

ASM Technologies

FY2022 Analysis and Thoughts



ASM Technologies Limited

<https://www.asmltd.com/>

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Executive Summary

Anyone that is a veteran of the Indian stock market can vouch for the power of compounding interest and playing the long game, especially in a country like India that has a strong macroeconomic foundation and promising future prospects. Of course, sitting on any random stock for an indefinite amount of time does not do one any favours. The most profound long-term gains can be realized when you buy into a well-run company that is operating in an industry whose potential is yet to be fully understood and appreciated.

In terms of examples, imagine if you bought and held onto Bajaj Finance shares before the acronym NBFC became commonplace, or perhaps Info Edge shares before you got a high-speed Internet connection at home. How about buying Pidilite Industries shares the first time you used Fevicol?

While Internet penetration and the flow of information is at an all-time high, I still believe that there are multiple opportunities in their nascent stage that are yet to enter the public gaze. Any long-term investor in IT Services companies has no doubt probably enjoyed market beating returns for some time now. However, astute investors may have noticed that IT Services is a maturing industry. **Forward-thinking firms in this industry have already started making meaningful strides in another emerging industry, Engineering, Research and Development (ER&D).**

ER&D services are those that augment or manage processes that are associated with the creation of a product or service, as well as those associated with maximizing the life span and optimizing the yield associated with a product or asset. ER&D services can include engineering analysis, product design/co-design, product lifecycle management, and quality assurance, all the way to prototyping and manufacturing.

Courtesy of a good friend that I met while briefly working in venture capital (Hi Priyanka!), I was introduced to a company that is well positioned to take advantage of the rise of ER&D in India. The company is ASM Technologies, a microcap company at this point, with the following characteristics:

- FY21-FY22 Revenue Growth nearing 40%
- FY21-FY22 PAT Growth of ~62%
- 3-year Revenue CAGR of ~30%
- Trading at a measly 2.37 Market Cap/TTM Sales multiple
- Deep expertise in engineering services to the semiconductor industry
- JV partner in a newly launched entity that is manufacturing equipment for the semiconductor and solar industries
- Owner of a subsidiary that is one of Asia's largest fixtures manufacturers
- Early investor in an SD WAN solutions provider (now 25% owned by Bharti Airtel)

There is a lot more that I can share, but it would require that you read the rest of the report. In my view, contingent on good execution, I am of the belief that this company's stock price **offers investors the opportunity for a 144% upside** from current levels.

1. ASM Technologies – An Overview

Established in 1992, ASM Technologies Limited is a publicly-listed company in India with a global presence in the USA, Singapore, UK, Canada, Mexico and Japan. With over two decades of experience, ASM has been providing world-class consulting and product development services in the areas of **Engineering Services** and **Product R&D** with successful Offshore Development & Support Centres in India and Overseas for its global clientele.

Said another way, ASM Technologies is primarily an **Engineering Research & Development (ER&D)** company.

1.1 Vision

To be a global leader, committed to the customer in providing the technology solutions with the highest degree of excellence, quality and value by an agile team and efficient process.

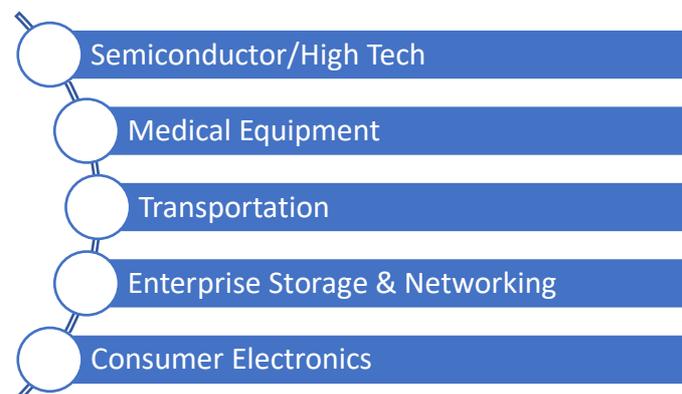
1.2 Mission

To commit us to the highest degree of excellence and customer support with a view to providing superior value to clients.

1.3 Scope of Offerings

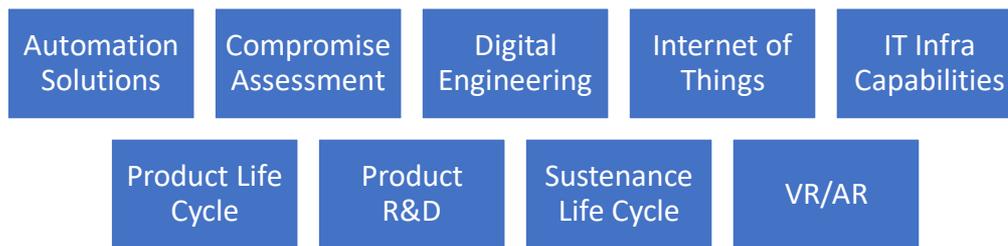
After reviewing the lists below, you will realize the breath of ASM's offerings, which will appear a little surprising given the small size of the organization. What is clear is that ASM Technologies aims to be a cutting-edge engineering research and development (ER&D) company.

1.3.1 Industries Served



I prefer this new overview of the industries served by the company, which is from the latest Annual Report. If you visit the company website (as of the date of this note), the industries listed are automotive, avionics, high-tech, medical and semiconductor. Additionally, though separate, the details of the high-tech and semiconductor industries had considerable overlap, and I prefer the two being combined. Finally, the enterprise storage and networking and consumer electronics industries being added highlights the growing importance of these domains to the company.

1.3.2 Services



2. Annual Report Snippets

When I reviewed the Annual Report, I saw a marked improvement in terms of communicating the company’s business, financial position, and future outlook, when compared to the FY2021 Annual Report. Apart from the financials (for which a separate section has been made in this note), see below for snippets from various sections the report that caught my attention. *Any comments of mine about the snippets have been italicized and are in green.*

2.1 Letter to the Shareholder

In 2021, we continued to grow our presence in Engineering Services across multiple industry verticals. **In the high-tech space, we have strengthened our foothold in the semiconductor and electronics industries.** We have also scaled our offerings in manufacturing services from our existing capabilities like workholding solutions, laser technology and precision machining to the digital expertise of automation, robotics and vision systems, all with a comprehensive software stack.

The semiconductor industry will remain a critical growth area for the company, and I intend to inquire about the details of new and existing client relationships during the company’s AGM.

Our Value Engineering efforts began with an investment in manufacturing several samples for customer qualification. In the past year, we have expanded to working with over **25 global equipment manufacturers** to provide Value Engineering services through enhancements and upgrades with robust field support. Some of the new geographies in this vertical include **Vietnam, Thailand, Brazil, and Japan.**

It is good to see a large number of global equipment manufacturers, along with the expansion to new geographies. I am pleased to see Vietnam on this list, due to its recent rise as a manufacturing powerhouse, which tells me that the company is taking advantage of the shifting global industrial landscape.

ASM has also entered into a joint venture partnership with Hind High Vacuum Company Pvt. Ltd. Called ASM-HHV Engineering Pvt Ltd, the focus of this venture would be the semiconductor and solar industries. The combined capabilities and infrastructure of our

companies include ISO 7 and ISO 8 clean rooms, lithography labs, extensive metrology testing facilities, and gas management for pyrophoric gases. These capabilities pave the way for us to rapidly grow our design-led manufacturing initiative.

The joint venture is game changing news, further underscoring the importance of the semiconductor industry to ASM. It is an attempt at forward integration, where the company will be able to go beyond design services and actually manufacture sub-assemblies and components for the industry. The [JV website](#) does a good job of highlighting its capabilities and strengths. With India's first semiconductor-focused equipment manufacturing facility, management in both companies are hopeful that the new entity will play a pivotal role in the country's rapidly evolving semiconductor landscape

Our existing work with Netherlands-based EclecticIQ, a leader in the cybersecurity space, has now grown to a **Managed Service Provider partnership** for their Endpoint Detection and Response (EDR) technology.

Though not quite within the realm of ER&D, this Managed Service Provider (MSP) partnership allows ASM to offer value added IT services in the lucrative cybersecurity domain. For some historical context, ASM Ventures invested in PolyLogyx, a company was acquired by EclecticIQ for its expertise in endpoint and cloud workload threat detection and response technologies. The fact that ASM now has an MSP partnership with EclecticIQ speaks to their ability in maintaining and deepening relationships with companies with which they share a history.

We are also pleased to share that **Airtel acquired 25% of Lavelle Networks**, which is a part of the ASM Ventures portfolio. We have been supporting Lavelle Networks for several years with our robust product engineering offerings.

This is another ASM Ventures success story. Airtel's 25% stake conveys how serious it is about boosting its Network as a Service (NaaS) capabilities. Lavelle Networks software defined software-define wide area network (SD-WAN) solutions will serve a critical role in this endeavour. SD-WAN is the necessary arsenal for enterprises to transform and future-proof their network infrastructure in this digital age. Its market in India is expected to grow exponentially at a CAGR of 55% in 2022-2026. As per F&S End-User Survey 2021, about 62% of enterprises plan to deploy SD-WAN across their organization in the next 1-2 years. Some of the major drivers which would contribute to this phenomenal run include the need for seamless management of Hybrid Networks, faster deployment of new sites, and network cost-efficiency.

We plan to increase our Engineering Research and Development (ER&D) spend, increase our global presence with decentralised/remote ER&D teams, and implement new procedures to streamline our **hybrid work model**.

I appreciate the company's ongoing commitment to the hybrid work model, which will aid in its continued success. It recently opened an additional office in Salem, Tamil Nadu. This move shows how the company is not averse to taking the road less travelled and how it realizes the potential that can be unlocked by building a presence outside of the metros.

To facilitate these plans for growth, we have expanded our state-of-the-art digital engineering services facility in Bengaluru by an **additional 35,000 square feet** and also opened a second design-led manufacturing facility with the latest machines and tools in Chennai.

I do not have much to add here except to state that a meaningful expansion in the company's physical presence conveys confidence about its future prospects.

2.2 Letter from the MD, Forms & Gears

During the past year we have undertaken a major expansion by setting up a second state of the art manufacturing facility in Guindy. We have added a battery of Machining centres from Mazak, Fanuc and DMG Mori along with CNC Turning Centres, Grinders, Temperature controlled inspection facilities equipped with Zeiss CMMs and a whole range of other inspection equipment. **This is part of a four-phase expansion project** that we have envisioned to increase our market share and presence in the electronics segment over the next few years.

The commitment to Forms & Gears' expansion is a welcome sign. I am of the view that this ASM subsidiary, which is one of Asia's largest fixtures manufacturers, can be a growth engine for the company going forward.

We have also bagged orders from MNCs in the Electronics segment and have supplied fixtures to plants in India and China. We have developed and supplied highly intricate and accurate fixtures for assembly and welding of PCB boards of various shapes, sizes, intricacies and tolerances.

Given the growing importance of the electronics industry, and the tight tolerances and precision that it requires equipment manufacturers to work with, Forms & Gears' ability to grow in the space is a positive sign.

For one of India's leading consumer electronics brands that specialises in audio-focused consumer electronics, including wireless earbuds, wired headphones, wireless speakers, home audio equipment, smart watches etc, we developed a series of fixtures to assemble ear pods and charging cases.

While we can make an informed guess about whom this client may be, the point I wish to make is that Forms is Gears is aware of where new opportunities lie, and tapping into India's nascent and rapidly growing consumer electronics industry is proof of that.

This year, our in-house product, SmartFix 4.0 went through a process of evolution. What started off as an industry 4.0 solution for fixtures has now been expanded to enable intelligence on legacy machines, test rigs, automation, special equipment etc. SmartFix 4.0 has grown over the past year both in depth and breadth. While we continued to contribute to deliver analytical insights to industry leaders, **the cross disciplinary effort of design, hardware and software helped conceive new use cases for us.**

Smart Fix 4.0 is a technology that can transform any fixture/workholding into a smart device, which will be able to collect, analyze and transmit data to end-users (operators, engineers, plant managers, etc.). Data can include tool wear analytics, forces (pressure, torque, vibrations), and machine & operator efficiency metrics, among other things. As manufacturing operations become more complex, and rising competition increases the emphasis on efficiency, Smart Fix technology will have a meaningful role to play in the industry.

2.3 Management Discussion and Analysis Report

Coming out of the pandemic, we are witnessing gradual but steady uptick in global ER&D spend. During the 2020 Pulse Survey, India were focusing on 'ensuring business continuity' and 'ability to drive scale'. However, the 2022 survey made it clear that the attention has now shifted to 'driving innovation out of the centre'. **Given the rapidly evolving technology and push to shorter innovation cycles and faster time to market, co-creation is emerging as the new innovation model of choice**, with 70 percent of the respondent companies exploring (or already involved in) co-creation with either start-ups or **Engineering Service Providers (ESPs)**. About 85 percent of the surveyed organisations already leverage a **Global Capability Centre (GCC)** for their ER&D activities, **with 75 percent of such centres being located in India**. More companies are expected to establish or increase their India presence in the next few years owing to increasing comfort levels with decentralised/remote ER&D teams and proven ER&D ecosystem that India offers.

*With the co-creation gaining acceptance in the industry, and the fact that India is proving its mettle as an ER&D hub, it is clear that **ASM Technologies is in the right place, at the right time**.*

Our process driven engineering and planning ensures in delivering quality products in the optimum time and cost. ASM is a pioneer in the Semiconductor and Electronic Equipment, Automotive and Product R&D industries. As a System Design House, ASM is fully equipped to handle complex Software, Electronics, Mechanical and Embedded software design and development to complete the product under one roof. **Further, working prototype and manufacturing results in the entire product realization for the client.**

ASM's progress as a full suite ER&D company is commendable. Instead of solely working on design, and then passing the baton over to another service provider, the company's growing prototyping and manufacturing capabilities (especially in regard to equipment for the semiconductor industry through its JV with Hind High Vacuum) will give it an edge over other ER&D companies.

The total employee strength of the company, as on 31st March, 2022 was 1191 as compared to 1107 the previous year.

*The only point I wish to add here is that while the company's revenue grew 39.51%, and profit after tax grew 61.62% from FY2021 to FY2022, headcount only increased by 7.59%. **This is a sign of increasing output per employee**. I will keep monitoring output per employee on a periodic basis, to see if it has the potential to keep increasing.*

3. Semiconductor Industry Offerings

While it is clear that ASM offers a range of services to a variety of industries, its capabilities in the semiconductor industry are of particular interest to me, as I foresee it contributing to a disproportionate amount of the company's growth in the near and medium term.

[As per its website](#), ASM has over **2000+ person years of experience** in serving reputed semiconductor equipment manufacturing companies. As of the financial year 2021, they counted Applied Materials as one of their clients.

I will try to uncover the details of ASM's present relationship with Applied Materials, and any new clients in the semiconductor industry that may have they onboarded in FY2022 during the company's Annual General Meeting (AGM). For some context, Applied Materials supplies equipment, services and software for the manufacturing of semiconductor (integrated circuit) chips for electronics, flat panel displays for computers, smartphones, televisions, and solar products.

ASM's semiconductor practice covers the following domains:

- VLSI/FPGA design services
- IP Integration
- Platform and Sub-System Solutions (*The most important domain, in my estimation*)
- Verification and Validation

Before diving deeper into the platform and sub-systems solutions, I will introduce a few definitions:

Very-large-scale integration (VLSI) is the process of creating an **integrated circuit (IC)** by combining thousands of transistors into a single chip. VLSI began in the 1970s when complex semiconductor and communication technologies were being developed. The **microprocessor** is a VLSI device.

Field Programmable Gate Arrays (FPGAs) are semiconductor devices that are based around a matrix of configurable logic blocks (CLBs) connected via programmable interconnects. **FPGAs can be reprogrammed** to desired application or functionality requirements after manufacturing.

In electronic design, a **semiconductor intellectual property core (SIP core), IP core, or IP block** is a reusable unit of logic, cell, or integrated circuit layout design that is the intellectual property of one party. IP cores can be licensed to another party or owned and used by a single party. The term comes from the licensing of the patent or source code copyright that exists in the design. **Designers of application-specific integrated circuits (ASIC) and systems of field-programmable gate array (FPGA) logic can use IP cores as building blocks.**

3.1 Platform and Sub-System Solutions

To begin with, the company offers the following services for capital process equipment in the semiconductor, solar and display verticals:

- **Design and Value Engineering,**
- **Complex Prototyping, and**
- **Competitive Manufacturing**

The company has experience providing solutions for just about every aspect of the semiconductor manufacturing process. Though this is not an exhaustive list, see below for the details about some of the systems/sub-systems that ASM has worked with.

While going through the descriptions, you may start to appreciate the immense complexity and the level of precision involved in the work that the company does.

System/Sub-System	Details
Physical Vapour Deposition (PVD)	PVD describes a range of vacuum deposition methods which can be used to produce thin films and coatings. Vacuum deposition methods refer to processes that deposit layers of material on an atom-by-atom basis on a solid surface.
Chemical Vapour Deposition (CVD)	CVD also describes a range of vacuum deposition methods which can be used to produce thin films and coatings. It differs from PVD because, in this case, the coating material will be in a gaseous state, unlike the solid state for PVD. And instead of merely being placed, the gaseous molecules react with the substrate.
Etching	In semiconductor device fabrication, etching refers to any technology that will selectively remove material from a thin film on a substrate (with or without prior structures on its surface) and by this removal create a pattern of that material on the substrate.
Thermal Systems	Thermal systems, which are used to heat silicon wafers are used for a wide variety of applications in semiconductor manufacturing including dopant activation, thermal oxidation, metal reflow and chemical vapor deposition. There are a variety of thermal processes that can be employed, and the company appears to have expertise in rapid thermal processing (RTP) , where

	silicon wafers are heated to temperatures exceeding 1,000°C for not more than a few seconds.
Chemical Mechanical Planarization/Polishing (CMP)	CMP is a critical step that is used multiple times in the semiconductor manufacturing process at each layer of the wafer to remove excess materials and create a smooth surface. This is done through the interaction of a pad and slurry on a polishing tool.
Lithography	Lithography (or more specifically photolithography), is a patterning process in chip manufacturing. The process involves transferring a pattern from a photomask to a substrate. This is primarily done using steppers and scanners, which are equipped with sources of electromagnetic radiation (light).

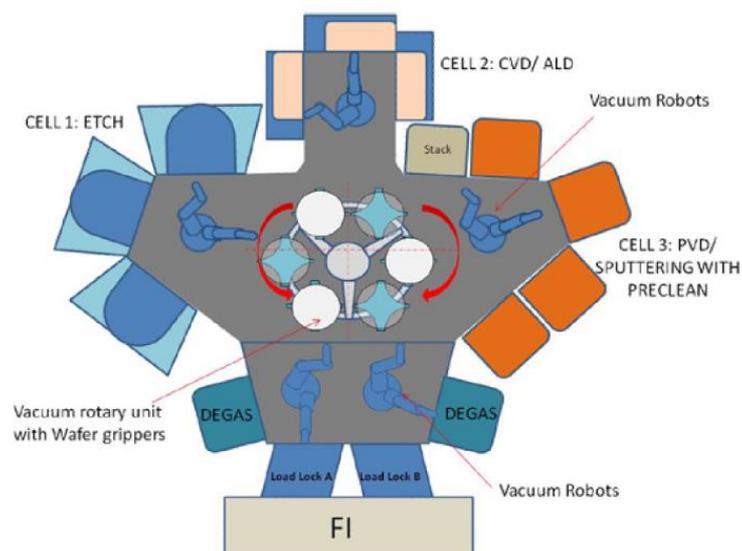
3.2 Continuous Innovation in Systems and Processes

Outside of the systems/sub-systems expertise mentioned in the previous section, I wish to share some examples of customized equipment that has been designed by the company. This illustrates how ASM is committed to continuous innovation, which helps to improve the efficiency of semiconductor manufacturing operations.

3.2.1 Modular Transfer Chamber

A chamber designed to reduce the overall footprint of a working area, and to facilitate the transfer of material from one stage of the process to the next.

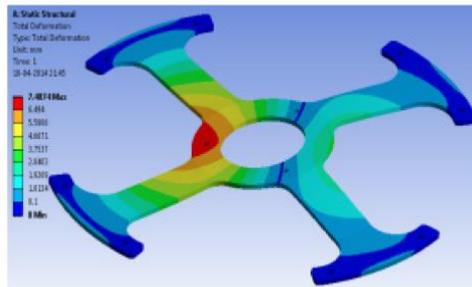
- ◆ ~80% of the common parts from current tools
- ◆ Allows to configure the system with single transfer chamber and multiple process chambers optimized for required recipe
- ◆ Productivity enhancement
- ◆ Reduced floor area
- ◆ Reduced system cost
- ◆ Modular for: 200mm/300mm substrate size



3.2.2 Vacuum Cassette Unit

Material handling equipment for silicon wafers in a vacuum environment.

- ◆ To carry wafers in a vacuum environment
- ◆ It integrates tools in different facilities/ location/ country
- ◆ Will reduce preliminary processes on wafers
- ◆ Easy to carry

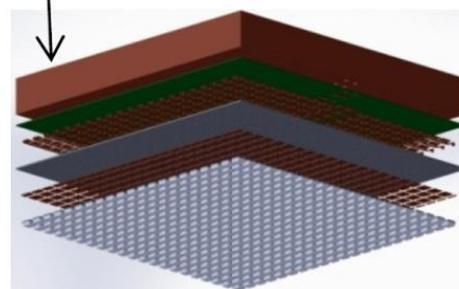
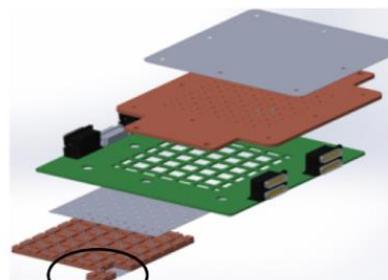
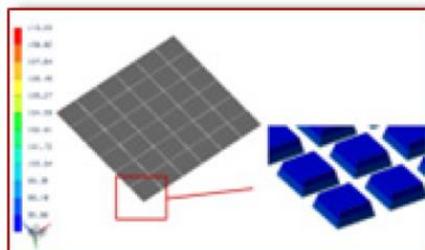
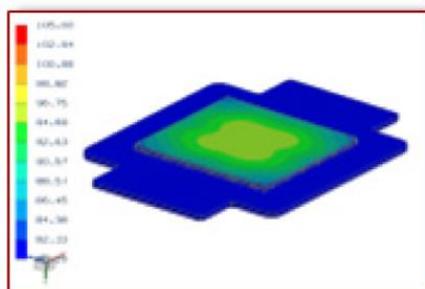


Control Panel

3.2.3 Chamber with Alternate Cost-Effective Heating Unit

An improvement over the existing thermal processing equipment that is available.

- ◆ Solid state heater (Up to 4000 C)
- ◆ Has considerable advantage over conventional heaters
- ◆ Increased efficiency as narrow band light is generated
- ◆ Selective heating mechanism to adopt as per required target area
- ◆ Modular construction for easy maintenance and system scaling
- ◆ Intelligent heating cell elements for diagnostics and control



3.3. Joint Venture with Hind High Vacuum

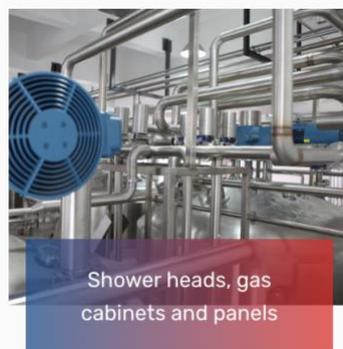
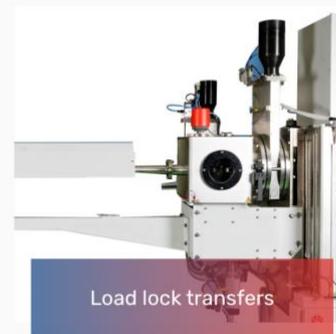
While ASM Technologies has proven itself in the design and prototyping of capital equipment required for the semiconductor industry, what was not clear in the past was its ability to manufacture what it designs (beyond prototyping).

As mentioned earlier in this note, [in February this year](#), ASM and Hind High Vacuum entered into a 50:50 joint venture, named ASM-HHV Engineering. **The new entity will undertake both design-led engineering and as well as the manufacturing of tools, sub-systems, sub-system components and other required components for the semiconductor and solar industries.**

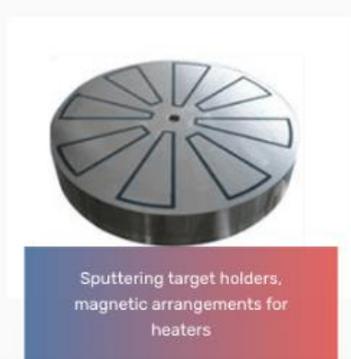
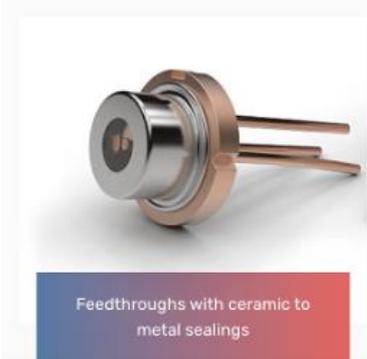
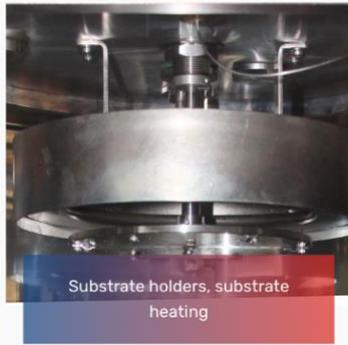
For some context, Hind High Vacuum is India's premier thin film and vacuum technology company, with over 55 years of expertise in the design and manufacture of high vacuum equipment for research and industrial applications. HHV's products are integral to multiple sectors that include Aerospace, Automotive and Defense. HHV is a global developer and manufacturer of laboratory and industrial-scale vacuum coating systems for optical, decorative and functional coatings, astronomical telescope mirror coaters, thin film coatings, optics and special purpose vacuum equipment for complex metallurgical applications.

See below for some examples of what the JV will be able to manufacture for its clients. Please do note that the entity will not just manufacture equipment, but will also help clients with installation, commissioning and full field support, including the supplying of spares.

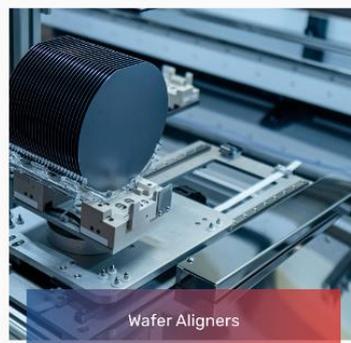
3.3.1 Sub-Systems

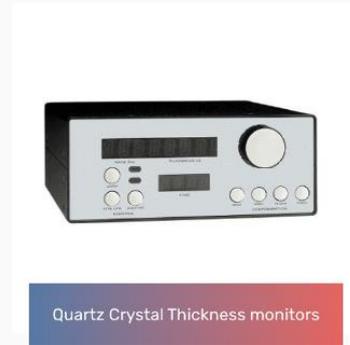


3.3.2 Sub-System Components



3.3.3 Assembly and Integration





4. ASM Ventures

Outside of their core business, ASM Technologies operates a venture division. In their [own words](#), “We make key strategic investments in several emerging technology companies, while co-creating innovative new products in future-focused areas...”

This division has invested in a range of businesses, listed below.

Company	Description
	<p>Asia’s leading fixtures manufacturer, with over 2700 designs in the company’s catalogue.</p>
	<p>EclecticIQ is a global provider of threat intelligence, hunting and response technology. It acquired PolyLogyx in May 2020 for its expertise in endpoint and cloud workload threat detection and response technologies.</p>
	<p>India's No.1 Software-Defined Wide Area Network (SD-WAN) solutions company. In February this year, Bharti Airtel announced its acquisition of a 25% stake in Lavelle Networks, to boost its Network as a Service (NaaS) portfolio.</p>

	<p>The smartest way to transform your existing fixture/workholding into an intelligent, IoT enabled, Industry 4.0 fixture/workholding.</p>
	<p>ASM Digital Engineering is the product of ASM's acquisition of Semcon India's delivery centre in October 2020. Semcon, headquartered in Sweden is an international technology company that helps customers in transforming technology into excellent user experiences. This acquisition has also helped ASM get access to new clients in Northern and Central Europe.</p>
	<p>Through its investment in Ideaspring Capital, ASM is able to keep tabs on the latest developments in a range of fields, including: Machine Learning, Big Data Analytics, IoT, AR/VR, Cyber Security, Computer Vision and Image Processing.</p>
	<p>Kogence is a cloud-native workflow orchestration engine for engineering modeling and simulation workflows.</p>
	<p>Baro Vehicles develops new generation machines to transport people and goods, employing AI-enabled robotics technology to replace traditional cars and vehicles.</p>

5. Financials

While I have gone into a fair bit of detail covering the company's capabilities, it is time to shift gears and take a good look at the company's financials. While it is clear that ASM Technologies has a lot to offer, I want check the organization's financial health, and also share my thoughts on its current valuation.

5.1 Comparing FY2021 and FY 2022

Note: Unless otherwise mentioned, monetary amounts are in crores of Indian Rupees.

5.1.1 Revenue and Income Snapshot

Financial Snapshot	FY22	FY21	% YoY
Total Revenue	198.604	140.643	41.21%
Revenue from Operations	191.673	137.388	39.51%
EBITDA (from press release)	27.918	20.149	38.56%
EBITDA Margin	14.57%	14.67%	-0.68%
PAT	13.901	8.602	61.60%
PAT Margin	7.00%	6.12%	14.44%

At first glance, these are very impressive numbers. As far as growth-oriented companies are concerned, I tend to bucket them in the following manner (based on revenue growth):

- 0-20% → Low Growth
- 20-40% → Medium Growth
- Over 40% → High Growth

With y-o-y revenue growth of 39.51%, ASM Technologies is right at the cusp of what I would classify as a high growth company, with 40% in top line growth being a fairly high bar. In addition, what I find impressive is that the growth has taken place without compromising on EBITDA and PAT margins. EBITDA margins dropped by just 10 bps, while PAT margins have increased by 88 bps (with PAT itself increasing by an impressive **61.60%**).

5.1.2 Revenue and Income Details

Item	FY2022	FY2021	% YoY
Revenue from operations	191.673	137.388	39.51%
Other income	6.931	3.255	112.93%
Total income (i)	198.604	140.643	41.21%
Expenses			
COGS	12.926	5.531	133.70%
(Increase)/Decrease in inventories	-3.268	-2.183	49.70%
Employee benefits expense	127.137	89.471	42.10%
Finance costs	5.584	2.832	97.18%
D&A	4.442	3.569	24.46%
Other expenses	33.850	27.674	22.32%
Total expenses (ii)	180.671	126.894	42.38%

Profit before tax and share of profits/(loss) of JV accounted for using the equity method	17.933	13.749	30.43%
Share of net profit/(loss) of JV accounted for using the equity method (net of income tax)	-0.041	0.000	
Profit before tax	17.892	13.749	30.13%
Tax Expenses			
Current	6.385	5.442	17.33%
Deferred	-2.394	-0.295	711.53%
Total Tax Expense	3.991	5.147	-22.46%
Profit/(Loss) for the year	13.901	8.602	61.60%

After a more detailed breakdown of the income statement, I have a few areas of concern:

- COGS
 - While COGS has shown some significant increase, there is no clarity in the notes to the financial statements as to why such as increase has taken place
 - **I will keep tracking the company's gross margins going forward** to check and see if COGS growth continuously outpaces revenue growth.
- Employee benefits expense:
 - While employee headcount increased by 7.59% (from the MD&A section of the annual report), the employee related expenses increased by 42.10%, a number which also slightly outpaces revenue growth.
 - Shortages in the labour market and a tough competition for talent in FY22 may be to blame for this development. However, **I will keep tracking employee benefits expense growth versus revenue growth** to ensure that this expense, in an ideal case, grows slower than the company's revenue.
 - If this expense keeps outpacing revenue growth, then ASM Technologies will be plagued by the same issues faced by many services companies, where employee benefits, a major cost in such companies, will start eating into profitability margins.
- Profit before tax:
 - While the company's PAT growth of 61.6% is commendable, when comparing this to the PBT growth of 30.13%, we see a figure that hasn't grown as fast as revenue from operations
 - **I will keep tracking PBT growth versus revenue growth**, and in an ideal case PBT growth should be higher than revenue growth.

5.1.3 Balance Sheet

Monetary amounts are in millions of Indian Rupees

Particulars	Note	As at March 31, 2022	As at March 31, 2021
ASSETS			
(1) Non-current assets			
(a) Property, Plant and Equipment	3.1	196.47	84.63
(b) Intangible Assets	3.2	82.72	77.82
(c) Intangibles under development	3.3	-	12.22
Goodwill on consolidation		0.73	0.73
(c) Financial Assets			
(i) Investments	4 (i)	132.52	79.63
(ii) Loans	4 (ii)	4.73	4.29
(d) Deferred tax assets (net)	5	58.68	41.97
(e) Other non-current assets	6	65.94	61.16
Total		541.79	362.45
(2) Current assets			
(a) Inventories	7	93.39	59.59
(b) Financial Assets			
(i) Investments	8 (i)	111.49	91.17
(ii) Trade receivables	8 (ii)	569.03	502.09
(iii) Cash and cash equivalents	8 (iii)	19.50	30.29
(iv) Bank balances other than (iii) above	8 (iii)	73.15	71.69
(v) Loans	8 (iv)	7.14	6.37
(vi) Others	8 (v)	9.81	6.15
(c) Other current assets	9	35.80	27.09
Total		919.31	794.44
Total Assets		1,461.10	1,156.89
EQUITY AND LIABILITIES			
EQUITY			
(a) Equity Share capital	10	100.00	100.00
(b) Other Equity	11	557.30	468.16
Attributable to Equity holders of the parent		657.30	568.16
Non Controlling Interest		(2.64)	4.33
Total		654.66	572.49
LIABILITIES			
(1) Non-current liabilities			
(a) Financial Liabilities			
(i) Borrowings	12	96.91	77.93
(ii) Lease Liabilities		29.85	32.69
(b) Provisions	13	16.28	13.06
(c) Deferred tax liabilities (Net)		-	0.56
(d) Other non-current liabilities	14	-	-
Total		143.04	124.24
(2) Current liabilities			
(a) Financial Liabilities	15		
(i) Borrowings	(i)	354.51	232.73
(ii) Lease Liabilities		24.56	9.90
(iii) Trade payables	(ii)		
(A) total outstanding dues of micro and small enterprises		0.93	0.08
(B) total outstanding dues of creditors other than micro and small enterprises		151.41	110.67
(iv) Other financial liabilities	(iii)	7.78	7.03
(b) Other current liabilities	16 (i)	91.02	82.22
(c) Provisions	16 (ii)	33.19	17.53
Total		663.40	460.16
TOTAL EQUITY AND LIABILITY		1,461.10	1,156.89

I highlighted a few items of mild concern in the balance sheet, with some context below:

- Property, Plant and Equipment
 - There is a significant increase (~132%) in this line item, and while this is not problematic per se, comprehensive details about the increase are not available in the notes to the financial statements.
 - All I could tell is that the most of the increase in PP&E comes from additions to the Plant and Equipment as well as the Right of Use entries
 - **I will keep an eye on metrics like the Return on Assets, as well as the Asset Turnover Ratio going forward.**

- Inventories
 - There is no context in the notes to the financial statements around the increase in inventory. All that is available are the monetary amounts for raw material and WIP.
 - **As ASM Technologies is likely to increase its prototyping and manufacturing activities, the company will need to take care to efficiently manage its inventory levels.**
- Current Borrowings
 - While every company will have to borrow to grow, this line item caught by attention with its ~52% y-o-y increase, which outpaced revenue growth.
 - The current portion of long term debt increased ~59%, which was not particularly concerning.
 - The remainder of the current borrowings account is comprised of secured loans (payable on demand).
 - **I will track the increase in both long term and short term borrowings periodically to ensure that there is not any sudden and/or worrisome increase.**

5.2 Thoughts on Valuation and Future Prospects

5.2.1 Peer Comparison

The IT Services industry has had its time in the sun. It is clear to industry observers that the sector is now maturing, and market beating revenue and net income growth will be hard to sustain for the remainder of the decade.

As a result, just about every IT Services company has an engineering services or ER&D division, and it is no surprise that growth in these divisions tends to outperform overall growth numbers in these organizations. True pure-play ER&D companies that are publicly listed in India are very few in number. However, these would be the only peers that can be fairly compared with ASM Technologies, as varying levels of contribution and growth of ER&D divisions in different IT Services companies would make it hard to have an apples to apples comparison.

To my knowledge, there are only four other publicly listed ER&D companies in India, which are Tata Elxsi, L&T Technology Services, Axiscades Technologies and Moschip Technologies. Of these four, Moschip Technologies appears to be the most focused on the semiconductor industry. Using data from www.screener.in, I will compare these companies with ASM Technologies.

Company	Stock Price (₹)	Market Cap (₹ cr)	CMP / Sales	P/E
Tata Elxsi	7991.60	49806.54	20.16	90.72
L&T Technology Services	3130.55	33060.82	5.03	35.37
Axiscades Technologies	123.65	469.72	0.77	20.20
Moschip Technologies	50.90	814.88	5.52	126.34
ASM Technologies	423.15	454.87	2.37	33.47

While I do not give too much importance to the P/E multiple for growth oriented companies, it is still worth looking at. Despite being a microcap stock that is very growth-oriented, ASM is neither reporting negative income, nor is it trading with a P/E multiple in the triple digits. Instead, its P/E multiple is the second lowest among its peers.

In addition, regarding the ASM's Market Cap/TTM Sales multiple of 2.37, given ASM's nearly 40% revenue growth from FY21 to FY22, I think that this multiple has room to move up much higher from its current level. With that in mind, I thought to then compare top line and bottom line growth for all of these companies, both over a 3 year period as well as from FY21 to FY22.

Note: The Market Cap/TTM Sales multiple I am going to use will only have revenue from operations in the denominator, not other revenue.

Company	3 year Revenue CAGR (%)	3 year Profit CAGR (%)	TTM Revenue CAGR (%)	TTM Profit CAGR (%)
Tata Elxsi	16	24	35	50
L&T Technology Services	9	7	21	44
Axiscades Technologies	0		17	
Moschip Technologies	25		40	
ASM Technologies	30	34	40	62

Some of the cells above were left blank, simply because the company in question reported a loss at the start of the period under consideration. What pleasantly surprised me is ASM's leadership for all four metrics. This further leads me to the conclusion that the company is quite undervalued. Finally, I wanted to compare the companies on the basis of dividend yields, the D/E ratio, as well as ROCE, ROIC and ROE.

Company	Div Yld %	Debt / Eq	ROCE %	ROIC %	ROE %
Tata Elxsi	0.53	0.09	47.72	35.30	37.18
L&T Technology Services	0.80	0.11	30.77	33.61	24.48
Axiscades Technologies	0.00	0.22	13.45	9.75	7.38
Moschip Technologies	0.00	1.03	12.10	10.68	10.90
ASM Technologies	1.42	0.77	22.06	23.08	22.18

With the exception of the dividend yield, where ASM is the leader, the company's numbers are roughly in the middle of the pack. I am quite pleasantly surprised by the dividend policy of ASM, and it is almost too good to be true to see a growth-oriented microcap company giving such healthy dividends. The D/E level does not bother me, and I have noticed that ROCE, ROIC and ROE numbers inch up after every quarter.

5.2.2 Valuation and Future Prospects

With a limited universe of peer companies, it is hard to have a firm opinion on what the valuation of ASM Technologies should be. That being said, a growth-oriented company with 40% of revenue growth from FY21 to FY22, with a positive net income in the nascent and rapidly growing ER&D space and strong ambitions to thrive in the semiconductor industry should not be trading at 2.37x TTM Sales.

I could discuss the potential of comparing its revenue growth figures with US listed SaaS companies, and then suggesting a revenue multiple. However, the nature of SaaS firms is completely different from that of an ER&D company, so I will not go further.

To then attempt a valuation for the company, given ASM's stellar performance in the last financial year, if the company maintains a TTM revenue growth in the 40% range over the next two quarters, is able to keep debt levels in check, as well as keep employee expenses growth below revenue growth figures, **I can see the company comfortably trading at a 5x Market Cap/TTM Sales multiple.**

This multiple can move up further if the company is able to grow its market share with renowned clients in the semiconductor industry. Successful traction in its JV with Hind High Vacuum, where the focus is on manufacturing, will make this company truly unique among publicly listed companies in India, and this can move up its valuation even further.

I bought stock in ASM Technologies about a year ago, **at a cost basis of ₹148.79**. When I entered the stock, I saw the company as a smaller version of Tata Elxsi. In terms of an upper limit for the company, both in terms of valuation as well as impact (contingent on good execution), I can see ASM Technologies growing and catching up with Tata Elxsi over the medium term.

For now, looking just 6 months ahead, if we run the numbers, and assume a 20% growth in revenue from Q4FY22 to Q2FY23, we get the following figures:

Metric	Q3FY22 (₹ cr)	Q4FY22 (₹ cr)	Q1FY23 (₹ cr)	Q2FY23 (₹ cr)
Revenue	47.62	54.71	60.18	65.65

So TTM sales would then be = ₹228.16 cr

At a 5x multiple, the market cap would be = ₹1140.8 cr

Shares outstanding (assume rights shares converted) = 1.1 cr

Potential Share Price = ₹1037 (current price of ₹424.75 → 144% upside)

6. References

https://pursuite-production.s3.amazonaws.com/media/cms_page_media/961/Brochure-Final%20ERD.pdf

<https://www.asmltd.com/>

<https://www.asmltd.com/asm-brochure-engineering-services/>

<https://www.asmltd.com/investor-relationships/>

<https://asmhhv.com/about-us>

<https://www.bisinfotech.com/asm-technologies-eclecticig-partner-for-edr-technology/>

<https://www.airtel.in/press-release/01-2022/airtel-acquires-25-percent-strategic-stake-in-sd-wan-startup-lavelle-networks>

<https://lavellelennetworks.com/about-us.php>

<https://formsandgears.com/smartfix-4.0.html>

<https://www.asmltd.com/semiconductor/>

<https://www.asmltd.com/semicon/>

<https://www.tutorialspoint.com/vlsi design/vlsi design digital system.htm>

<https://www.xilinx.com/products/silicon-devices/fpga/what-is-an-fpga.html>

https://semiengineering.com/knowledge_centers/intellectual-property

<https://www.differencebetween.com/difference-between-pvd-and-vs-cvd/>

<https://www.mksinst.com/n/etch-overview>

https://people.rit.edu/lffeee/lec_rtp.pdf

<https://www.dupont.com/electronic-materials/semiconductor-cmp.html>

<https://hhv.in/news-and-new-developments/asm-and-hhv-form-a-joint-venture-for-semiconductor-equipment-manufacturing>

<https://hhv.in/about-us>

<https://asmhhv.com/products>

<https://www.asmltd.com/asm-ventures/>

<https://www.eclectiq.com/news/27-may-2020-eclectiq-joins-forces-with-endpoint-solution-provider-polylogyx>

<https://www.asmltd.com/wp-content/uploads/2020/10/ASM-SEMCON-PR.pdf>

<https://www.bseindia.com/xml-data/corpfiling/AttachHis/664372cd-ddf7-478c-a3be-fcdd61780fb.pdf>

www.screener.in