

# Synchronize to Perfection



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SYNCHRONIZE TO PERFECTION

A MEMBER OF  HTI GROUP

# aceeeefhlprtw or a perfect whole

## Perfect individual components alone do not make any sense

The High Tech Extrusion Group is a pioneer in the extrusion industry. It is the only company in the world which supplies processed-optimized extrusion lines developed and manufactured on its own, namely the OMNIA series produced at corporate headquarters in Korneuburg, Austria.

### Not only connoisseurs but masters

Many companies claim they can build perfect components for extrusion lines, but what about the perfect interaction of these components operating as a whole? High Tech Extrusion understands the entire extrusion process and technology, and aligns the individual components to precisely harmonize with each other.

An extrusion line can only be considered as complete if it consists of an optimized extruder with synchronized downstream equipment, designed by the extruder developer in accordance with tooling requirements along with an integrated operating panel which can control all components, all of which work together in unison.

With its completely newly developed OMNIA extrusion line, High Tech Extrusion has succeeded in developing machinery which goes gently on natural resources and whose efficient use ensures a maximum output rate while reducing costs at the same time. Productivity, reliability and efficiency are the trademarks of the OMNIA extrusion line.

### An international team of experts

An entire team of specialized companies is operating at three different locations in Austria and Germany to manufacture top-notch machinery and components. High Tech Extrusion counts the world's most important profile and pipe producers among its customers.

With respect to complete systems, the extrusion lines concentrate on using PVC as the material for manufacturing profiles, pipes, sidings and sheets. In addition to complete facilities, the group of specialists also produces all individual components such as extruders, profile and pipe tooling and downstream equipment.

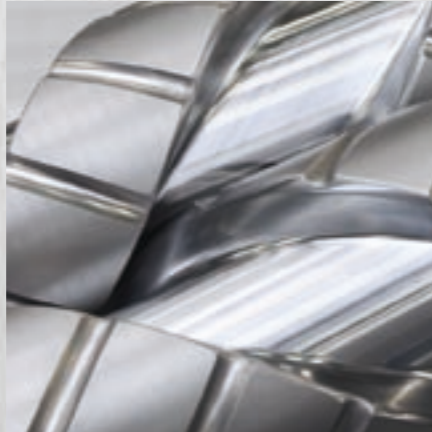
The sales office in Pune, India is responsible for serving the Asian and East African markets, whereas the subsidiary in Moscow, coordinates the group's business activities in Russia, Belarus, Ukraine and neighboring countries. High Tech Extrusion belongs to the High Tech Industries (HTI) Group.

# fitopr or profit

Maximize your profits in the production of profiles, pipes, sheets and sidings with the OMNIA extrusion lines.

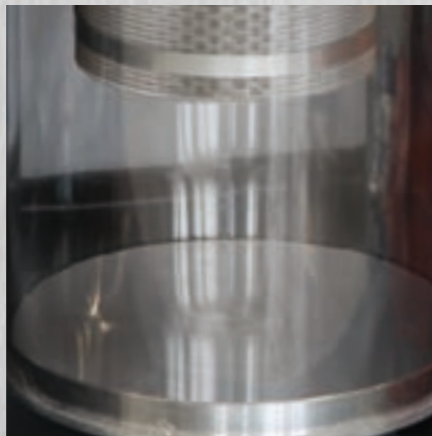
## Productivity

State-of-the-art extrusion lines such as OMNIA increase the productivity of your manufacturing operations on the basis of their output, low production downtime and reduction of scrap. Compared to conventional, poorly synchronized extrusion lines, an OMNIA product pays for itself within a period of two years.



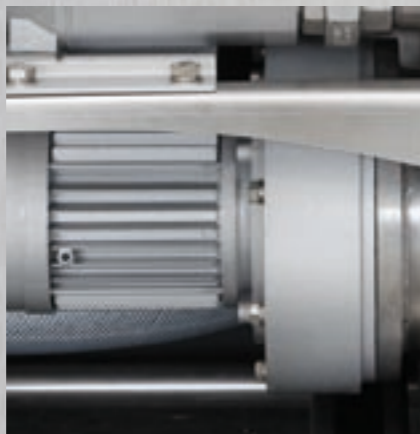
## Reliability

The perfectly synchronized components of the OMNIA extrusion lines and intelligent solutions such as a closed water cycle and avoidance of exposed hose and cable connections increase the reliability of the production processes and the quality of the manufactured profiles, pipes, sheets and sidings.



## Efficiency

High Tech Extrusion continually focuses its activities on ensuring the economical use of natural resources such as water, air and above all energy. The reduction in resource consumption was one of the core goals underlying the development of the OMNIA extrusion lines.



## OMNIA Extrusion Line



# Productivity or productivity



## Productivity of the OMNIA Extrusion Lines

### Extruder

The improved arrangement of the gearbox is a major step forward in the efforts to reduce the required space. Thus a higher equipment density is achieved with the same amount of production space. While optimally taking advantage of local conditions, it is also possible to mount the control cabinet on the left or right side of the extruder. Two High Tech Extrusion extruders are mounted side by side in a space-saving manner. The newly-developed vacuum canisters can be removed and easily emptied in a few simple steps, even while operating. Different technical solutions have been integrated, for example on the cylinder, which contribute to reduce energy consumption.

25% more output despite reduced energy use.

### Profile Tools

High Tech Extrusion has taken advantage of the expertise available to a full-range supplier to develop a new type of quick change system for profile tools. As a result, just a few simple steps are required to quickly and easily change the tool. Bundling all cables in a single harness also plays an important role in enabling the successful exchange of the tool. Interruptions or shutdowns are kept to a minimum, and thus the operation of the OMNIA extrusion lines at a higher level of productivity is ensured. The simple assembly of the tools reduces the effort and expense involved for regular maintenance and cleaning.

Peak production figure of 5.5 meters per minute for a 3-sided co-extrusion tool.

### Pipe Tooling

The newly developed Stream Liner pipe head manufactured by High Tech Extrusion enables a running performance of up to 20 m/min. These high speeds can be realized by the deployment of Nirosta vacuum calibration sleeves with precooling ring.

The patented feedback system enables three layer pipes to be produced with a foam or recycling core to be produced. The system requires 30-40% less material and helps to exploit enormous potential savings. The required cleaning effort is minimal, and longer operating time is guaranteed.

Higher productivity based on a running performance of up to 20m/min.

### Downstream Equipment

The downstream equipment of the OMNIA extrusion lines has been developed to meet the demands of high quality production. An important element here is the closed water cycle. The water is free of dust and the growth of algae is prevented, ensuring a high surface quality of the profile. Permanently lubricated chains in the haul off also contribute to this high product quality and simultaneously prevent the profile from being contaminated. The sophisticated mounting of the guillotine blade ensures the particularly long life span of the blade.

The closed water cycle increases quality and prevents rejects.

## Fewer unplanned shutdowns increases productivity

All components of the OMNIA extrusion lines are synchronized to perfection, so that the extrusion lines already pay for themselves after a short time. Easy operability and control of the machinery saves time and staff costs. Energy efficiency in the production processes reduces costs. The extrusion lines are failure-resistant for the most part, for example by avoiding exposed hose and cable connections. Moreover, service technicians from High Tech Extrusion can identify and analyze the problems online within a very short time. This has been made possible by using an integrated Siemens control system and Siemens components with Profibus.

On the one hand, the extrusion lines enable cost and material savings, and on the other hand, higher output based on a high output rate and the lowest possible production downtime. The outstanding performance of the OMNIA extrusion line on all levels increases earnings.

# Higher reliability or reliability



## Reliability of the OMNIA Extrusion Lines

### Extruder

The method of construction underlying the entire extruder ensures a long product life span. The gear box smoothly drives both screws connected by a mesh, thus causing minimal backlash and increasing the life span of the screws. The special method of building the gear box helps prevent churning loss and saves energy.

Screws and barrels of the processing unit provide the highest level of reliability. The screws alloyed with molybdenum in the plasma injection process are characterized by the utmost sliding and emergency running properties. The nitrified barrel itself features outstanding abrasion resistance.

All components of the OMNIA series are connected by an integrated control system. All electrical components, such as the touch panel, IPC, etc. are made by Siemens. This enables the continuous, advanced quality control of all defined process parameters. A trend diagram with alarm bands provides information at an early stage before potential quality problems arise.

Fewer scrap due to advanced quality control

### Profile Tools

Simplicity enables clarity and thus reliability. For this reason, the OMNIA extrusion lines feature a sophisticated cabling concept. Cables for the electricity supply and sensor technology are integrated into one single cable harness. In this way, cable breakage is prevented which could arise from cables mindlessly thrown on the floor, thus extending their life span.

The high quality steel used in tool construction comprises the basis for the long-lasting, reliable extrusion nozzles and calibration units. The tools are designed for the utmost haul-off speeds, for example 5m window profile per minute. This is all the more reason why the world's largest window profile manufacturer has confidence in the machinery provided by High Tech Extrusion.

A single cable harness comprises the controlled link between the extruder and tools.

### Pipe Tooling

The newly developed Stream Liner pipe head gives the extrusion lines of the OMNIA series an impressive tool to ensure product quality. There is only a minimal loss of melt pressure due to the design of the torpedo, and the longitudinal waviness of the pipes is minimized. This results in low excess weight, thus reducing material consumption. Compared to conventional tools, the Stream Liner is significantly easier to clean, thus increasing its reliability.

The die sets can be adapted to different formulas and discharges by means of attachment rings. The modular construction enables die sets of the next smallest pipe head to be used.

The shorter method of construction reduces the residence time in the pipe head and thus improves the quality and decreases the volume of rejects.

The precision of the Stream Liner pipe head stands for consistent product quality.

### Downstream Equipment

The OMNIA extrusion lines make use of a closed water cycle in the downstream equipment, comprising an intelligent solution which enhances the reliability of the manufacturing process and the product quality.

This system is characterized by several bottom-line advantages, for example the closed water cycle in the calibration tables ensures that only a minimal amount of dust loading and dirt contaminate the cooling water. Moreover, this prevents algae from forming and the water from overheating. The contamination of cooling water can impair the quality of the profile surface. For its part, clean cooling water enhances the gloss level of the end product.

Clean cooling water makes a significant contribution to the high quality of the surfaces and enhances the gloss level.

## Higher reliability reduces rejects

**The extremely high level of reliability is the result of decades of experience in the development and production of extrusion line components or complete systems. High Tech Extrusion has succeeded in increasingly perfecting the extrusion process. Only with a reliable process-optimized extrusion facility is it possible to reduce rejects and thus cut material and production costs.**

The new OMNIA extrusion lines are a credit to their developers – High Tech Extrusion – when it comes to the initial cost of acquisition, the simple startup as well as ongoing operation.

# Efficiency or efficiency



## Efficiency of the OMNIA Extrusion Lines

### Extruder

A large amount of product development work was done over the past few years. The Theysohn Torque Master Extruder (TTM Extruder) line optimally launched on the marketplace served as the basis for newly developing the OMNIA extrusion line. The tried and tested TTM gearbox, which has already succeeded in serving as the quality benchmark with respect to reliability and resilience in extrusion gear manufacturing since the turn of the millennium, has been further upgraded and has set a new standard, achieving 98% efficiency.

The fact that the gearbox has been vertically installed, thus saving space, facilitates the process of dual extrusion. An oil pump integrated in the gearbox reduces energy and maintenance costs and reduces the noise level. Gear efficiency is significantly enhanced through a special lubrication concept in the reduction.

Intelligent gearbox design and screws with the utmost sliding properties save energy and increase the life span of the devices.

### Profile Tools

The tooling concept was revolutionized based on the know-how of a full-range supplier. A quick change system enabling the speedy exchange of tools enhances the availability of the machinery. Tools are calibration table are optimally synchronized with one another. Only a single cable connects the extruder and the tool, which saves additional time during the tool change. This also prevents potential errors from arising which are related to confusing electricity connections. The optimal water flow conditions in the tool reduce water consumption, which in turn decreases the amount of energy needed to prepare the cooling water.

Lower water consumption in the tool reduces the cooling load.

### Pipe Tooling

The newly developed Stream Liner pipe head guarantees the lowest possible loss of melt pressure due to its mandrel support. The die sets can be adapted to different formulas and discharges by means of attachment rings. Ergonomically designed pipe head supports enable simple handling. Double extrusion is also possible on the basis of the two pipe heads mounted on one distribution block.

A Stream Liner pipe head enables the production of a significantly broader range of pipes.

### Downstream Equipment

Naturally the development of downstream equipment and its interaction with other components in the OMNIA extrusion line also took account of ensuring optimal efficiency with respect to the issue of functionality - for example, when it involves exploiting potential savings. A new type of vacuum concept only makes the vacuum in the calibration table available which is specifically needed at that particular moment. The actual amount of required water is delivered by the water pumps. The frequency-regulated vacuum pumps as well as the regulated water pumps save more than 50% of the energy and operating costs.

Vacuum precisely at the moment when it is needed and realize energy savings of more than 50%.

## Perfect individual components alone do not make any sense

It is true that efficiency lies in the details, but it is also a matter of considering the big picture. Only those people who look at things from both a macro and micro perspective can achieve the maximum output from the resources deployed such as water, air, materials and above all energy with minimal effort and expense. The individual processing steps in the OMNIA extrusion line were dissected and closely scrutinized and the newly discovered solutions were integrated into the processes. The extruder - the heart and soul of the machinery - as well as the tools and the downstream equipment are optimally synchronized with each other in process engineering terms, but not a bit too much when they are not needed.

With its new OMNIA extrusion system, High Tech Extrusion has succeeded in developing complete extrusion lines fulfilling the highest technological standards, relieving the burden on the company's costs and on the environment.

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