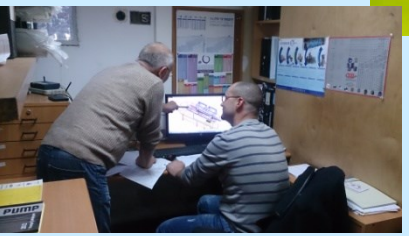
A.M. I.T.L. LTD.

Effluents Filtration

Swarf /Sludge Handling

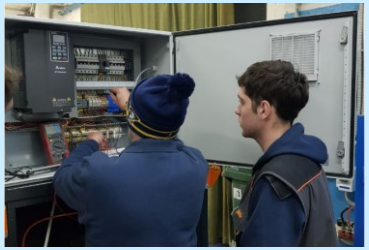
Pneumatic Conveying



Engineering & Consultation

we think green

Air & Dust Filtration



Maintenance & After Sales Services

Vacuum Extraction Systems

and save the blue

Oil, Gas & Mines
Process Water
Dosing and Filtration

Process Chillers

Factory Automation

Pumps & Peripherals

A.M. I.T.L

Well come to I.T.L

Thanks for the opportunity to introduce you our company.

We hope you will find our capabilities interesting and will convince you to be one of our satisfied customer.

Main Menu

- About.
- The Conception.
- Theory and Coolant management applications.
- Theory and swarf management applications.
- The Sales department.
- Location and Address.

a.m. I.T.L
Industrial technologies limited

A.M. I.T.L. has been established in the early 1986 as a mechanical engineering company. Our wide experience in the Israeli industry beside a non-conservative open mind, gives us the capability to compete and lead various industrial projects like big companies capability at flexibility of small innovative companies.

A.M. ITL design manufacture industrial filtration , swarf handling systems ,Industrial Envirotech solutions, Cleaning ,Washing & Factory Automation . Most of our systems are fully designed and produced at our site.
Beside **ITL**'s sales dep. exclusively represent foreigner companies.

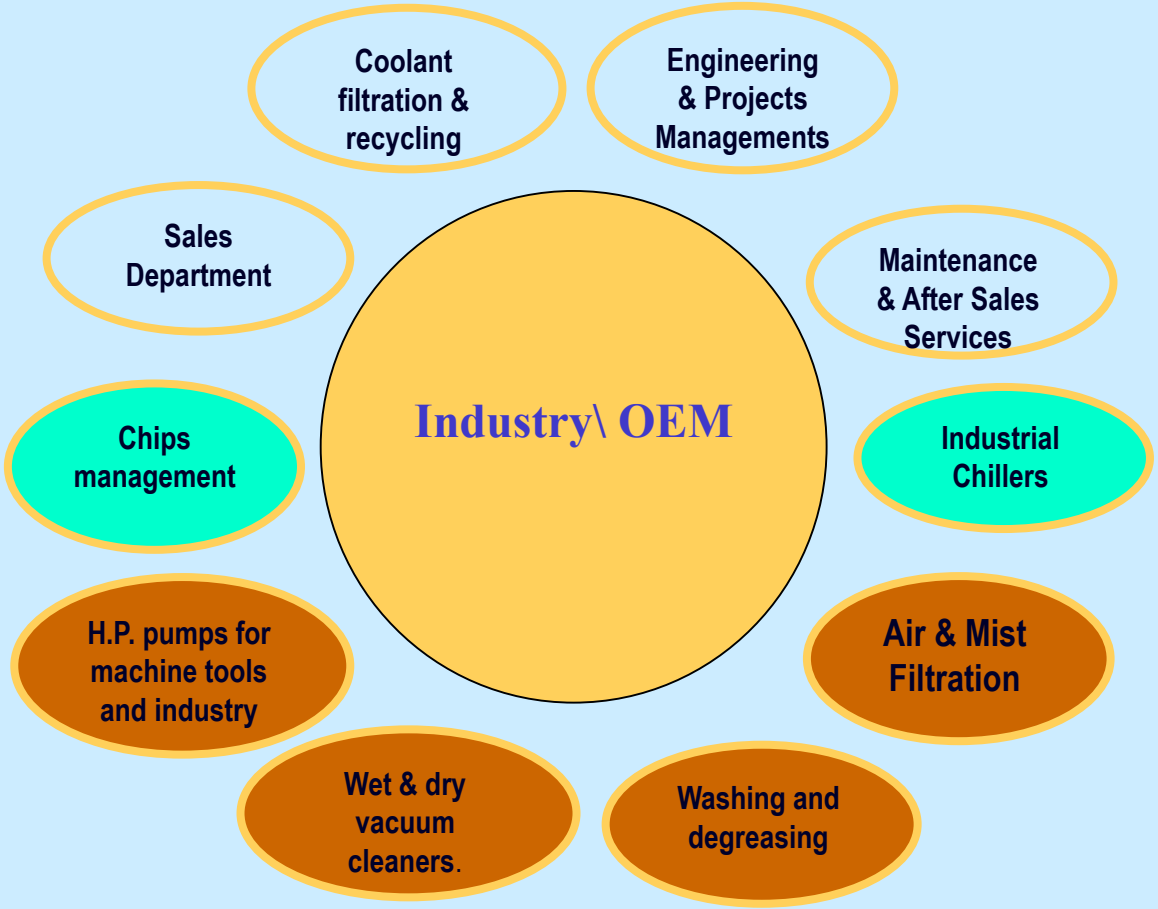
At the filtration and Swarf Handlling dep. we tailor filtration solutions for machining, grinding and miscellaneous sludge filtration such as deburring and washing processes. The swarf handling systems deals with chips management systems in order to reduce volume's and improve recycling.
Our systems vary between local , mobile and central solutions.

At the Industrial Automation dep. **ITL** design special Purpose machinery.

At ITL's After Sales dep. We provide maintenance services , especially to machine tools.

At ITL's Sales dep. We sale and distribute peripheral items.

The conception



Local by ITL

Agency & Local

Agency

Our Filtration Program ;

	Filtration µ	Flow rates	Applications
** Settling Conveyors	100- 70	Up to 10,000lpm	Heavy Dirty load
** Auto Back Wash Drums	50-30	Up to 10,000lpm	Medium Dirty load
** Vacuum & Hydrostatic Filters (Media & Media free type)	30-15	Up to 10,000lpm	Medium / low Dirty load
** Pressure Belt Filter	30-10	Up to 5,000 lpm	Medium / low Dirty load
** Precoat Filters (Cellulose or Diatomic)	10-3	Up to 10,000 lpm	Medium / low Dirty load and fines
** Hydro Cyclones 1 element *	30-15	Up to 250lpm/unit	Low dirty load
** Centrifuges-1 unit * Manual type	10-3	Up to 90lpm/unit	Low dirty load with fines
** Auto Back Wash Sinter Filters-1 candle *	5-1	Up to 50 lpm/unit	Low dirty load / fines
** Membrane UF,MF,NF,RO 1 element *		Up to 400 lpm/unit	Low dirty load/ extra fines
*** Automatic Centrifuges Others.			

* Qnt depend on application.
** Depend on applications, systems combinations are possible
*** At R&D stage.

Our Oil/Water separation Program ;

	Separation %	Flow rates	Applications
** Coalescing Tramp Oil Separators . *	90- 60	Up to 500l pm	Heavy/Medium hydrocarbon load
** Absorption Cartridges*	Up to 99	Up to 80 lpm	Low hydrocarbon load
*** Coalescing Sinter elements-1 candle *	Up to 99.5	Up to 50 lpm/unit	Low hydrocarbon load
*** Hydro Cyclones* Other	95-70	Up to 100 lpm/unit	Heavy/Medium Hydrocarbon load

* Qnt depend on application.
** Depend on applications, systems combinations are possible
*** At R&D stage

Our Sludge Treatment Program ;

	Separation %	Capacity	Applications
** Sludge Compactors *	97- 70	Up to 500 Kg/h	Heavy/Medium sludge load
** Sludge conveying systems			
*** wringers			
*** Continuous Press Filter			

* Qnt depend on application.
** Depend on applications, systems combinations are possible
*** At R&D stage

Theory : The Coolant

Cutting fluids are widely utilized to optimize the process of machining operations such as turning, drilling, boring, grinding, and milling. Historically, cutting fluids have been used extensively for the last 200 years. Today, it is estimated that over 100 million gallons of metalworking oil are used each year in the United States, and the volume of cutting fluids used is many times that of metalworking oil. The most common metalworking fluids used today belong to one of two categories:

-oil-based fluids including straight oils and soluble oils

-chemical fluids including synthetics and semisynthetics.

Cutting fluids play a significant role in machining operations and impact shop productivity, tool life and quality of work. The primary function of cutting fluid is temperature control through cooling and lubrication [Aronson, et al., 1994]. A fluid's cooling and lubrication properties are critical in decreasing tool wear and extending tool life. Cooling and lubrication are also important in achieving the desired size, finish and shape of the workpiece [Sluhan, 1994]. A secondary function of cutting fluid is to flush away chips and metal fines from the tool/workpiece interface to prevent a finished surface from becoming marred and also to reduce the occurrence of built-up edge (BUE).

- Monitoring and maintenance of cutting fluid is required due to contamination and degradation. Eventually, fluids require disposal once their efficiency is lost. Waste management and disposal become a major problem concerning environmental liability. The primary concern is the significant negative effects to worker's health associated with use of the cutting fluids.

Theory :Cutting Fluids Effects

The primary functions of cutting fluids in machining are :

- **Lubricating the cutting process primarily at low cutting speeds**
- **Cooling the workpiece primarily at high cutting speeds**
- **Flushing chips away from the cutting zone**

Secondary functions include:

- **Corrosion protection of the machined surface**
- **enabling part handling by cooling the hot surface**

Process effects of using cutting fluids in machining include:

- **Longer Tool Life**
- **Reduced Thermal Deformation of Workpiece**
- **Better Surface Finish (in some applications)**

Easy of Chip and Swarf handling

Theory : Type of Coolants

The most common metalworking fluids used today belong to one of two categories:
-Oil-based fluids including straight oils and soluble oils
-Chemical fluids including synthetics and semisynthetics.

Cutting fluids play a significant role in machining operations and impact shop productivity, tool life and quality of work. The primary function of cutting fluid is temperature control through cooling and lubrication [Aronson, et al., 1994]. A fluid's cooling and lubrication properties are critical in decreasing tool wear and extending tool life. Cooling and lubrication are also important in achieving the desired size, finish and shape of the workpiece [Sluhan, 1994]. A secondary function of cutting fluid is to flush away chips and metal fines from the tool/workpiece interface to prevent a finished surface from becoming marred and also to reduce the occurrence of built-up edge (BUE).

Theory : Coolants Selections

The principal criteria for selection of a cutting fluid for a given machining operation are:

1. **Process performance :**
   - **Heat transfer performance**
   - **Lubrication performance**
   - **Chip flushing**
   - **Fluid mist generation**
   - **Fluid carry-off in chips**
   - **Corrosion inhibition**
   - **Fluid stability (for emulsions)**
   - **Foamidity.**

2. **Cost Performance**
3. **Environmental Performance**
4. **Health Hazard Performance**

Theory : Why to Filter coolants

Direct costs $:

- Longer Machine tools life.
- Longer Cutting tools life.
- Less nozzles, piping , spindles and tools blockages.
- Better Surface finish.
- Coolants are expensive.
- Disposing cost time and money.

Environment :

-Chips drag out coolants which affect environment.
-Coolant disposal is expensive and need to meet environmental regulation prior damping.

Recycle coolants and chips instead of disposal.

Better filtration = Save and improve performances.

=

Coolant Maintenance

Cutting fluid request following attention

-**Filtration** to remove particles who contaminate the coolant. Those particle\contamination changes coolant Ph. Which may affect coolant properties .

-**Circulation**. When coolant circulate the coolant is aerated and less exposure to fungus and bacteria's is possible. Although circulation do not aloud contamination to sank on the machine sump and surface. The more the coolant passes trough the filtration media the better for the coolant.

-**Tramp oil** removal (emulsion). To remove free oils which can mix\emulsify with the coolant and change the properties. The Tramp oil create an anaerobic atmosphere in the emulsion and it's a perfect background to grow bacteria's and fungus.

-**Top Up** with new emulsion at low concentrate and RO water. In Israel pot water is of a poor quality and it is very hard. That affect emulsion and build bacteria's in the coolant.

-**Temperature**. The coolant need to be kept in a constant room temperature in order to avoid Bacteria's growth.
A secondary benefit is that cold coolant keep machine a t a constant temperature which helps to keep machine accuracy.

Remember : F.C.T.T.T.

Theory : Coolant Maintenance

Cutting fluid maintenance involves checking the concentration of soluble oil Emulsions (using refractometers), pH (using a pH meter), the quantity of tramp oil (hydraulic oil leaking into the cutting fluid system) and the quantity of particulates in the fluid.
Action taken to maintain the fluid includes adding make-up concentrate or water, Skimming of tramp oil, adding biocides to prevent bacterial growth and filtering the particulates .

Remember : F.C.T.T.T.

Theory : Filtration

When considering a retrofit or a new filtration system the following information is requested:

-Application .
-Local or central.
-Machine type.
-Flow rate.
-Pumps.
-Level of Filtration requested.
-Coolant.
-TOS.
-Chiller.
-Other.

Filtration Standards we work accordingly

Standard ISO 4406

INDEX OF PARTICLE CONTENTS

	* CODE	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10
PARTICLE QUANTITY	more than	8 M	4 M	2 M	1 M	500 k	250 k	130 k	64 k	32 k	16 k	8 k	4 k	2 k	1 k	500
	less than	16 M	8 M	4 M	2 M	1 M	500 k	250 k	130 k	64 k	32 k	16 k	8 k	4 k	2 k	1 k

M = millions; k = thousands

* ISO 4406 Codes are formed by two numbers:
  - the first indicates the number of particles larger than 5 µm, in 100 ml.
  - the second indicates the number of particles larger than 15 µm, in 100 ml.

EXAMPLES

Filtration degree achieved by using NOVOTECNIC filtration equipment:

ISO 4406 Code 16/13

- between 32k and 64k particles larger than 5 µm, in 100 ml.
- between 4k and 8k particles larger than 15 µm, in 100 ml.

Average filtration degree allowed to a lubricating oil at refinery:

ISO 4406 Code 19/16

- between 250k and 500k particles larger than 5 µm, in 100 ml.
- between 32k and 64k particles larger than 15 µm, in 100 ml.

Grinding- Central Coolant Filtration

3-5 Micron @ 3,000 lpm Central Precoat Systems

25 micron @ 1,000 lpm Media Free Central System

25 Micron @ 2,500 lpm Media Free System

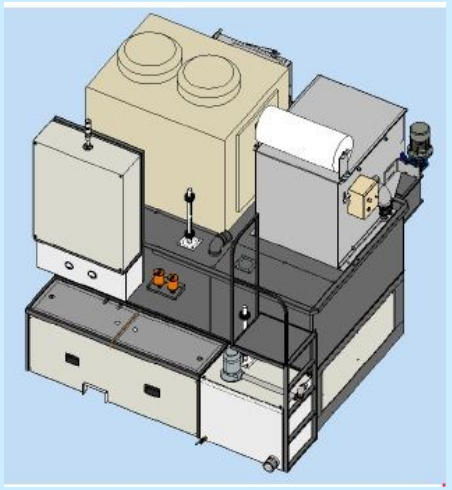
Various Hi Flow Central Filtration Systems

30 Micron @ 10,000 lpm Media Vacuum Filter

Local Grinding - Centrifugal Coolant Filtration

7 – 10 Micron Local Centrifugal Filtration Systems

10 Micron Local Hi Pressure Coolant Filtration System



1- 500 LPM systems varying between 1-250 bar

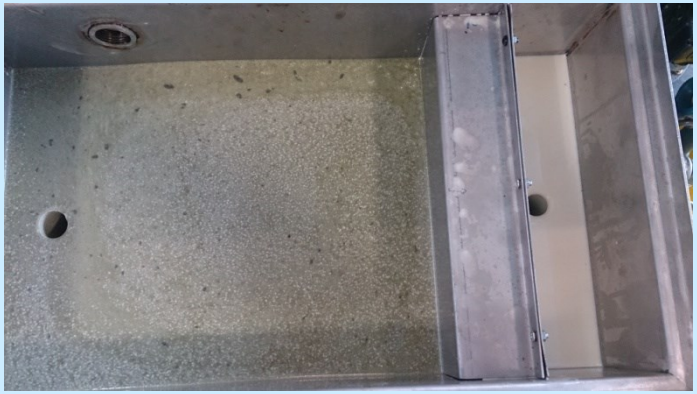
Local Media Free Drum Filtration – Machining Applications

Auto Back Wash Drum Filters 40 – 30 Micron @ 250 lpm

Media Free Auto Filter 20- 25 Micron @ 750 lpm

Local Media Vacuum Filtration – Grinding Applications

Media Type Vacuum Filters 30 Micron @ 500 lpm



Tramp Oil Separation

Central Drum Filter 1500 lpm for steel machining including tramp oil removal.

Coolant recycling : Hydrostatic Media Filter 150 lpm for grinding, composite materials and various machining application including tramp oil treatment and Bacterial treatment.

Coolant recycling : AutoBack wash Media Free Filter 150 lpm for various machining application including tramp oil treatment and Bacterial treatment.

Swarf Handling and Recycling

Money

=

Environment

=

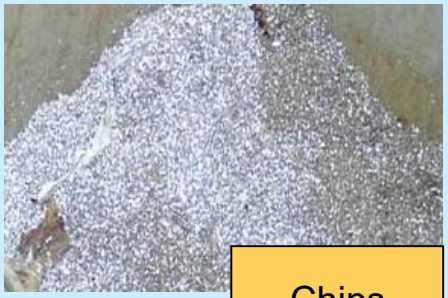
=

Coolant Recycling

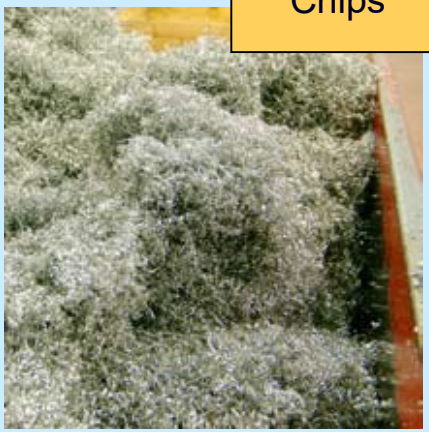
Metals Recycling

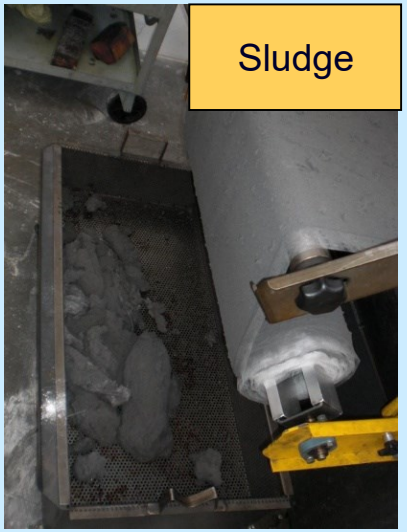
Volume Reduction

Swarf



Chips

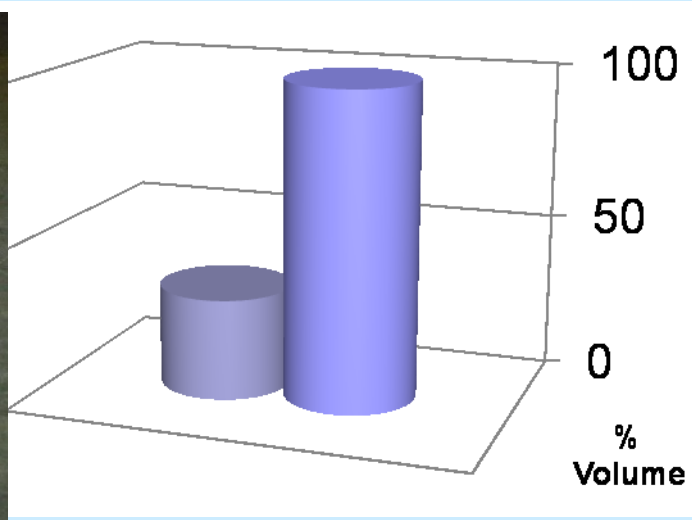




Sludge

Sludge Handling and Oil Recovery Test

After filter press 30%-20% residual humidity



after compacting 2%-5% residual humidity

Chips Recycling

- **Why to recycle.**
- **How to make money of it.**
- **What is necessary to have a good recycling system.**

Expected pay back from processed chips and coolant reclamation at a work shop utilizing 16 M.C. on Aluminum machining Supposing each M.C produce 7Kg. Al.\h . All Mc works 5 days\week 3 shifts.

Case 1 – Emulsion:

The money recovery calculation is :
7Kg\h x 16 MC x 24 H\day = 2.7 ton\day X 5 Day= 13.5 ton\week which is 54 ton\month .
x12 month = 648 Ton\year
Free chips value is around 0.5 $\kg. = 324,000 $\year.
Briquetted Al. value 1.2 - 0.8 $\kg = lets say 1 $ which means 648,000 $\year.
a difference of 100% = 324,000 $\year.
Coolant recovery\year 30 - 20% from total weight : 20%= 130,000 L\year = 9100 L emulsion concentrate (7% in volume of solution). That is 45.5 drums\year.
1 drum costs vary around 900$ - 1200$. Lets say 1000$.
45.5 Drums\year x 1000$ = 45500$\year
Total direct money recovery = 369,500 $\year from briqs and emulsion.

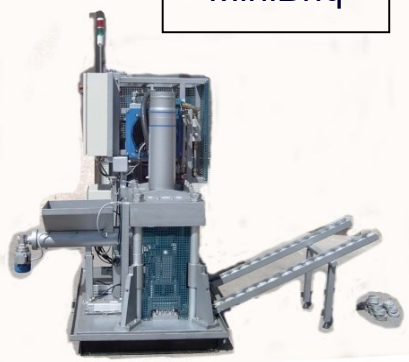
Case 2. net oil:

If coolant is net oil then recovery cost is around : 4 $\Litter of oil x 130,000 litter reclaimed \year
= 520000 $\year !!.
The total direct money recovered on net oil will be : 844,000 $\year from chips and net oil.

There are although indirect costs to be considered such disposing costs, as environmental costs, floors spaces costs and other labors which are saved.
Genneraly we say a swarf handling system will return costs within 6 – 24 month.

Swarf Handling systems

MiniBriq



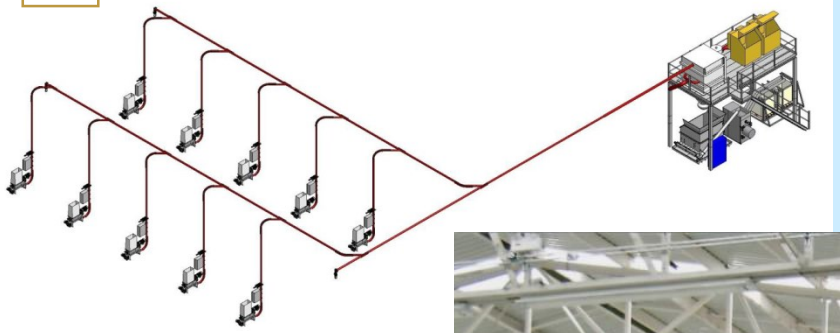
Centrifuge, Briqueter

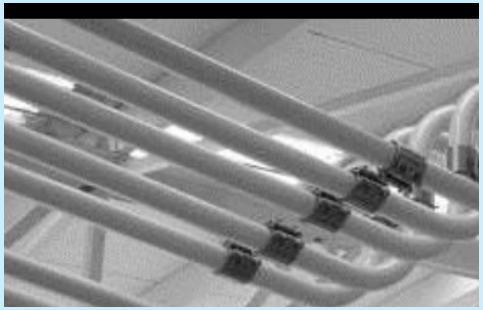
Skip Hoist, Crusher, Centrifuge

Skip Hoist, Feeder,Shreder ,Briqueter and Dispenser

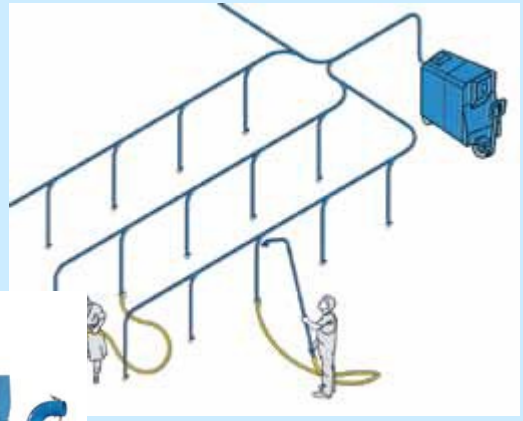
Skip Hoist, Crusher, Centrifuge, Briquetter

Pneumatic Conveying.

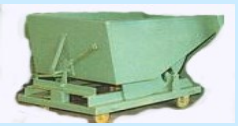




Vacuum Extraction Systems



Central Swarf Handling System & Filtration Syst.- Schematic concept.



Skip Hoist

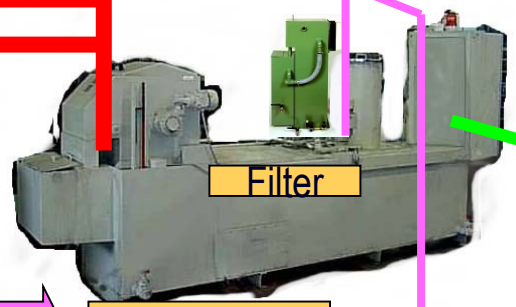
Feed Conveyor

Shredder

Briquetter

Briquette

RO



Filter

Top Up Line

Filtration System.

Filtration
Tramp Oil
Top Up
Chiller

The Sales Department

The collaboration between the engineering, Maintenance and sales departments assures a high quality after sale service including yearly maintenance contracts.

Pumps & Peripherals

High Pressure Positive Displacement Pumps

Centrifugal Pumps for Machine Tools & Industry.

Industrial Vacuum Suctions Systems

Industrial and Machine tools Air Cleaners

Various Coolant Chillers

Industrial Washing Solutions

Filtration Media & Disposables

Location & Address

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