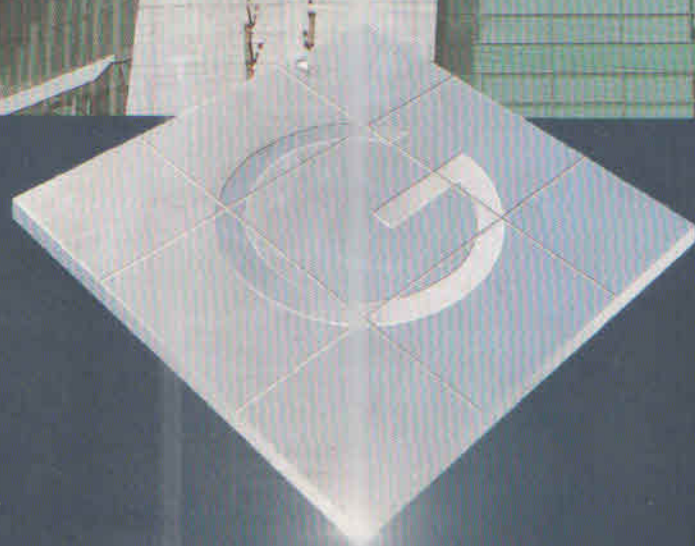


GURIND GLASS

ERICSSON 



ART & TECHNOLOGY
PERFECTLY MATCHED

Dear Customer,

In today's market dynamics, change is a reality. For, as never before, the market demands better quality, more focused and customized services and fast changing specifications to meet rapidly changing needs. That is why it is imperative to gear ourselves up to successfully manage change. Ever responsive, ever vigilant and all systems in place to service this dynamic environment.

That is exactly what we have done at Gurind India. Putting in place the most sophisticated plant and machinery from the best manufacturers in the world. The most stringent quality control measures that ensure the highest international standards. This has earned us the coveted ISO 9001-2000 certification and brought us close to achieving Zero Defect. We source the best material from the leading vendors, and have set up a flexible system that enables us to meet the most diverse customer requirements. So that whatever be your need in terms of product, service or quality, we are perfectly equipped to deliver.

Our attitude is a manifestation of this internal change, reflecting the inner dynamism that forever propels us forward. As well as our on-going mission to successfully manage change and always be at the cutting edge of technology.

With warm regards

Sincerely,

Gurmeet Singh,

Managing Director

Contents

Glass and Various Forms	1
Infrastructure	2
Toughened Glass	3
Heat Strengthened Glass	4
Insulating Glass	5-6
Ceramic Frit Glass	7
Laminated Glass	8
Gurind Decorative Glass	9-10
Gurind Mirror	11
Export Products	12
Projects	13-15

Glass and the various forms it takes

Float Glass

Glass is probably one product that finds the most multifarious uses and takes the most diverse forms through sheer innovation. In its basic form it is an inorganic product of fusion that is cooled to a rigid solid without crystallisation. It can take on a transparent, translucent or shiny appearance, by varying its constituents like sand, soda and lime and using special additives. Various forms of glass available are:

- Clear Glass
- Tinted Glass
- Reflective Glass

Clear Glass

Clear Glass is having high light transmission qualities because of their optical clarity and is available in thickness ranging from 2mm to 19 mm and normally in sizes of 2440 mm x 3660 mm, though larger sizes can be supplied if specially ordered. Clear Glass is used in:

- Residences
- Shopping Malls
- Restaurants
- Solariums
- Green Houses
- Atriums

Tinted Glass

Tinted Glass is made by adding metal oxides into molten glass to give it the colouring required. The tint thus given, filters light and so helps reduce eyestrain that might happen due to

dazzling light. It also absorbs light, so diminishes heat transmission from sunlight.

Tinted Glass finds use mainly in doors and windows.

Reflective Glass

Reflective glass is manufactured by applying a metallic coating on one side of normal glass so that the glass reflects sunlight and reduces to a large extent the heat transmitted through it, making it ideal for air-conditioned buildings. However due to the special nature of the film, the transparency of the glass is not adversely affected. Apart from cutting down heat gain and glare, reflective glass gives an aesthetic mirror like appearance to buildings during daytime, yet allows external light to enter inside. Reflective glass has properties that make it ideal for architectural use:

Available in a number of colours - clear,

bronze, grey, green, blue, pink etc. Available thickness -4 mm, 5 mm & 6 mm.

Gurind always has substantial stocks of Reflective glass of the best brands in the world like Pilkington-USA, Saint Gobain, Glaverbel, Pyro-Mexico, LVC-Taiwan & China etc.

Some of the main types of glass for architectural, industrial and decorative applications that we offer are :

- Toughened / Tempered Glass
- Heat Strengthened Glass
- Insulating Glass
- Laminated Glass
- Ceramic Frit Glass
- Decorative Glass
- Glass Bricks
- Mirror



Glass products on display

The Infrastructure that ensures quality



Hoist Crain



In-House Design Studio

At the ultra-modern Gurind plant the most advanced glass processing equipment has been put in place to ensure that the highest quality glass is created to meet the diverse needs of our wide range of customers. The Gurind facilities include:

- Over 75,000 sq. ft. of manufacturing area with mechanised handling
- Largest range of processed glass products under one roof.
- Imported Horizontal Toughened Plant
- CNC Cutting Machines

- CNC Glass Grooving Machines from Italy
- Automatic Conveyorised Insulating Line from UK
- Automatic Bend Plant
- Automatic 6' wide Conveyorised Mirror Line
- Electronically controlled beveling and edging machines from Bavelloni and Bovone of Italy
- Hoist Cranes and Goods Elevator for material handling
- Numerous Glass Working Machines for: Slitting, Drilling, Grinding, Engraving, Polishing, Shaping, Buffing, Screen Printing, Sand Blasting/ Etching
- In-house design studio, laboratory equipped with all testing and allied facilities



Test Laboratory



CNC Cutting Machine

TOUGHENED GLASS



Horizontal Toughened Plant

Gurind Tuff, Toughened Glass, is processed by heating glass to its transition stage (610-650 degrees Celsius), and then cooling it rapidly with blasts of air through specially designed air nozzles. This gives the glass high surface stress and tensile strength and it becomes four to five times stronger than annealed glass of the same thickness. So though it is more difficult to break, if it does break due to high impact, only small pieces without any sharp edges are formed. Unlike annealed glass which forms sharp knife like fragments when it breaks. This improved safety factor is why Toughened

glass is used by a wide range of industries for a variety of applications.

Gurind Tuff is also capable of withstanding direct heat of up to 400 degrees Celsius due to its high surface stress. It is resistant to scratches, sudden impacts, shock and wind pressures.

International technology for a visible difference

Our state of the art horizontal Oscillating Roller Hearth Toughening Plant is a fully automatic, computer desk controlled, window based workstation with micro processor assisted solid state control system to produce certified quality toughened safety glass conforming to all International safety and quality standards.

- Advanced SO₂ Injection System : to facilitate smart cleaning and coating of glass to protect the fused Silica Rollers' surface, in order to avoid the roller

leaving defects/marks on the toughened glass.

- The heat system is designed using most modern heat radiation & convection techniques including AIR ASPIRATING SYSTEM, to facilitate the achievement of best optical quality and true flatness in the product, which is a very important requirement for reflective glass.
- In-house testing facility is available to check the quality of Toughened and Heat Strengthened glass in accordance to the following codes:



Orchid Square, Gurgaon

As per IS : 2553 PART I & PART II	As per ASMT : 1048 C & ANSI Z 97.1
1. Fragmentation Test	1. Flatness (Over Bow)
2. Shock Test	2. Impact Test
3. Light Transmission Test	3. Light Transmission Test
4. Secondary Image Test	4. Surface Tension
5. Optical Distortion Test	5. Strength Test
6. Impact Resistance Test	
AS PER BS : 6206 BUILDING SAFETY TEST	
1. IMPACT TEST	



Satyam Computer, Chennai

Heat Strengthened Glass



Grooved Shower Cubical

Gurind Heat Strengthened Glass, due to the special process it goes through, has high impact and shock resistance properties and is at least two times stronger than annealed glass. Due to its medium tensile strength it is very safe as it does not fall from its frame even if it breaks, making it ideal for use in glazing. It is also capable of withstanding temperature differences on its surface of up to 20 degrees Celsius. While its medium surface stress makes it resistant to scratches, sudden impacts, shock and wind pressures during a storm.

All these qualities of Gurind Heat Strengthened Glass make it ideal for applications in:

- Façades of Towers
- Window glasses in commercial complexes, multi-storey buildings and housing complexes.



Silokhera, Gurgaon

- As a combination with double glazed, double sealed insulating glass where the outer glass is exposed to higher temperatures and so has a risk of breakage due to temperature variation.
- As a combination with Laminate Safety Glass where the overhead glazing is exposed to higher temperatures and so has a breakage risk due to temperature variations.
- Heat Strengthened Glass is produced on the same machinery as Toughened Glass with different parameters.

Insulating Glass

Gurind Insulating Glass is made of two or more glass panes, which can be of any type as per customer requirement, separated by metallic spacers and hermetically sealed, with a dehydrated air space using molecular sieves as a desiccant to prevent condensation between the two glass panes. A primary seal Polysobutylene is applied to both sides of the spacer and a secondary sealant Polysulphide/silicon is also used as a back-up material.

All inputs for Insulating Glass are carefully chosen from the best suppliers from across the world. Even so, each and every sheet of glass, components and inputs are thoroughly checked by the Gurind Quality Assurance through a battery of tests and by the Inspection Wing which follows stringent International standards and even the slightest defect is rejected.

All this ensures that Gurind Insulating Glass is of flawless quality with a high degree of resistance to heat, retarding the influx of heat during the summer and heat loss during winter. The high quality sealants also help in screening harmful ultra-violet rays



Terex Vectra, NOIDA

and act as noise insulators. These properties result in massive savings in electricity bills as cutting down heat transmission reduces the load on air-conditioners in the summer and on heating systems during the winter.

Gurind Insulating glass is produced on an Automatic Line from Willian's, UK, considered to be one of the best technology in the world.

Each and every batch also goes through the most stringent tests like:

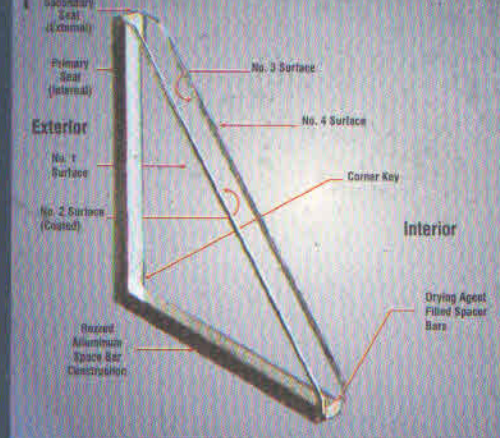
- Delta 'T' Test
- Absorption Test
- Ultra-violet Ray Test
- Dewpoint Test
- Sealing/Leakage Test
- Moisture Vapour Contents Test

The Widest Range

Gurind Insulating Glass comes in a wide variety of combinations: Clear, Tinted, Reflective, Toughened, Heat Strengthened, Laminated, Frosted, Ceramic Frit etc.



Automatic Insulating Line



Insulating Glass

Triple glazed Insulating Glass can also be manufactured for more effectiveness as per sizes and combinations desired by the customer. Various other combinations and various glass thicknesses can also be worked out as per requirements.

Noise reduction figures

Glass Thickness(MM)	Air Space (mm)	Mean of Noise Reduction (DB)
4 + 5	12	32
5 + 5	12	31
5 + 6	12	33
6 + 6	12	32
6 + 8	12	34
8 + 10	12	36



Global Business Park, Gurgaon

Solar energy control performance chart

Description	Nominal Thickness (mm)	U value 6 mm air space	U value 12.9 mm air space	Visible light transmission (%)	Solar Radiant Heat Reflection (%)	Solar Radiant Heat Absorption (%)	Direct Solar Transmission (%)	Total Solar Transmission (%)	Shading coefficient No Shade
Clear Nominal & Monolithic	6	1.13	1.13	87	8	12	80	84	0.95
Clear Normal & Clear Normal	6	0.64	0.56	76	13	23	64	73	0.83
Clear Normal & Bronze Normal	6	0.64	0.56	44	7	58	35	46	0.52
Clear Normal & Grey Normal	6	0.64	0.56	37	7	58	35	46	0.52
Clear Normal & Green Normal	6	0.64	0.56	43	13	42	45	55	0.62

Another innovative insulating glass is Gas Filled Insulating Glass. When a colourless and harmless gas like Argon is filled and sealed between the two glass sheets. This appreciably increases the insulating properties of the glass and at the same time substantially reduces condensation.

This is a low-cost procedure but results in a major improvement in the thermal performance of the glass.

Gurind is also equipped to produce Step Glazed Insulating Glass.

Ceramic Frit Glass

Gurind Ceramic Frit Glass is made by printing ceramic frit on float glass by a silk screen process before tempering or heat strengthening. After heat strengthening the ceramic frit fuses into the glass and becomes a permanent coating that cannot be removed or damaged by scrubbing or cleaning. This makes it possible to mask or make opaque areas for privacy or for concealing the background. It is also ideal for decorative designs.

Gurind Ceramic Frit Glass has advantages like:

- A range of stable and durable colours, offering designers a wide choice
- Energy saving, as it insulates solar

heated source and reduces air-conditioning costs

- It is light and can be effectively used as a substitute for stone, tile, metal plate etc. and so reduces structural load on external walls.
- It can be processed into laminated safety glass with high wind pressure resistance

Ceramic Frit Glass is used for curtain walls, glazing systems, shower cubicles, glass doors, partitions and other decorative applications in architectural interiors as well as exteriors.



Ceramic Frit Pattern



Vatika Triangle, Gurgaon

Laminated Glass

Gurind Laminated Glass is a high safety glass. It is a combination of usually two, and for specific needs multiple layers of glass, bonded permanently by a strong interlayer of Polyvinyl Butyl (PVB). It is this interlayer that gives the glass its high safety characteristic, as the glass sticks to the layer if broken by impact minimising the risk of injury from sharp edged flying glass.

The tough interlayer also resists penetration by the impacting object, which adds to the safety of the glass. In multiple glass layer configurations, it can even resist bullets, heavy objects or small explosions. Even in a two-glass combination it takes many blows at the same spot to penetrate and so is ideal for use in anti-robbery applications.

Apart from the safety features, the interlayer of Gurind Laminated Glass damps sound waves and is effective for keeping out unwanted noise. It also screens out at least 99% of damaging Ultra Violet rays, protecting interior furnishing, displays or merchandise in shop windows from the fading effects of UV radiation. With all these advantages, Gurind Laminated Glass is widely used for:

- Places where safety is of prime importance like schools, offices, hotels, restaurants, shopping malls, hospitals, airports, high rise buildings etc.
- High security areas like banks, ticket counters, jewellery shops, showcases, show-windows etc., where burglar resistance glass and bullet-proof glass is required.



Sahara Mall, Gurgaon



Sahara Mall, Gurgaon

The manufacturing process:

Gurind Laminated Glass is manufactured with the best glass sourced from the leading suppliers in the country. Each and every sheet is further put through the most stringent inspection. Then they are produced under a completely dust-free and clean environment. The glass cleaned with filtered, de-mineralised, de-ionised RO water.

Precise temperatures of 20 degree centigrade, relative humidity of 23% and a high level of cleanliness are maintained in the PVB storage and lay up rooms to ensure that each and every input and

every stage of manufacturing is flawless. The Laminated Glass then goes through stringent tests that further ensure that the highest quality levels are maintained:

- Boil Test
- Bake Test
- Penetration Test
- Fracture and Adhesion Test
- Comprehensive Shear and Moisture Test
- Content Determination Test

All of which go toward ensuring the highest quality, safety, sound and UV ray resistance of Gurind Laminated glass.



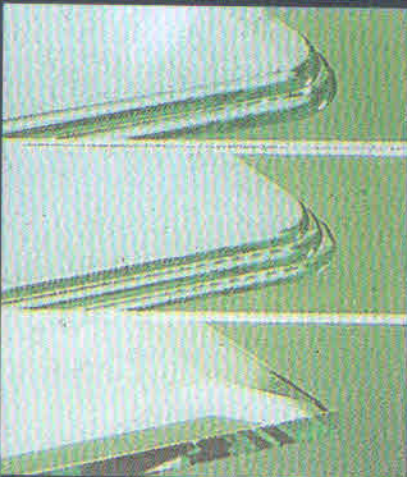
Auto Clave

Gurind Decorative Glass

Tables Tops

Gurind Glass Table Tops are created in a wide variety of edges, shapes, shades, thickness and sizes in plain or decorative finishes.

The range includes tops for dining tables, centre tables, side tables, counter tops and even wash basin slabs. Various shapes can be given to the outer and centre edges like Beveled, Flat, Pencil and Single to triple OG.



Various Edge Finishes

Gurind Table Tops range from 6 mm to 25 mm thickness with an exclusive range of 12 mm and 19 mm extra clear imported glass with standard shades of Grey, Bronze, Green and Clear.

Gurind's expertise, experience and state-of-the-art computerised facilities also set its range of Decorative Glasses apart. Enabling it to create numerous shapes and designs of exquisite perfection. This range includes Table Tops/Tables; Etched Glass of various patterns; Grooved Glass and Bend Glass. We can also execute

customised designs in etching or grooving and so turn your dreams and imagination to reality.

Beveled Glass

At Gurind's beveling set up, the largest in India, beveling is done on machines from Bovone and Bavelloni of Italy, which are



Automatic Beveling Machine

the best in the world. This ensures that the beveling has perfect corners meeting at right angles so that the beveled line is absolutely straight and there is excellent clarity.

Gurind can make Beveled glass in customised sizes with beveling width ranging from 6 mm to 50 mm on 3 mm to 19 mm thick glass.

Grooved Glass

Gurind offers a practically inexhaustible range of Grooved glass with finishes in the 'U', 'V', 'W' and off-center profiles.



CNC Grooving Machine

Any customised design can be grooved at Gurind using master CAD software. The quality of Gurind Grooved glass is ensured by the use of the best equipment in the world like the Intermac Master Glass CNC grooving machine from Italy, backed by the most in-depth technical expertise.

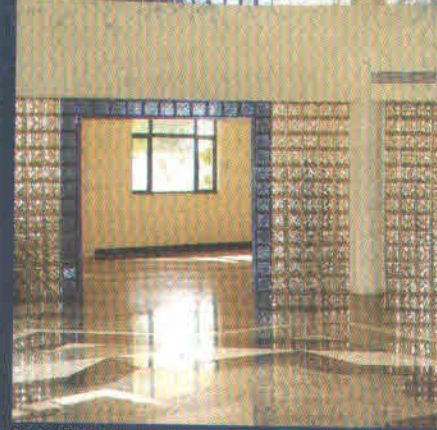
The perfect combination of machines and tools, specifically designed for each others, allows Gurind to offer its customers a complete service and a total guarantee of manufactured products.

Etched Glass

Gurind Etched glass is created by highly skilled craftsmen with sand blasting as well as chemical etching in various



Jindal Centre, New Delhi



Glass Bricks

finishes. The in-house design and art centre uses the latest computer aided designing methods to achieve the highest standard of accuracy and innovation.

Customised designs and fabrication can be done to meet varying customer needs.

Bend Glass

Gurind Bend Glass is made in different shapes and sizes as per customer specifications at the sophisticated Bend Plant. Gurind Bend Glass is used in curved wooden cabinets, French Windows, Table Bases, Show Centres, Interiors, Light Fittings, Balustrades and Partitions.

Glass Bricks

Glass Bricks have many enduring qualities that make them a great material for architects to work with. Transparent or translucent, they are of sparkling beauty and enable the designer to work with colour, light and forms in an innovative way. Add to this their ability to keep out dust and dirt, as well as their noise insulation properties and you have a material that merges aesthetics and practicality in a never before manner.

However, Glass Bricks have no load bearing functions and so should not be subjected to any structural load other than their own weight.

Glass Bricks allow architects to really let their imaginations soar and design structures that are innovations in sparkling beauty and at the same time extremely functional.

They are available in various shapes and colours, which give further latitude in design and imagination. Also, Gurind always has large stocks of various sizes and colours, so you will never have to wait and your designs can be given shape with no delay at all.



Bend Glass

Gurind Decorative Mirrors - A Reflection of Glass



Gurind has been the leaders in decorative glasses ever since it commenced its operations in India. A leadership position achieved through a sheer qualitative difference in its products that is exemplified in its range of mirrors.

Unlike ordinary mirrors that are manufactured with sheet glass having numerous defects, Gurind Mirrors are made with selected quality Float Glass, thoroughly checked and tested to produce mirrors of flawless quality. A care that is reflected right through the entire manufacturing process:

Gurind manufactures and markets the most exquisite range of mirrors, comprising:

- Beveled Mirrors
- Grooved Mirrors
- Etched Mirrors

This exhaustive range is manufactured on a fully automatic conveyerised line with

support equipment from Bovone, Italy. The most skilled craftsmen use the most sophisticated methods and equipment to create this exquisite range.

State-of-the-art equipment like CNC Glass Grooving Machines, Automatic Electronic Beveling and Edging Machines from Bavelloni and Bovone of Italy, give us the capability of creating decorative mirrors that are unmatched in the country.

Antique Mirrors

Gurind Antique Mirrors use a unique lining material that gives a feeling of great depth, while their marble pattern creates a luxurious and calm ambience. Highly skilled craftsmen combine various colours and designs in the mirrors with a mixture of various chemicals. This gives the mirrors their unique feel, clarity and old world class with all the benefits of modern technology.

Automotive Prismatic Mirrors

Gurind Prismatic Mirrors find use mainly in the rear view mirror of vehicles. In these



mirrors the reflective face is given a special treatment that scatters the reflected light in all directions and so reduces the brightness of the reflected object. This eliminates the problem of using ordinary mirrors as rear view mirrors, in which the brilliance of the reflected image is greater than the original object, specially when there is a strong light source like a headlight. So the view of objects at the rear is greatly improved with Gurind Prismatic Mirrors, and you are no longer dazzled by the reflection of headlights at night.

Some of the tests routinely carried out at Gurind are:

- Salt Spray Test
- Hot Water Test of 10 cycles
- Ferric Chloride Test
- Paint Adhesion Test
- Distortion Test
- Reflectivity Test
- Load Bearing Test

Export Products

Gurind India is one of India's largest exporters of Decorative Mirrors and value-added glass products to countries right across the globe like USA, U.K, Australia, France and Germany. At the moment the company is involved in the export of:

Decorative Mirrors, with:

- Coloured Border
- Plain Border
- Antique Border
- Screen Printed
- Grooved Border
- Wooden Border

Photo Frames in various edges and finishes:

- Bend
- Coloured
- Etched
- Glass to Glass
- Edged
- Mirrored

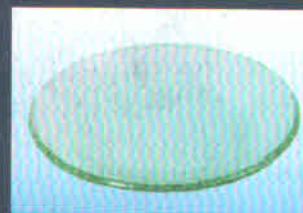
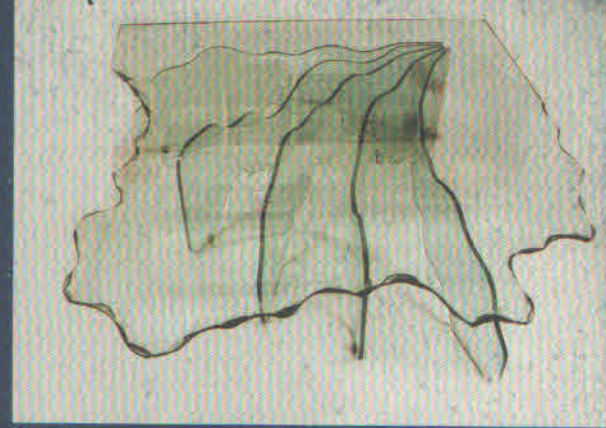


Table-tops

- Various shapes in Beveled, Pencil, Flat and OG edged

Miscellaneous Items:

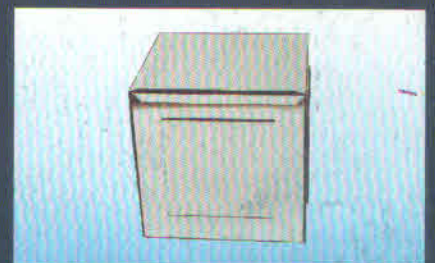
- Textured platters/bowls
- Mirror furniture
- Coasters



Glass Table



Export Assembly Line



Gurind Projects



Paras Down Town, Gurgaon

Sahara Mall, Gurgaon



Orchid Square, Gurgaon



Silokhera, Gurgaon



Terex Vectra, NOIDA



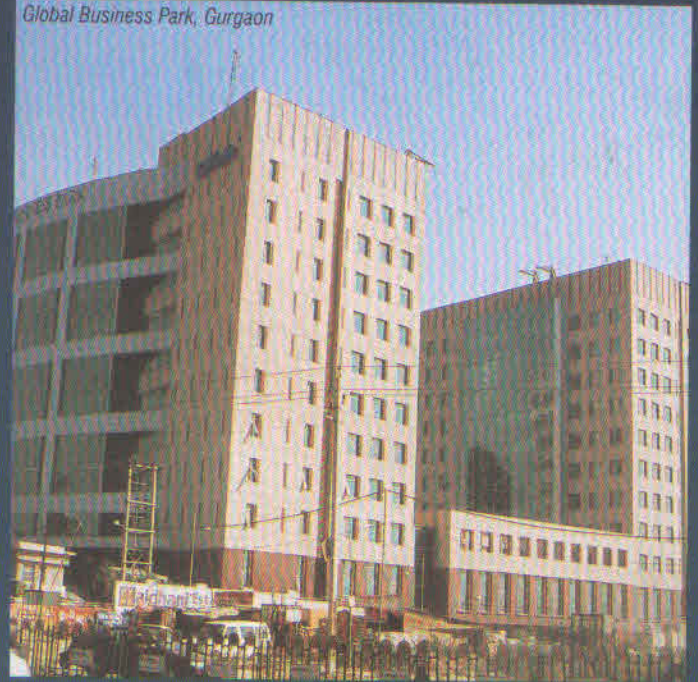


Le Meridien, Delhi

Satyam Computer, Chennai



Global Business Park, Gurgaon



Phoenix lamps, Noida



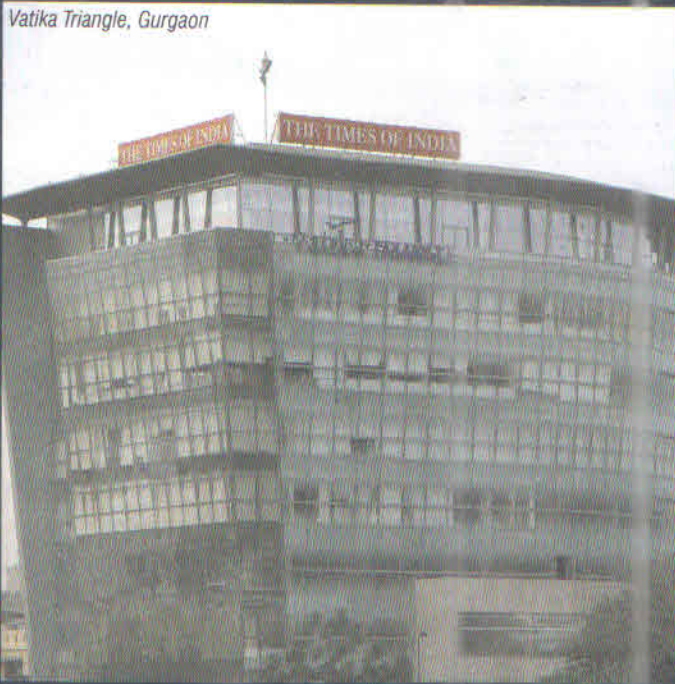
Ericsson, Gurgaon





Paras Down Town, Gurgaon

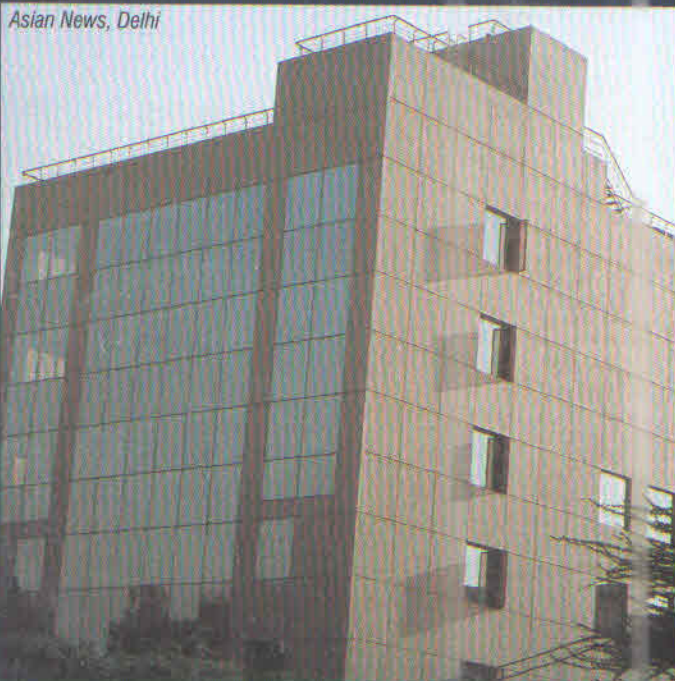
Vatika Triangle, Gurgaon



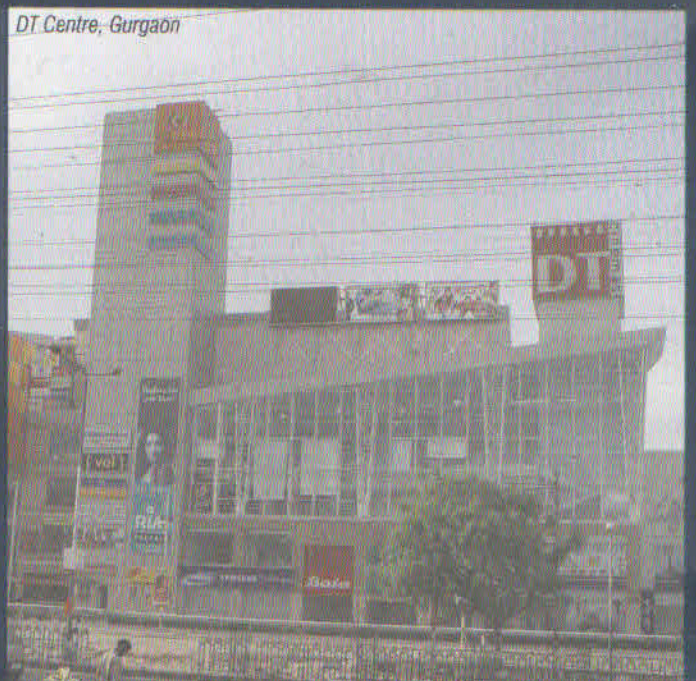
American Express, Gurgaon



Asian News, Delhi



DT Centre, Gurgaon



Paras Down Town, Gurgaon





Gurind India Pvt. Ltd.
(ISO 9001 - 2000 COMPANY)

Head Office :

60, Janpath, New Delhi - 110001
Ph.: 0091-11-23320774/23322987/23324907
Fax : 0091-11-23329084

Works :

W-34, 35, Sector 11, Noida (U.P) 201 301
Ph.: 0091-120-2554218/2535659 /2551364
Fax : 0091-120-2555275

For more information on our products,
please visit our website : www.gurindglass.com
or e-mail us at : info@gurindglass.com