this business model because a customer has to spend serious money in order for Aduro to generate revenues. But because of the 2025 deadline, the plastic producers have to invest serious money into recycling facilities. They are desperate for a solution. If they accept Aduro's

technology, they will spend the money. This is not a problem. In fact, many of these companies have spent several hundred million dollars on one of the other three approaches and are stuck with solutions that don't work economically.

Here is how the owner/operator business model would work versus the licensing business model.

HPU: HYDROCHEMOLYTIC PLASTICS UPCYCLING

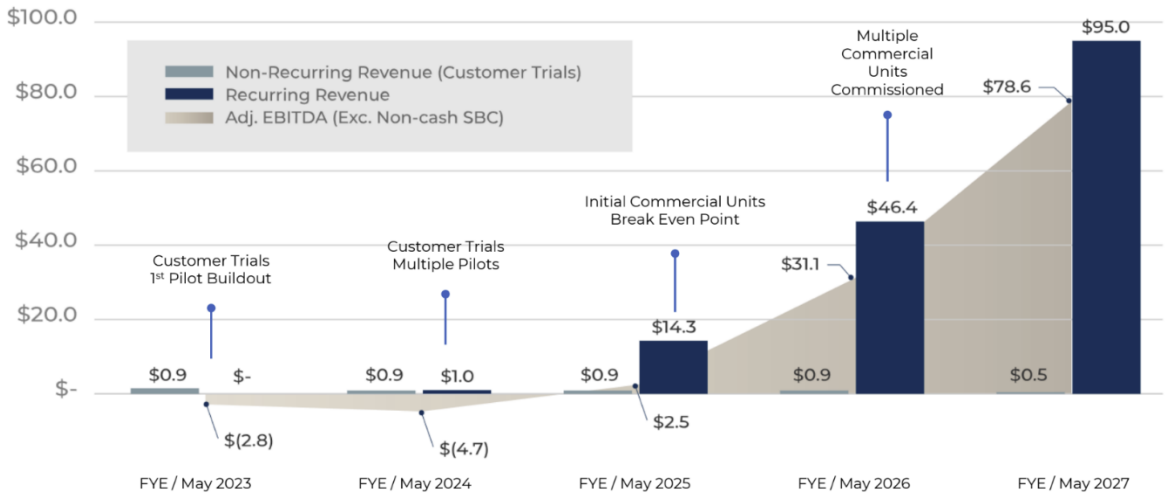
Use Case Illustration of Economics: Owned & Operated Vs. Licensing

	25 Tons/day = 1 * 25 Tons Train Reactor 8,500 Tons Annually		**75 Tons/day** = 3 * 25 Tons Train Reactors 25,500 Tons Annually		**225 Tons/day** = 9 * 25 Tons Train Reactors 76,500 Tons Annually	
	LICENSING	OWNED & OPERATED	LICENSING	OWNED & OPERATED	LICENSING	OWNED & OPERATED
CAPEX	22,500,000	22,500,000	67,500,000	67,500,000	202,500,000	202,500,000
Revenue **	**7,739,760**	**7,739,760**	**23,219,280**	**23,219,280**	**69,657,840**	**69,657,840**
Operating Expense	(2,817,788)	(2,817,788)	(7,637,365)	(7,637,365)	(21,892,094)	(21,892,094)
Feedstock Acquisition *	–	(1,700,000)	–	(5,100,000)	–	(15,300,000)
Aduro Licensing Fee **	(1,547,952)	–	(4,643,856)	–	(13,931,568)	–
Gross Margin	**3,374,020**	**3,221,972**	**10,938,059**	**10,481,915**	**33,834,178**	**32,465,746**
GM %	**44%**	**42%**	**47%**	**45%**	**49%**	**47%**
Payback 'years'	**6.67**	**6.98**	**6.17**	**6.44**	**5.99**	**6.24**
For Aduro:						
Gross Margin	**1,547,952**	**3,221,972**	**4,643,856**	**10,481,915**	**13,931,568**	**32,465,746**
CAPEX Required	N/A	Yes	N/A	Yes	N/A	Yes
Payback 'years'	N/A	**6.98**	N/A	**6.44**	N/A	**6.24**

Obviously, Aduro could just build recycling plants around the world and generate more revenues and profits. I would prefer the licensing route because licensing route is capital light. Somebody else pays for the CAPEX and Aduro collects royalty which is the highest quality revenue available.

With that being said, this is not for me to decide. I am interested in making money here. If an investment in Aduro turns out to be successful, the first 10 to 20x will come from R2 and R3 working. I will worry about the second 10x when the time comes.

In the investor presentation, Aduro has some revenue and EBITDA projections.



This is just based on engagement from small players. These projections were made before the company started getting overwhelmed with interest by the biggest players in the industry. If one big player chooses Aduro's technology, then revenues from one player per year would be $100 million.

Focus on what matters – When Aduro shows that the technology works on R2 and R3, the stock will soar multiples from the current level.

CONCLUSION

As you can see, Aduro is an asset play. Yes, at some point, revenues and profits can be generated, but at this point, this is an asset play. The technology has been proven hundreds of times through research and development in the lab. Potential customers are already engaging which is pretty much unheard of in this industry. Usually, there is no engagement until the pilot is done. In this case, the technology is so groundbreaking that potential customers are already engaging with the company even though R2 and R3 are not done. This is because they desperately need a solution to plastic waste by 2025. (Did I mention that I love deadlines?) They poured hundreds of millions of dollars into other technologies because there was nothing better until of course, Aduro showed up.

Now the only question left is whether you believe in the thesis? You have to do a lot of work and due diligence to answer this question. Good luck.

---

[i] Toloken, Steve. "Canada Launches Plastic Pact, Seeks 50% Recycling, Composting Rate." *Sustainable Plastics*. Sustainable Plastics, 29 Jan. 2021. Web. 19 Jun. 2022