A Work Project, presented as part of the requirements for the Award of a Master Degree in Finance from the NOVA - School of Business and Economics.

PRIVATE EQUITY INVESTMENT COMMITTEE PAPER ON MESA LABORATORIES, INC.

- COMPANY AND MARKET ANALYSIS

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A Project carried out on the Master in Finance Program, under the supervision of:

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3rd January 2020

NOVA SCHOOL OF BUSINESS & ECONOMICS

Abstract:
The following paper examines the company Mesa Laboratories (“Mesa”). A focus is set on the analysis of the company’s products, historical financials, historical M&A activity, management team and competitive advantages. Further the markets in which the company operates in are described and characterized. Moreover the respective competitive positioning is analyzed in-depth. The paper concludes with an overview of the end-user markets of the company.

Keywords (up to four):
Investment proposal, Private equity challenge, Mesa Labs, Leveraged buy-out

This work used infrastructure and resources funded by Funda9&o para a Ciencia e a Tecnologia (UID/ECO/00124/2013, UID/ECO/00124/2019 and Social Sciences DataLab, Project 22209), POR Lisboa (LISBOA-01-0145-FEDER-007722 and Social Sciences DataLab, Project 22209) and POR Norte (Social Sciences DataLab, Project 22209).

MesaLabs

Preparation of an IC Memo comes with an extensive learning curve in diverse areas

Soft skills

Communicative:

- Professional communication of complex topics to professors, company representatives (inc. C-level management) and functional advisors
- Alignment of targets, work packages with all team members to ensure project success
- Motivation of team members over a long time horizon

Presentation skills:

- Presentation in front of a professional committee thus improving presentation skills

Build up of extensive stakeholder management skills

Functional skills

- In-dept company analysis based on historical financials, management facts and identification of potential red flags
- Market analysis with regards to drivers, trends and competitive positioning
- Application of various valuation techniques
- LBO Modelling beyond course scope with implementation of (i) different debt structures, (ii) M&A targets and (iii) an alternative purchase price structuring

Functional skills on a real-life PE level

Methodology

- Improvement of knowledge with regards to all office programs, through extensive modelling and creation of professional illustration material
- Usage of common databases: CapIQ, Bloomberg, Thompson Reuters for company and market data
- Professional project management with efficient resource deployment, and quality assurance leading to a on-time delivery

Mastering essential business tools and methodology

Course knowledge

- **PE course** has set the basis for the IC memo preparation, covering general PE knowledge, technical as well as functional aspects
- **Financial modelling/ Excel** as a background for modelling and efficient handling of office programs
- **FSA** sharpened the understanding of relevant accounting positions and treatment of such
- **Applied corporate finance** helped during preparation in a business analytical sense

Combination of knowledge from several courses set the basis for thesis preparation

Lessons learnt

Key factors:

- Team motivation through comprehensive communication is essential to ensure the project success
- 3rd party advise from external advisors helps to stay objective with regards to target and market estimations
- A continuous feedback culture helps to deliver a project on time and maintains high quality standards

Room for improvement:

- Focusing on key aspects of a value creation strategy helps to maintain a good effort/ rewards ratio

External and 3rd advisors are essential for project success

Executive Summary

MesaLabs

Mesa's unique niche positioning is the perfect basis for a combination strategy

Proposed transaction

- Mesa Laboratories Inc. ("Mesa"), valued at an EV of $352.8m or 12.5x 2020E EBITDA represents an attractive buy-out opportunity
- The purchase price will be structured into a base price of (i) $332.8m equaling 11.7x EBITDA and (ii) an additional earn out in the amount of $20.0m or 0.7x EBITDA
- The overall multiple is justified in light of current market prospects, stable cash flows and an exceptional growth pattern (14% sales CAGR 2015-2019)
- The total uses of $341.3m will be financed with $143.2m private debt through a stretched senior loan, $188.3m of committed sponsor equity and $9.8m Management Investment for 15% of equity share
- Mesa can be used as a platform for combinations. In this scenario the combined entity with a total of three add-ons (2021-2023) is expected to generate a 5y MM/IRR of 3.4x/29.4% mainly driven by consistent organic and inorganic growth with a strong EBITDA-Margin expansion
- In a stand-alone case the firm is expected to generate a slightly lower 5y MM/IRR of 2.8x/23.2%

OVERVIEW

CAGR 14%

103m

Sales

60%

Gross margin

26%

EBITDA margin

Mesa is an US-based manufacturer of quality assurance tools, operating **worldwide** through **3 business units** with 7 manufacturing and 2 administration sites (63% of sales made in the US).

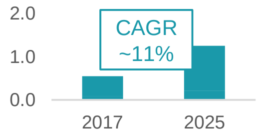
The company is **quality leader** in selected applications which help its customers to maintain business critical quality standards.

- **Sterilization & Disinfection (S&D):** Manufacturing and distribution of Biological and Chemical Indicators to detect residual debris in the **medical sector** (45% of sales)
- **Instruments (INS):** Production of various lines of Validation & Calibration Instruments mainly for the **medical sector** (35% of sales)
- **Cold Chain Monitoring (CCM):** Design and manufacturing of sensors and software to monitor aggregates (temperature, humidity a.o.) for facilities and transportation singularly in US mainly for the **medical sector & food processors** (13% of sales)

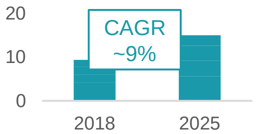
The company serves diverse markets which are small in size but have high potential in growth, further enhanced by strongly growing end-user markets mainly in the Medical sector. 37% of Mesa's sales are made in the Pharmaceutical industry, 13% with Medical Device manufacturers and 35% with Healthcare services as of 2019.

In $bn

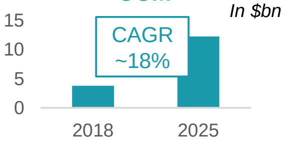
S&D



INS



CCM



Mesa has a consistent history of M&A with ~2 acquisition p.a., which since 2017 is equally continued by a **new CEO,** who himself has a **strong M&A track-record** coming from his previous senior position at a medical conglomerate.

With moderate capex (c.6% of sales) and low working capital requirements Mesa shows an attractive financial profile at high operative cash conversion (c.65%).

INVESTMENT RATIONALE

Riding the growth wave: Mesa's main markets are predicted to grow close to or above double-digits mid-term, further fueled by strong end-market user growth, more stringent quality control regulations and growth in emerging countries. Therefore, it is strongly believed that the firm can realize an exceptional organic growth of 10.5% Core Sales CAGR over the investment horizon.

Building on a strong foundation: Mesa is market and quality leader within its S&D and INS segment, having positioned itself uniquely in a high-margin niche. From this, Mesa has built a sticky customer base, leading to reliable revenues that can be expanded at a CAGR of 16.7% (organic & inorganic). Moreover, this positioning can be utilized upon positioning Mesa equally strong in the CCM market, hence realizing cost saving potential of ~900 bps.

Consolidating the market: Mesa's markets are partly fragmented with few big players and many small companies with different geographical focus. Especially small players can be acquired at lower multiples, representing attractive multiple arbitrage opportunities. Mesa can serve as the right consolidation platform due to the fact that the management is experienced in M&A in the medical sector. Actionable combinations with Germany-based Gke GmbH ($19m Sales/$11m EBITDA) & US-based Tisch Environmental ($13m Sales/$5m EBITDA) have been identified. Due to a partly overlapping footprint and diverging customers these companies are considered to be a perfect fit for Mesa.

Internationalizing the footprint: Currently, Mesa makes the majority of its sales in the US. Especially rising awareness for sterility assurance products in emerging countries and intensifying governmental regulations in Asia-Pacific are an untapped opportunity for the firm. Therefore, international expansion will lead to strong value creation at average 16.3% p.a. sales growth for S&D in APAC over near-term.

Diversify product offering: Mesa has the potential to expand along the value chain of Dialysate Control by adding Water testing instruments to its portfolio, hence increasing the share of wallet with their customers. An actionable target to add respective capabilities with high synergy potential has been identified with US-based Myron L ($25m Sales/$9m EBITDA).

Source: Business Model, Company Website

Company Overview

Mesa targets regulated, high-margin niche markets with its Quality Control products

THE MesaWAY

- **1982** – Incorporated as Mesa Medical Inc. by Luke Schmieder
- **1995** – Relocation to new Headquarter in Lakewood, Colorado
- **2010** – Acquisition of SGM Biotech, positioning Mesa as a market leader in the Biological Indicator industry
- **2014** – Mesa Labs. #68 on Forbes Best Small Companies in US
- **2017** – Appointment of Gary Owens as new CEO
- **2018** – Announcement Divestiture Cold Chain Packaging Business Unit

BUSINESS MODEL

Manufacture and sale of **Quality Control Tools**	Sold into **high-margin niche markets**	Products are **regulatory requirement**

Quality Control Tools

Mesa **manufactures and markets** Indicators for Sterility Testing, Calibration & Validation Instruments (Temperature, Pressure, Gas Flow) and Cold Chain Monitoring Software and Sensors

Products are used in everyday sterilization and operations in **Hospitals** or during manufacturing of new **Pharmaceuticals & Medical Devices**

Total Product Portfolio consists of **7 different product lines** after 27 strategic acquisitions

Markets

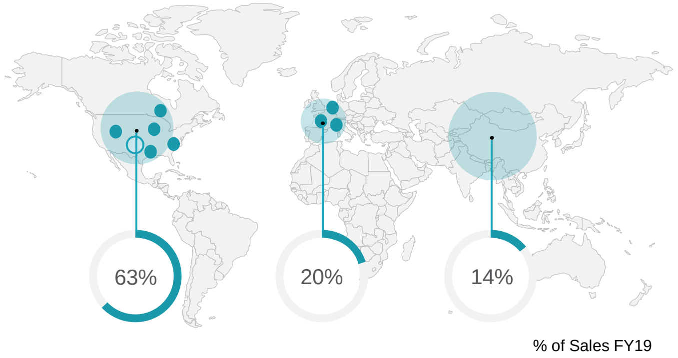
Total global addressable market size of all product lines is ~$13bn

Relevant sub-markets per product are ~$0.5-4bn total market size where its main End-Users consist of Hospitals, Pharma & Medical Device Manufacturers and Environmental agencies

Regulations

Quality Control measures such as **testing, calibration and validation** are mandatory in many medical applications and **regulated by the FDA** among others (e.g. weekly spore testing for dental offices, calibration after each dialysate treatment)

FOOTPRINT & KEY FIGURES



- Headquarter in Lakewood, Colorado (US)
- 7 Manufacturing & 2 Marketing Sites in the United States and Europe

- **Sales of $103m** in FY2019 ending EoM March 2019
- **CAGR of 14%** between 2015-2019
- **Gross Margin of ~59%** in FY2019
- **Normalized EBITDA margin of 26%** in FY2019
- **347 Employees**, in 9 Locations
- New Management since 2017

COMPETITIVE ADVANTAGES

Superior product portfolio of Quality Control tools

- Low cyclicality of operations
- Quality Leader in dialysate calibration meters and biological indicators

Products increasingly required by regulations

- Very sticky customer base
- No investment focus by bigger players due to minor market size

New management with strong M&A track record

- Top Management with high industry expertise
- Gary M. Owens Buy & Build success at Danaher Corp. created high shareholder value

Source: Company filings

MesaLabs

Applications of Quality Control products drive market penetration opportunities

7 Key Product Lines across 3 major Business Units

For more detailed information see Appendix s. 47-49

Sterility Indicators
Biological, Chemical, Cleaning (since 2017)

DataTrace
Validation Data Loggers

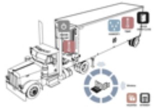
DryCal
Gas Flow Calibrator

BGI
Ambient Particulate Sampling

DialyGuard
Dialysate Meters

SureCap
Torque Testing systems

ViewPoint
Monitoring Sensors and Software



STERILIZATION & DISINFECTION (S&D)

Detection of residual debris after sterilization which is signalled through colour coding.

VALIDATION & CALIBRATION INSTRUMENTS (INS)

Self-contained, wireless, high precision instruments that are used in critical manufacturing, quality control and validation applications of sterilization, e.g. electronic device to record data over time at pre-determined intervals (includes individual instrument, a personal computer (“PC”) interface, software and various accessories).

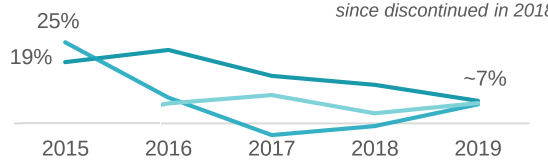
COLD CHAIN MONITORING (CCM)

Stationary or transport control of various parameters to comply to regulations.

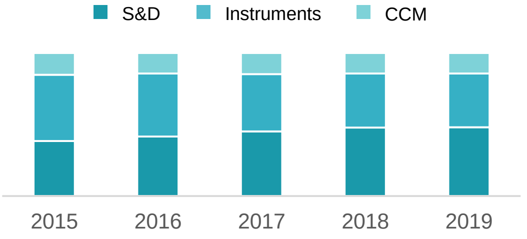
Business Units Breakdown

YoY Growth

Cold Chain Packaging excluded since discontinued in 2018



Sales by BU



Production

R&D

R&D program with 29 employees & third-party consultants

Manufacturing

Sourcing from several different suppliers (no significant dependency)

S&D products are manufactured in Montana (CA) and Munich (DE)

INS products in Lakewood (Hq.), Hanover (DE) and Butler (US)

CCM products in Lakewood (Hq.) and outsourced to third parties

Distribution

Promotions via trade shows, mail campaigns, Internet & others

S&D

110 Countries covered by distribution network | Direct sales model in US/EU

INS

67 Countries covered by entire distribution network | Direct sales model only in North America

CCM

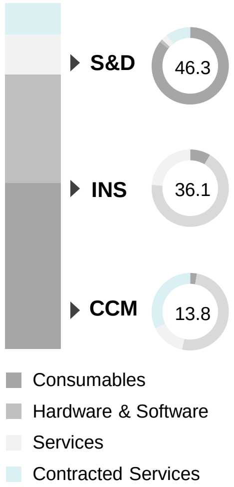
Only US/CA covered by distribution network | Direct sales model US/CA

Customers

- No customer >10% of sales
- Certain products have **annual service contracts** (unearned revenue $4.4m as of 2019)
- Substantially most contracts are 12 months or less in duration (Backlog $8.3m), nevertheless relationships are sticky in nature due to the fact that Mesa’s products are used on a routine basis
- Various **Partnerings** e.g. with purchasing organizations of the dental industry

Sales by Source

- **Consumables** are used on a **standalone basis**
- Routine usage and long-term contracted Services lead to a **very low cyclicality**
- Calibration solutions are also critical to the ongoing use of instruments (perpetual/ annual software licenses)
- **Hardware and Software sales** are driven by acquisition of new or replacement of existing equipment



Source: Company filings

Mesa excels through platform building to extend innovative product portfolio

Competitive Advantages

Superior Product Portfolio

- **Leading provider** of **Biological Indicator** for the Pharma & Medical Device industry and **main provider of Dialysate Calibration Meters**
- Major player in the global Sterilization Monitoring market
- Mesa's products are incorporated into the medical & drug manufacturing processes and on-going business in hospitals; Quality Control tools are essential for Pharma/ Med. Device companies to **retain reputation**

Low Substitution Risk

Niche Markets required by Regulations

- Markets targeted by Mesa are innovation-driven & highly technological while remaining **small-sized** (< $4bn addressable market size)
- Direct sales force in US and Europe
- Revenue lines of $5-10m are too **small for Big Medical conglomerates** to place innovative focus on
- Mesa uses **strategic positioning to enforce market growth** by building and expanding on strong specialised product portfolio

Market Growth Enforcement

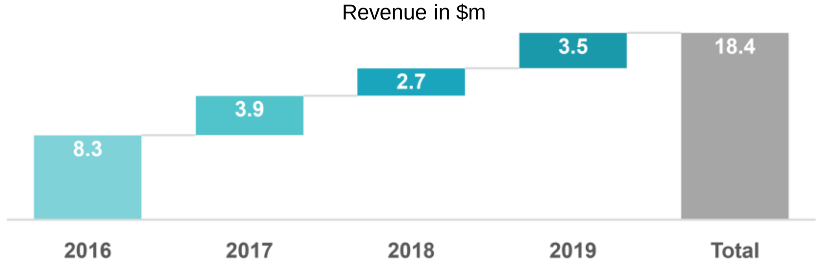
Strong M&A History

- Success story of platform building with high-margin established companies enabled **profitable market share expansion**
- M&A was conducted into the two directions **International expansion** (through acquisition of **distribution segments** for Mesa products) and established companies **operating in the Quality Control business** with a recent focus on CCM to build a new platform

Profitable & Quick-to-Market Expansion

Run-rate revenue impact subsequent to acquisition[1]

Inorganic Split



- **58%** of total revenue growth is **inorganic**
- Total growth 31.8m (45%) until 2019
- Concentration on complementary add-on product lines

Corresponding Acquisitions

	Target	Operating Segment	Country	Date	Impact
2016	BGI Inc.	Particulate Air Sampling Equipment	US	Apr. 14	2.6m
	PCD-Process Devices	QC Ethylene Oxide Sterilization	US	Oct. 14	5.7m
	ATI Atlas & 2 other[2]	Mesa BI Distribution	UK, DE	Feb. 15	
2017	North Bay Bioscience	Dental Sterilizer Testing	US	Aug. 15	2.7m
	Tiselab & 7 others[2]	Mesa BI Distribution	Various	Jan. 16	
	Autoclave Testing	P&S Dental Sterilizer Testing	US	Apr. 16	
	HANSAmed Ltd.	BI & Mail-In Testing P&S	CA	Jul. 16	
	FreshLoc Tec.	Wireless Temperature Control	US	Nov. 16	1.2m
2018	FreshLoc Tec.	Wireless Temperature Control	US	Nov. 16	0.4m
	Hucker & Hucker[2]	Mesa BI Distribution	DE	May 17	2.3m
	Simicon GmbH	BI & Cleaning Indicator	DE	Oct. 17	
	BAG Health Care GmbH	BI, Chemical & Cleaning Indicator	DE	Nov. 17	
2019	BAG Health Care GmbH	BI, Chemical & Cleaning Indicator	DE	Nov. 17	3.0m
	IBP Medical GmbH	Medical Meters and Sensors	DE	Mar. 18	
	Point Six	Wireless Sensors	US	Mar. 18	0.4m

Source: Expert interview Janney Montgomery Scott, Company filings

Note: (1) For comprehensive over of Acquisitions see Appendix s. 52 (2) Only distribution segment of named entity acquired

Mesa has a management team experienced at running billion-dollar businesses

Executive Committee

*"**Gary** left as an executive in charge of a multi-billion dollar line of business to become CEO of a company with less than $100 million in sales. It's not hard to imagine that (1) Gary has something to prove to his former Danaher colleagues and (2) he **saw Mesa as the ideal company that would allow him to build a track record that could rival Danaher's**."* – Andvari Associates

Gary Owens, President and Chief Executive Officer **(CEO)**, since September 2017

John V. Sakys Chief Financial Officer **(CFO)** since October 2012

Brian Archbold Senior Vice President, since January 2018

Greg DiNoia Senior Vice President, since November 2017

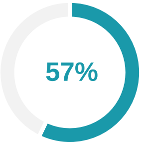
Bryan T. Leo, Vice President for Instruments since April 2012

Boden Larson, Vice President of Information Services, since 2010

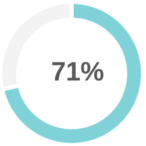
Peter Jung, Vice President of Corporate Development and Strategy since February 2016

Management Insights

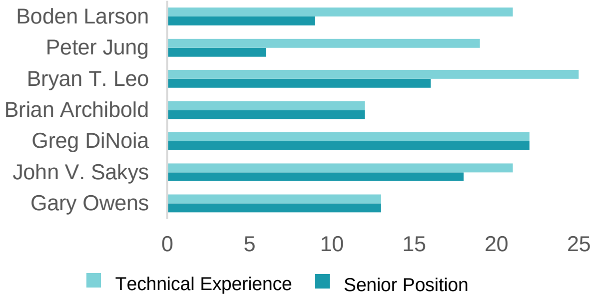
Experience



More than 15 yrs.
Executive Experience



More than 20 yrs.
Technical Experience



- Mesa's management has **substantial experience** in their relevant field
- In 2017 replacement of former CEO by **Gary Owens**, **former executive of Danaher**, a multi-national medical player with an outstanding track record of success
- Core management successfully proved capabilities of **identifying key markets, acquiring a platform and building on it** and is now repeating it at Mesa

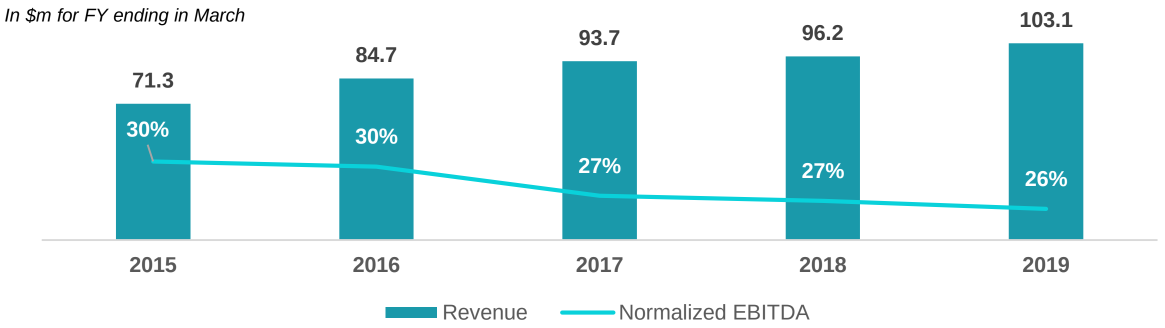
Achievements

Exit non-profitable BU	**Exit Cold Chain Packaging (2019)** Profit margins for the Cold Chain Packaging division continued to lag behind other segments	↗ EBITDA
M&A Expansion	**Purchase of BAG Health's hygiene business (Germany)** *"This move is anticipated to give competitive edge to the company."*	↑ SALES
Operational Improvement	**Substantial Reduction** of Debt and **Working Capital** **Consolidation** of Production Facilities	↘ COGS

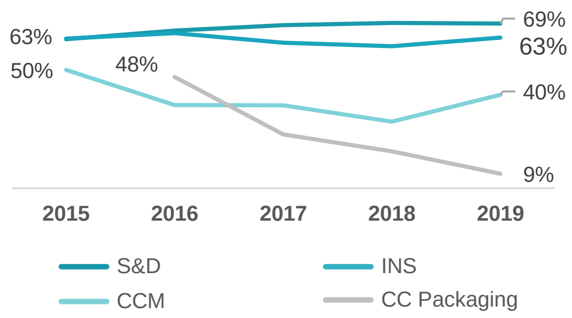
Source: Expert interview Janney Montgomery Scott, Company filings , Andvari Associates

Skyrocketing revenues came with a drop in EBITDA margin due to higher G&A Cost

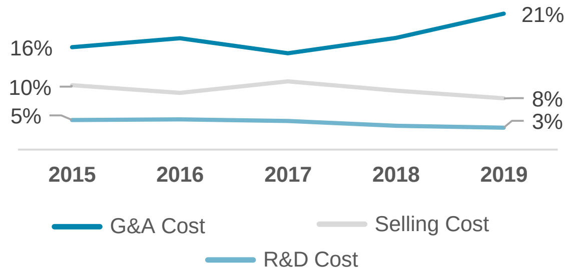
Revenues



Gross Margins



Overhead Cost



	Income Statement	2015	2016	2017	2018	2019
	Sterilization and Disinfection Control	27.4	33.6	38.6	43.3	46.3
	Instruments	33.1	35.7	34.4	34.1	36.1
	Cold Chain Monitoring	10.9	11.6	12.6	13.0	13.8
	Cold Chain Packaging	-	3.8	8.0	5.8	6.9
1	**Total Revenue**	**71.3**	**84.7**	**93.7**	**96.2**	**103.1**
	Cost Of Goods Sold	(27.9)	(33.2)	(39.7)	(41.0)	(42.2)
2	**Gross Profit**	**43.4**	**51.4**	**53.9**	**55.2**	**60.9**
	Gross Margin	*61%*	*61%*	*58%*	*57%*	*59%*
3	Selling	(7.2)	(7.5)	(10.0)	(8.8)	(8.3)
3	General & Admin Exp.	(11.4)	(14.7)	(14.1)	(16.8)	(21.9)
4	R & D Exp.	(3.3)	(4.0)	(4.2)	(3.5)	(3.5)
	Normalized EBITDA	21.5	25.2	25.7	26.0	27.3
5	*EBITDA Margin*	*30%*	*30%*	*27%*	*27%*	*26%*

1
- **Increase of revenues by 45% since 2015**, of which S&D grew by 69%, Instruments by 9%, CCM by 27% and CC Packaging Segment was entered in 2016
- **Inorganic growth** with 27 M&A transactions accounted **for 58% of growth**

2
- **Overall Gross Margin decreased** from 61% to 59% of sales between 2015-2019
- Whereas the gross margins increased for the S&D segment due to insourcing of biological indicator supplies, the **gross margins dropped for the CCM** due to internal restructuring **and especially CC Packaging** due to fierce pricing and fix cost progression in relation to shrinking revenues

3
- **Selling expenses** consist of salaries and commissions for 94 sales employees (2019), cost related to distribution as well as marketing; **Streamlined from 10% to 8% of sales**
- **General and administrative expenses increased from 16% to 21%**; Largest increment of $5m during 2019 primarily due to increased stock-based/ short term incentive compensation and higher salary expenses for more admin employees preparing for future growth

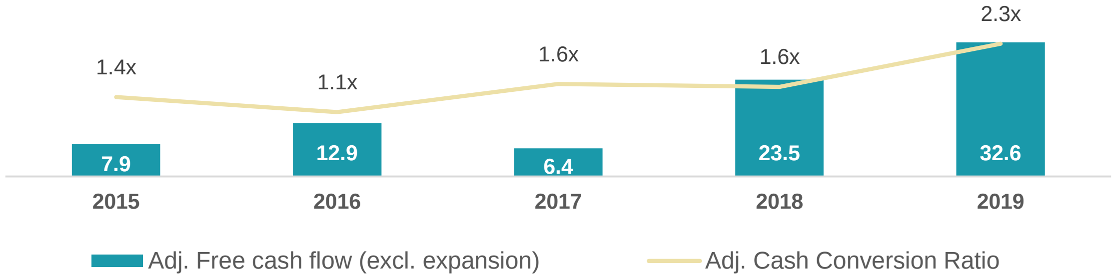
4
- **R&D Cost** comprise mainly salaries of 27 employees; **decreasing figures due to streamlining** of necessary engineers and supplies required to support existing businesses
- Extensive knowhow is acquired externally through strategic acquisitions

5
- **EBITDA Margin decreased** mainly due to drop in gross margins (CCM and Cold Chain Packaging) and increasing G&A cost

Source: Company filings

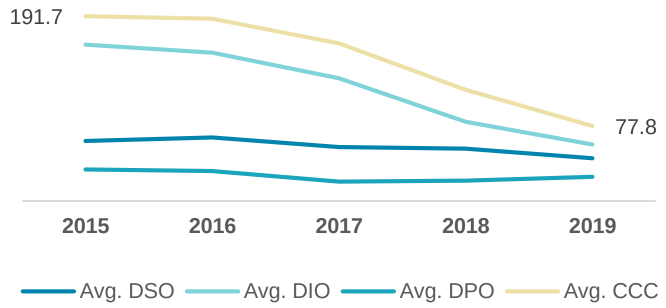
Strong Cash flow generation based on stable business and NWC optimization

	Cash flow Statement *(in $m for FY ending in March)*	**2015**	**2016**	**2017**	**2018**	**2019**
	Normalized EBITDA	**21.5**	**25.2**	**25.7**	**26.0**	**27.3**
	Interest Expenses	(0.6)	(0.8)	(2.0)	(1.7)	(1.5)
	Income Tax Expense	(5.8)	(4.4)	(3.1)	(3.3)	(1.1)
1	Other non-cash operations	1.3	0.9	1.1	1.1	1.3
	Change in Acc. Receivable	*(2.3)*	*(2.0)*	*1.0*	*0.7*	*1.6*
	Change In Inventories	*(3.2)*	*(1.5)*	*0.1*	*2.3*	*2.6*
	Change in Acc. Payable	*0.4*	*(0.2)*	*(0.7)*	*0.2*	*1.1*
	Change in Unearned Rev.	*(0.6)*	*0.1*	*(0.2)*	*(0.2)*	*0.1*
	Prepaid Expenses	*0.8*	*0.4*	*(0.8)*	*0.8*	*(2.9)*
	Accrued Liabilities and Taxes Payable	*(0.9)*	*2.9*	*(3.1)*	*0.4*	*5.5*
2	Change in NWC	(5.7)	(0.3)	(3.7)	4.1	7.9
	Adj. Cash flow from Operations	**10.7**	**20.7**	**18.0**	**26.3**	**33.9**
	Maintenance Capex	(2.8)	(7.7)	(11.6)	(2.8)	(1.3)
	Expansion Capex (Cash Acquisitions)	(20.5)	(24.1)	(6.8)	(15.5)	(4.8)
	Sale of Property, Plant, and Equipment	-	-	-	1.1	2.2
	Divestitures	-	-	-	-	-
3	**Cash from Investing**	**(23.4)**	**(31.8)**	**(18.4)**	**(17.2)**	**(3.9)**
4	**Adj. Free Cash flow** (excl. Expansion Capex, Sale PPE)	7.9	12.9	6.4	23.5	32.6
	Unlevered Free Cash flow Margin	*11%*	*16%*	*8%*	*25%*	*32%*



1
- **Other Non-cash expenses** are mainly comprised of **Stock-based compensation, deferred taxes and foreign currency adjustments**
- In order to incentivize new management for long-term growth strategy **stock-based compensation** more than **doubled** from $1.7m to $4.2m in the last two fiscal years

2
- **NWC Management** has been identified as **one of the top issues** within the fast growing company, consequently **Mesa decreased the CCC by the factor 2.5**, now averaging at 78 days
- Meanwhile maintaining a satisfactory **Quick ratio at avg. 1.1x**

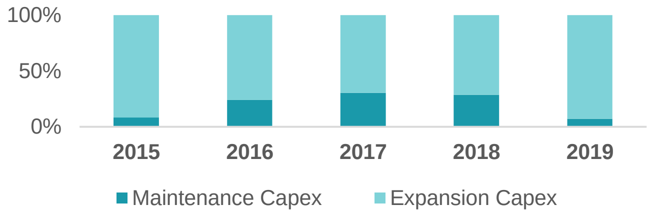


Receivables
- In the last 5 years DSO have been decreased by 18 days from 62 to 44 days

Inventories
- Inventories have been decreased radically, hence DIO shrank by 104 days

Payables
- DPO increased by 7 days in the last 5 years (offering the same conditions as all competitors)

3
- **Maintenance capex at 6% on average**, mainly driven up due to an investment into a factory built up in Bozeman, MO (finished 2018)
- **Expansion capex** is driven by frequent M&A activity and **mostly covered by cash flows**



4
- **Free cash flow grew by 413% since 2015** supported by a strong cash conversion ratio at avg. of 1.6x and a **high cash generating power ratio** at avg. 47%, peaking in **2019 at 78%**
- **Cash flows have** consistently **been** stable, **positive and predictable**

Source: Company filings

MARKET OVERVIEW

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NOVA SCHOOL OF BUSINESS & ECONOMICS

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Quality Control Tools increasingly penetrate environmental & medical markets

Sterilization & Disinfection (S&D)

Relevance

"Materials processed in a sterilizer, dating from the sterilization cycle having the last negative biologic indicator, must be considered ***nonsterile and retrieved"***
- CDC

Segmentation

Biological Indicators (BI)

- **Spore Ampules, Spore Suspensions** are placed on/ into representative unit of product to be sterilized
- **Viable Spores** (Strips) are added to a carrier
- **Self-contained Vials** are intended for incubation following the sterilization process

Chemical Indicators (CI) Class 1 - 5 Indicator

Cleaning Indicators (Cl.I)

Application

Sterilization Cycle

Biological & Chemical Indicators are exposed to a sterilization process (e.g. placed inside autoclave) and tested to detect residual debris.

Autoclave steam Sterilization, Dry Heat & others

Cleaning Indicators are processed together with e.g. surgical instruments to verify the cleaning efficacy of e.g. washer-disinfectors.

Validation & Calibration Instruments (INS)

Relevance

"In the same way that you wouldn't trust going past a speed camera in a car that has a dodgy speedometer, you shouldn't conduct medical diagnosis on patients or clients using equipment that has not been calibrated."
- MHRA

Segmentation

Medical Equipment Calibration & Laboratory Equipment Services

Pressure & Temperature Sensors Market

- High precision instruments that are used in critical calibration, manufacturing and validation

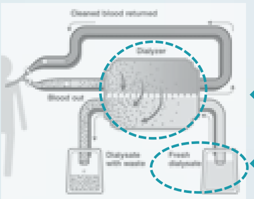
Air Quality Monitoring Systems

- Particulate concentrations in air as a measure of urban/ industrial air pollution, industrial hygiene

Application

Dialysis Cycle

Dialysis: As blood flows past one side, dialysate flows by the other side filtering larger substances, mimicking the filtering process that takes place in the kidneys by removing waste from circulating blood through a dialyzer.



Calibration: Instant reading from sample port on dialysis machine

- Testing for e.g. Pressure
- Testing for e.g. pH, conductivity

...before each treatment

Cold Chain Monitoring (CCM)

Relevance

"In 2017, a shipment from a single lot of Intralipid 20% IV fat emulsion (Baxter International, Inc.), was improperly exposed to subfreezing temperatures upon transportation. When frozen, the product can obstruct pulmonary circulation, leading to possible death. The company ***recalled this parenteral-nutrition product****."*
- PMCIB

Segmentation

Wireless Sensors (Data Logger)

- Battery-operated digital temperature sensor with programmable log rates and onboard memory

Cloud-based Software

- Monitors temperature parameters, humidity, differential Pressure, O_2, CO_2, Leak Detection, DC Voltage among others
- Accessible from anywhere with internet capability with customizable automated reports and alarming systems

Application

Cold Chain Process Flow

Supplier
Transport
Refrigerated Storage
Distribution Centre
Transport
End-user

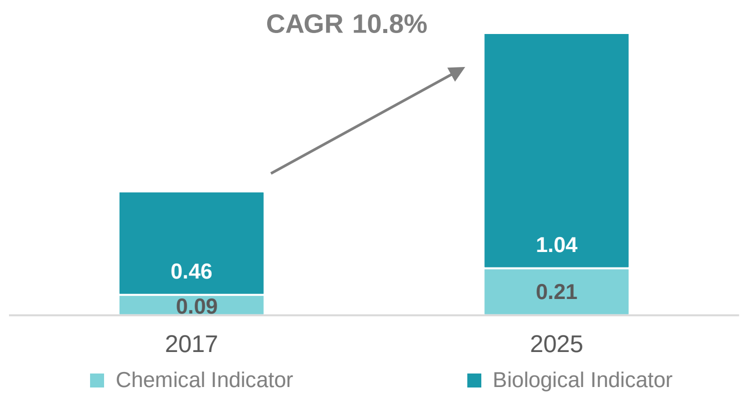
Monitoring

- Wireless Sensors, with integrated geolocation & geofencing
- Real-time alerts sending temperature, humidity, oxygen level, location a.o.
- Customized, automated delivery reporting to proof safe transport

Source: CDC, FDA, MHRA, Company website, PMCIB

Adverse healthcare trends and increasing gov. regulations foster steady growth

Total addressable Market Size (in $bn)[1]



Opportunities
- High growth opportunities in emerging countries

Restraints
- Lack of awareness of Sterilization Monitoring

Challenges
- End user non-compliance to sterilization standards
- Influx of low-quality products

Market Trends

Current
- Recent product launches, **expansions in manufacturing/ R&D facilities**
- Hospital segment accounts for largest share of the market

Mid-term
- **Pharmaceutical, biotechnology, and medical device segment are expected to grow at the highest CAGR**

Long-term
- **Asia-Pacific** market expected to experience highest CAGR of 11.3% (2.4bn USD) due to increasing number of hospitals, incidence of HAI and growth in geriatric population
- **Emerging markets** (India and China) have become attractive destinations, **Pharma sector India** is expected to grow at the highest CAGR due to local production

Market Drivers Analysis

Driver	Description	Impact
Rising incidence of **Hospital-acquired Infection** (HAI)	▪ 7/100 in developed, 10/100 in developing countries hospitalized patients acquire HAI (~90k deaths annually) ▪ HAIs are **rising across all relevant types of infection** (*CLABSI, CAUTI, MRSA*)	
Increasing number of **drug launches**	▪ Frequent advancements in complex technologies ▪ Pharma companies significantly reducing prices of older versions of drugs **drive their adoption in developing countries**	
Increase in **R&D activities**	▪ Advent of complex equipment with rising intricacy of medical devices drive demand for effective sterilization ▪ **Frequent product launches** in the field of healthcare driving demand (110 Novel Device Approvals in 2018)	
Stringent **governmental regulations**	▪ Stringent regulatory guidelines for sterilization of class III medical devices, biologics and drugs drive growth	
Rising **geriatric population** and chronic diseases	▪ >65 year-old to rise to 33% of population by 2050 (2.8x) ▪ Aging is **strong risk factor** for many chronic diseases ▪ Average number of laboratory and diagnostic tests and diabetes increased by 27%; 55% (2010-2014)	
Increasing number of **surgical procedures**	▪ Volume of surgical procedures is expected to grow at a **CAGR of 5.6%** until 2023 due to **tech. advancements** ▪ Use of **non-disposable medical devices** and increasing cost savings drive sterile practices	

Key Takeaway
- **APAC** most promising international target
- **Pharma sector** to grow at the highest rate therefore attractive to uphold leading market position

Source: Evercore, MarketsandMarkets, GrandViewResearch
Note: (1) Cleaning Indicator no addressable market identifiable due to minor relevance

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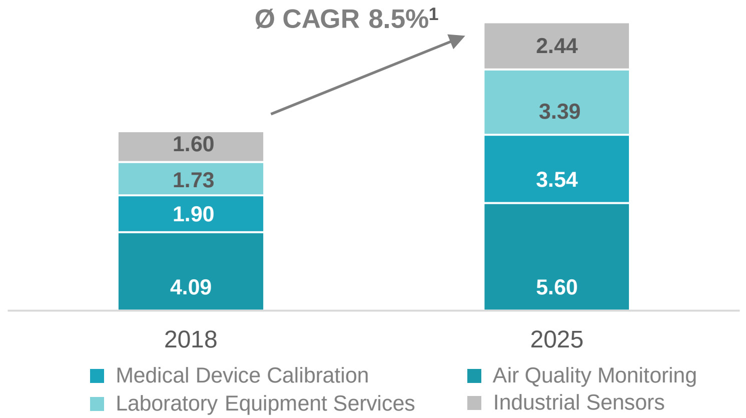
High growth and increased QC necessity cause higher market penetration

Total addressable Market Size (in $bn)



Opportunities
- Laboratory automation
- Technologic advancement

Restraints
- High Cost of service contracts
- Technologies are premium-priced

Challenges
- Shift to home-based/POC testing

Market Trends

Current
- **Europe** largest market for Medical Equipment Calibration services, US 33% market share
- Companies enter into collaboration with hospitals for providing reagents pertaining to QC
- **North America** largest market for Air sampling & Laboratory Equipment Services
- **Expansion of service portfolio** is major focus area of market players

Mid-term
- Third-party calibration services are expected to grow at the highest CAGR
- More stringent government regulations are expected to drive the Asia Pacific and Europe medical equipment calibration services market
- Pharmaceutical & Biotech segment is expected to dominate the market

Long-term
- **Emerging countries:** Companies focus on M&A for expanding their businesses in developing regions, expansion of pollution monitoring
- **Asia-Pacific:** fastest progressing regional market due to rising number of Contract Research Organizations & growing number of life science R&D activities

Market Drivers Analysis

Driver	Description
Governmental regulations	Strict **rules enforced by governments** related to medical equipment calibration and pollution control policies that require regulatory compliance for air pollution monitoring as well as data collection
Increasing **research activities** in pharma & biotech	Rising investments and **government research funding** to support biomedical research activities Rising import of laboratory equipment Growing need of **timely diagnosis** of diseases
Rising pollution levels	Increasing **public awareness** related to the environmental and **healthcare implications** Degradation of ambient and indoor air quality result in a **higher risk of contracting respiratory infections**
Demand **external** quality assessment **support**	Fragile and expensive **analytical equipment** is **requiring frequent servicing** Timely servicing & maintenance is **crucial for accurate research outcomes to uphold quality**
Enhanced accuracy, ease of use requirement	**Medical devices** are needed to undergo extensive testing and examinations thus **delivering competitive advantages to manufacturers**
Rising **frequency of product recalls**	**Product recalls have increased** by 56% 2009-2012 To avoid recalls and subsequent reputation impacts, **companies are laying strong emphasis on calibration** of their machinery

Impact

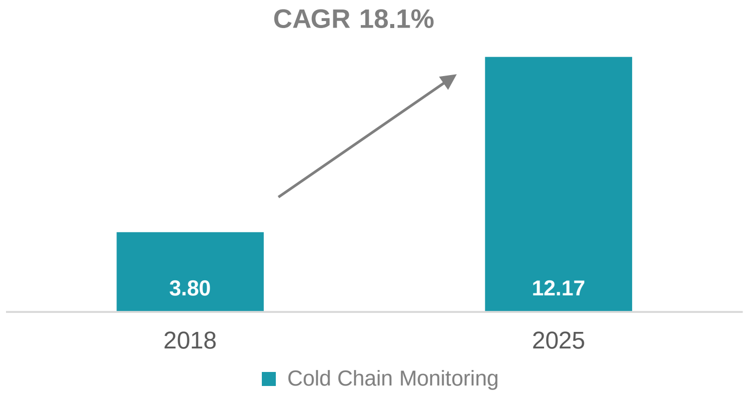
Key Takeaway
- **Emerging countries/ APAC** most promising international market to expand into
- **Laboratory Equipment Services** (Maintenance, Calibration & Validation) highest growing market

Source: Evercore, MarketsandMarkets, GrandViewResearch

Note: (1) Sub-Markets with different CAGR projections, see Appendix s. 56-60 for extensive overview

Double-digit growth offers opportunities for market players

Total addressable Market Size (in $bn)



Opportunities

- Cold Chain Logistics in developing countries

Restraints

- High cost of installation (deploy sensors & connectivity network)

Challenges

- Complexity involved in installation and monitoring
- Companies remain sceptical due to high investment

Market Trends

Current

- More than 25 **Product Launches** in 2017-2019 & significant product development
- More than 10 substantial **M&A** Deals over the last 2 years
- **Partnerships, collaborations and expansion**
- **North America** as the largest regional market with facility CCM holding largest share

Mid-term

- CCM **Transportation sector** is expected **to grow** at the highest rate between 2018-2023
- **Software** Segment to grow at high CAGR due to adoption of cloud-based software
- **U.S. and Canada** are also expected to drive the growth of the market due to already well-developed transportation and distribution network

Long-term

- **Emerging countries:** Companies focus on M&A for expanding their businesses in developing regions due to expansion of infrastructure (**India** fastest growing market over forecast period)
- **APAC** fastest progressing regional market for Pharma & Healthcare

Market Drivers Analysis

Driver	Description	Impact
Growing **governmental focus**	• High governmental efforts to **extend healthcare coverage & vaccinations** across emerging countries (higher accessibility of vaccines and biologics) • Stricter regulations in Europe	
Increasing demand for **temperature-sensitive drugs**	• R&D evolve to more complex large-molecule biologics that are **highly sensitive** to temperature, humidity, light • More than h**alf of the top 32 counterfeited drugs have strict temperature-control** logistical requirements • Global delivery of products in the traditional supply chain have **increased the risk for counterfeit products**	
Increasing demand **for generic drugs**	• **Owing to higher accessibility** as infrastructure enhancement in more remote areas is accelerating • Growing distribution networks enable **more market coverage for Pharma** requiring CCM to retain conditions	
Rising demand for **better food quality & reduce of wastage**	• **Dependence of Food & Beverage industry** on CCM is gradually increasing • CCM vital for modern supply chain transporting **larger volumes over greater distances** • Food wastage **adversely increases cost** for producer	
Digital transformation	• Increasing **penetration of wireless sensors** due to enhanced efficiency of Cold Chain Management in terms of high precision & control and fast execution covering reception, storage, release, transportation and distribution	

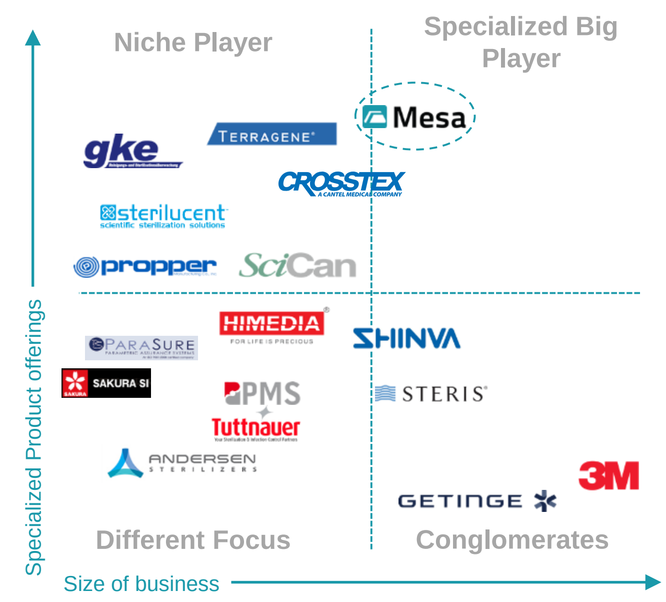
Key Takeaway

- CCM is highest growing market due to **technological advancements**
- **US/ Canada** strong growth driver due to mature distribution network
- **Transportation sector** to grow highest due to increasing distribution network of established food & pharma companies

Source: Evercore, MarketsandMarkets, GrandViewResearch

Mesa serves main portion of market establishing strong selling position

COMPETITIVE BREAKDOWN



Market Share End-User

- Hospital
- Pharma
- Medical Dev.
- Clinical Labs
- others

Pharma/ Med. Device

#1	**Mesa**	**>75%**
#2	Crosstex	~15%
...	others	n/a

Healthcare

#1	3M	n/a
#2	others	n/a
n/a	**Mesa**	**~10%**

- Market separated into **large medical conglomerates** with Indicators as **secondary product portfolio** due to small market size and **small dedicated manufacturers**
- High historical consolidation efforts undertaken leave **moderate market fragmentation** and **partly mature market**
- **Two-sided Market** separated into End-users:
  - **Pharma/Medical Device** which require tests with highest reliability due to rigorous regulatory standards, non-changing loads and sensitivity of and extensive capital investment in new drugs – 100% assurance quality control mechanisms
  - **Healthcare** rapid readouts matter more due to higher application frequency, changing loads and lower regulatory standards

Mesa Market Share

Biological & Chemical Indicator Globally

Cleaning Indicator

S&D

- **Dominant player** of Sterilization Indicator worldwide in the **Pharma & Medical Device** Segment by 3x/4x of sales to the next biggest competitor Crosstex (subsidiary of Cantel Medical)
- In healthcare segment Mesa holds **medium market share internationally**, targeting countries with more rigorous testing standards in Hospitals (e.g. certain European countries); little coverage in US
- Mesa's offers **most comprehensive portfolios** of **sterility monitoring products** compared to its competitors
- Mesa's products offer 99.999% accuracy on sterilization testing, consequently longer readout time of 24 hours up to 2/3 days in some cases *(3M rapid readout 98-99% accuracy)*
- The positioning as a **specialized quality player helps Mesa to maintain and attract market share**; thus establishing Mesa as one of the **major players** in the Biological Indicator industry in the US

Source: CapitalIQ, Companies' Websites, Analyst Coverage, Expert Interview CFO Mesa, GrandViewResearch

Fragmented markets leave much room for consolidation & portfolio expansion

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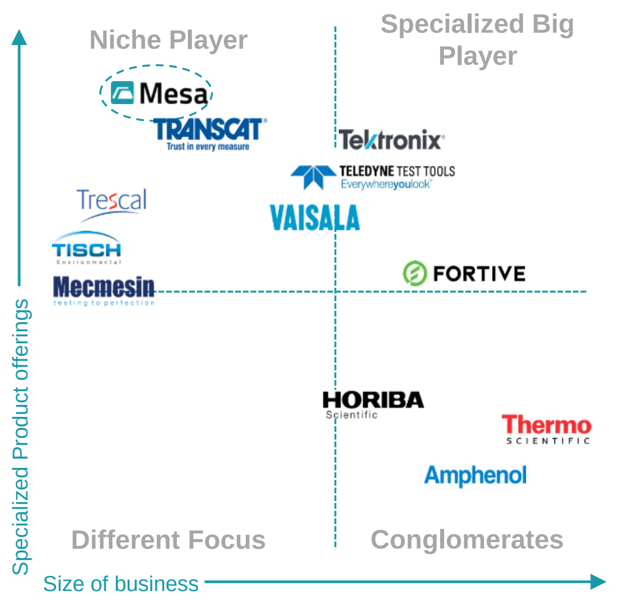
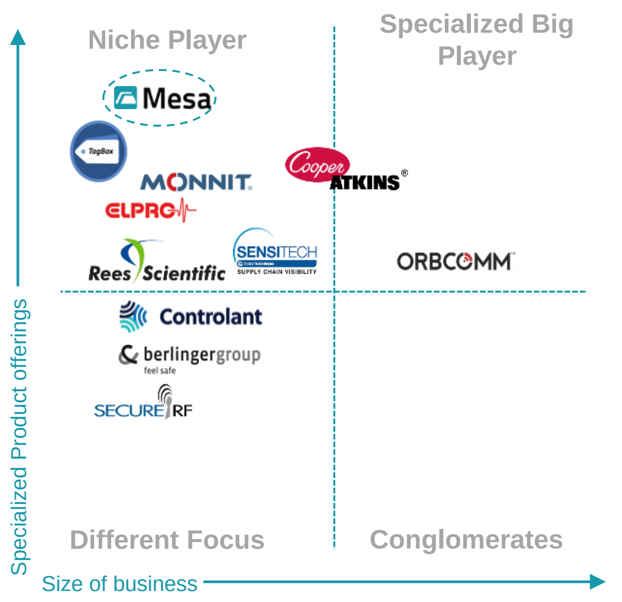
COMPETITIVE BREAKDOWN

Instruments



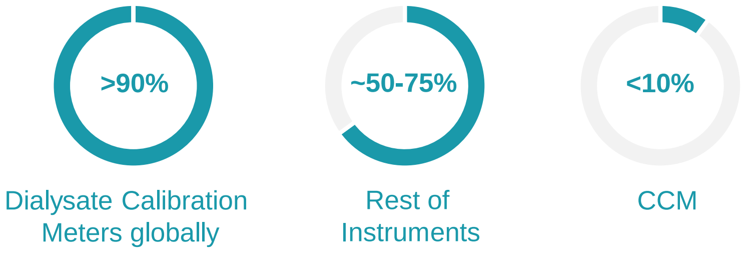
- **Very mature markets** with majority of players in the US
- Market players have very **diverting focus areas** in which they operate
- Large **conglomerates** do not place focus on QC instead offering respective products as **side-line business**
- Majority are **specialised on single area** of sub-markets
- Still **highly fragmented market** with consolidation possibilities for portfolio expansion & consolidation

Cold Chain Monitoring



- **Highly fragmented** & strongly growing market
- Top **3 players consolidate around 25-35%** of total Revenues
- Around ~**40-50 provider** make up entire market
- Small players locally bound around single operating location within US & internationally
- Disruptive market trend through **innovative technology**

Mesa Market Share



INSTRUMENTS

- Largest competitor in dialysate Calibration was acquired in March 2018 (IBP Medical)
- As **major provider** of Dialysate Calibration Tools Mesa can harvest growth in the market & expand its position as quality provider of quality control instruments through its more profound product portfolio
- **Strong market position** with >50% up to 75% share in other instrument segments (estimated as not covered by market studies due to small niche market)

CCM

- Mesa only covers US/ Canada – single division not operating internationally yet
- Locally bound business gives strong position in base location with high consolidation opportunities

Source: CapitalIQ, Companies' Websites, Analyst Coverage, Expert Interview CFO Mesa

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Low substitution threat stands against competitive pricing among players

Porter's Five Forces

HIGH

COMPETITION

Players engage in competitive pricing

Price pressure from domestic players can be strategically tackled through M&A

MODERATE

BUYER POWER

Large number of suppliers
Differentiated products available

Highly recurring customer base in most segments

SUPPLIER POWER

Large number of suppliers
High switching cost

More than one supplier for all supplies available or is expected to be found in a short timeframe

LOW

NEW ENTRANTS

High initial capital investment
Strong brand identity established

S&D, Instruments products require compliance with ISO 13485, ISO 17025, ISO 9001 and federal laws

SUBSTITUTION THREAT

High capital investment
Highly differentiated products

Complex technology requires high capital investment to create possible substitution

Risks

- Dependence on continuation of short-term contracts needs strong customer relations
- Adverse dynamics within industries such as accelerated changes in medical reimbursements or **strategic collaboration among bigger players**
- Unexpected **decrease in regulations** on quality control testing requirements within Medical device, Pharmaceutical manufacturing and Healthcare services
- Decline in legacy business and dependency on success of add-on acquisition targets
- Growth depends in part on the growth of the markets served with **limited visibility**

Regulatory Bodies & Guidelines

AAMI

(ST79)

FDA

CDC

1976 Medical Device Amendment to the FD&C Act

Sterilization Control

Medical Devices | Pharma Labs | Dental Offices are required to spore test on **every load at least weekly,** Hospitals **spore test daily**

AAMI ST79 recommends monitoring with a BI process challenge device **weekly, preferably daily** (10.5.3.2)

Sterility conditions to be monitored using a combination of **mechanical, chemical, and biological indicators** *(Mechanical monitors include daily assessment of cycle time and temperature and an assessment of pressure)*

Quality Control

Customers' quality control and regulatory environments require periodic repair and recalibration or certification of instrument products and cold chain monitoring systems.

Storage area should constantly be **controlled for temperature** (max. 75°F) and **relative humidity** (30-60%)

MESA

Increased regulatory application necessity and high market entry barriers give **strong selling position** to established player Mesa

High sensitivity of reputational consequences upon issues with quality control increase **pricing power** for Mesa (towards customers) leading to 2.0-3.0% annual price increase in S&D, 0.5-1.5% in Instruments and less in CCM due tow lower maturity of business division

Through high historical & forecasted M&A efforts Mesa increases ability to **tackle competitive pricing** amongst well established players

Source: Acumen Research, MarketsandMarkets, Grand View Research, Evercore, FDA

Affected Segment: S&D INS CCM