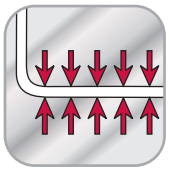
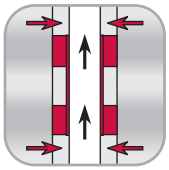
# Conventional Well Screens

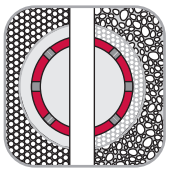
Providing the organizational capabilities, well-screen technology understanding, system reliability and installation experience to effectively address your sand-control challenges



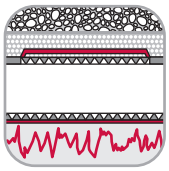
Optimum Drainage



Effective Isolation



Application Versatility



Integrated Function

Weatherford®

Solving your sand control challenges

## A Full Range of Completion Products and Services

- Advanced flow control
- Artificial lift (all forms)
- Chemical injection
- Conventional sand screens
- ESS® expandable sand screens
- Fracturing technology
- Gravel pack
- Inflatable packers
- Intelligent wells
- Liners
- Packers
- Safety valves
- Solid expandables
- Wellheads
- Well services

# The Weatherford Portfolio

Weatherford International Ltd. is one of the largest global providers of innovative mechanical solutions, technology and services for the drilling and production sectors of the oil and gas industry. An industry leader for more than 55 years, Weatherford has built its reputation by providing high-quality products, responsive client service, and a commitment to safety in all aspects of operations. Our continued pledge to our clients is to provide production-enabling technologies and superior services that maximize production.

Our vast global infrastructure—exceeding 900 sales and service locations throughout more than 100 countries—enables us to offer one of the industry's most diversified portfolios of products and services for drilling, evaluation, completion, production and intervention applications.

Since 1998 Weatherford has strategically combined an array of well-known brands from the completions sector with one goal in mind: making your reservoir recovery operations more productive.


Resistance seam welding

## Focused on Technology

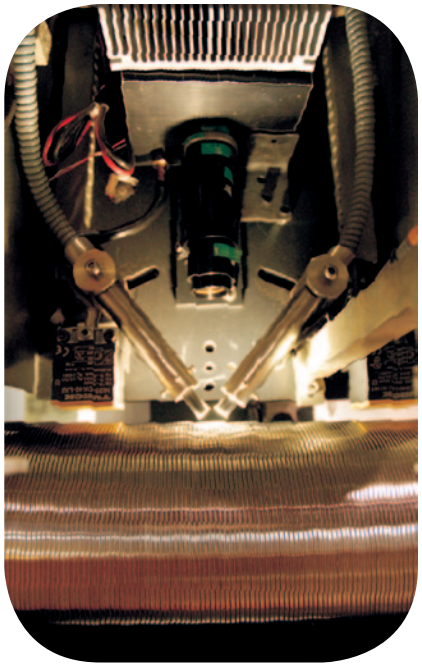
Over the past several years, Weatherford has brought together a full-dimensional core well-screen offering that includes metal-mesh, wire-wrapped, and pre-pack conventional screens. In addition, our skilled engineers, technicians and subject matter experts bring a superb level of knowledge and experience and a drive to push the technology envelope. The result? A focused well-screen business prepared to serve clients as never before in the industry.


## Industry-Leading Testing, R&D and Training Facilities

Weatherford's network of 34 technology and training facilities includes two of the largest facilities in the industry and in the world. Our Houston-based Technology & Training Center houses the world's most advanced safety valve engineering lab and three hot cells that simulate downhole conditions, including temperatures of up to 500°F (260°C). Our Downhole Technology Ltd. (DTL) facility in Aberdeen is Europe's foremost research, testing and development center for offshore well services. The DTL facility includes two fully operational drilling rigs; test boreholes; Well Intervention Center; and RigTrain® services, the market leader in high-quality training services.

### Engineering Depth

Weatherford's product engineering resources are based around the world. We also employ a range of engineers, designers and technical support staff with a breadth and depth of experience from mechanical and electrical engineering to highly specialized disciplines of optical science and metallurgy.



Photometric inspection system measures wire, spacing the full length of each screen to meet client specifications.

Aberdeen training facility

## Production-Enabling Technologies that Convert Reserves into Revenues

Weatherford's ongoing technology focus continues to provide the right technologies for every application in the most cost-effective manner for our clients. Key criteria for technology development include products that

- drive down well costs;
- increase well productivity;
- maximize mature reservoirs and address the technical challenges of new fields.

Houston Technology & Training Center

## Comprehensive Completion Products and Services

Weatherford's latest completion technologies range from our revolutionary, world record-setting expandable technologies to continued expansion of our premium conventional screens line. We also continue to expand our product offerings with product-line extensions, such as packers for high-end, large-bore applications and proven liner systems for deepwater and extended-reach situations.

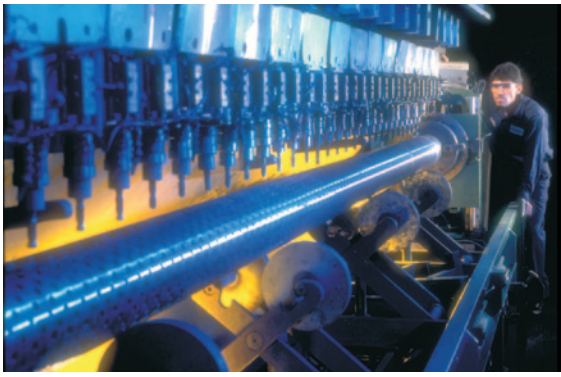
Intelligent Screens™ technology and FloReg™ inflow control device models

Weatherford's manufacturing facilities span the globe.

## Manufacturing Infrastructure

Weatherford's 106 certified manufacturing facilities are strategically located throughout the United States, Canada, South America, Europe and Asia. Since 2002 we have doubled our completions manufacturing capacity by adding new facilities, expanding existing ones, and investing significantly in the latest machining equipment. We put all of our manufacturing employees through internal apprenticeships and external training programs to ensure the highest level of quality control.

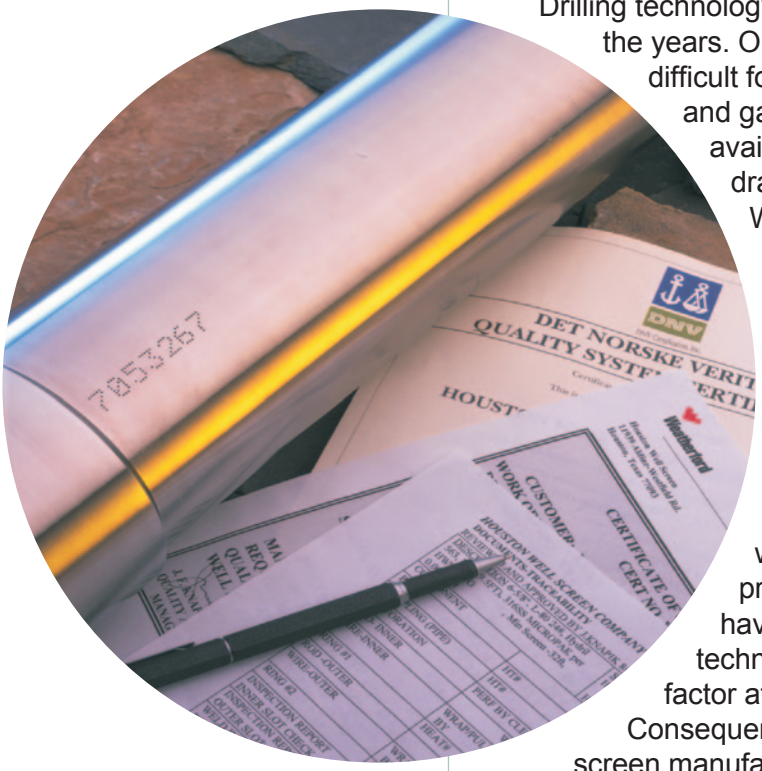
With more than 100 years of experience in driving well-screen technology and with global ISO 9001 manufacturing facilities in Dublin, Singapore and Houston, Weatherford can offer the greater economies of scale that bring real bottom-line value to our clients.



Multi-spindle drill press speeds manufacturing.

Screens are shipped globally from any of our regional centers.

## QHSSE and Weatherford Well Screen




Global ISO 9001 certification ensures repeatable quality and success.

Drilling technology has undergone many changes over the years. Operators drill ever deeper and into more difficult formations as the world demand for oil and gas increases. The technological expertise available for well completion has advanced dramatically in complexity and effectiveness. We know. Weatherford has been there since the beginning. We pioneered many of the advances in sand-control technology and currently hold some of the most important patents in the field.

Onshore and offshore, in some of the deepest wells, under the most difficult downhole conditions, as well as in thousands of less dramatic oil, gas and water wells, Weatherford products have proved themselves again and again. We have always recognized that our well-screen technology represents the single most important factor affecting the efficiency of a producing well. Consequently, we operate the most complete well-screen manufacturing facilities in the industry.

To ensure the precision and quality of our products, we control every step of their production.

Each order starts with custom materials to meet well-specific operating conditions. We draw, anneal and roll-form our own wedge-profile wire to exact dimensions. Screen-fabricating machines weld and assemble each screen, with careful quality checks at every stage.

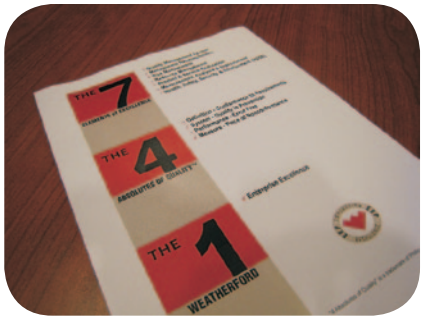
These unmatched standards of excellence have fueled our growth in this critical industry. With complete operating plants in three locations and 900 service bases around the world, we can provide efficient service to your wells in any country or offshore location.

# Enterprise Excellence Program

Weatherford International Ltd. is committed to pursuing the highest standards of excellence in all our business processes. It is the policy of the company to

Bernard J. Duroc-Danner
Chief Executive Officer
Weatherford International

- adhere to our high standards of ethical conduct and comply with all applicable laws and regulations in the areas where we do business;
- conduct all operations in a manner that promotes safe work practices and minimizes risk to our employees, our communities and the environment;
- implement the programs, training and internal controls necessary to achieve our goals.




## Objective

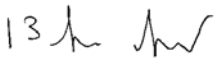
**To achieve complete internal and external client satisfaction and to conform to mutually agreed requirements the first time, every time, while protecting the well-being of all personnel, assets and the environment.**

This objective is achieved through a commitment to understanding and applying defined business processes, complying with established standards and implementing continual improvements. Paramount attention will be given to achieving error-free processes, products and services and maintaining a safe environment.

## Commitment

We empower each employee to take the appropriate action to ensure compliance with this policy and objective.

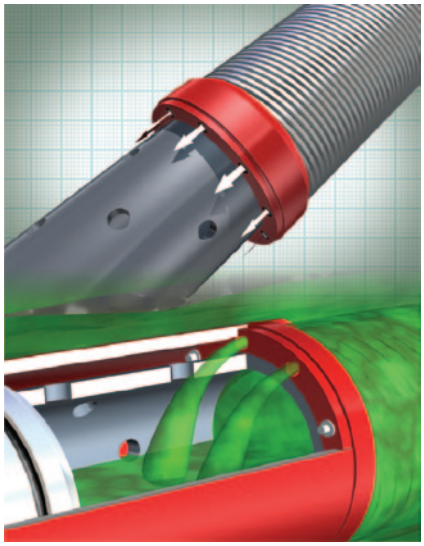
This policy and the associated objective and commitment statement describe the targets we have set ourselves in achieving excellence. The principles described in this document define the corporation's expectations that must be incorporated into the culture of the enterprise in order to achieve excellence.






The structure of the basic competency system model is known as the "Triple 5," which refers to the five levels of personnel the system addresses, the five components of assessment and the five methods of assessment.

Flow Ports of FloReg™ ICD



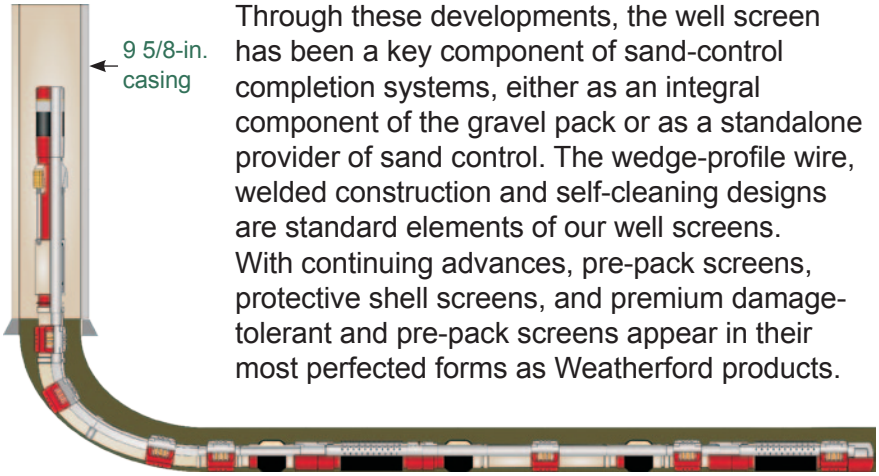
Ports can be opened or closed for desired flow rate.

## Sand Control

The control of sand flow from unconsolidated formations has always been one of the most critical challenges in well completion. Economic considerations, such as the increased value of non-renewable oil reserves and climbing costs of remedial work, have moved sand control to a central position in well management. Production reliability is essential in offshore or remote locations, and maximal productivity is important anywhere.

The physical mechanisms that result in sand production in oil, gas or water wells are very complex. Producing sand, along with well fluids, can result in premature failure of artificial-lift equipment. Sand bridges formed in the casing or tubing can impede and eventually obstruct the flow of your well. The compaction or erosion of surrounding formations can cause failure of casings and liners. A casing failure in the producing zone can mean the loss of your well. Other sand-related challenges include abrasion of downhole and surface equipment and difficulties associated with handling and disposal of produced formation sands.

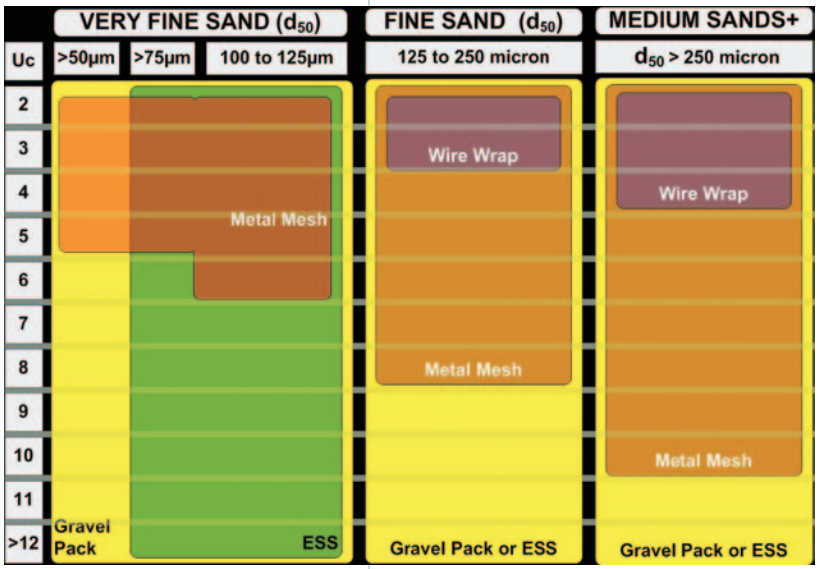
### Sand-Control Technology




Through these developments, the well screen has been a key component of sand-control completion systems, either as an integral component of the gravel pack or as a standalone provider of sand control. The wedge-profile wire, welded construction and self-cleaning designs are standard elements of our well screens. With continuing advances, pre-pack screens, protective shell screens, and premium damage-tolerant and pre-pack screens appear in their most perfected forms as Weatherford products.

## Screen Selection

A producing well can represent significant revenue to you, and your choice of well screen can have a profound and far-reaching effect on the productivity and efficiency of that well. Weatherford combines sand-control technology with manufacturing expertise to provide screens you can use with confidence. Many of our manufacturing techniques are unique and patent-protected. While meeting or exceeding ISO 9001 standards, Weatherford is one of the few manufacturers that build every element of a well screen, from raw materials to finished products, entirely in their own plants.



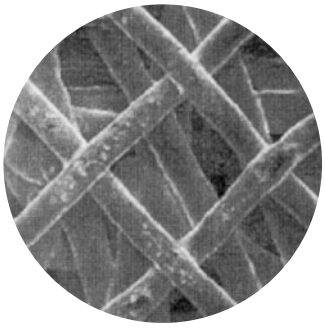

We manufacture our own precision-shaped wire to exacting specifications. Our special six-step, double-annealing process creates a uniformly strong wire free of internal stresses. Custom-engineered, screen-fabricating machines ensure precise tolerances essential to our products and your needs.

Our quality control department checks every product at each stage of production to ensure strict conformance with specifications.

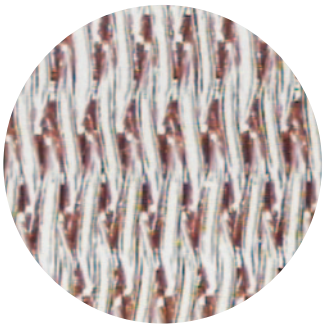
Our technical staff has many years of experience in all phases of hydrocarbon well completion. This expertise is available on request to help resolve your well completion engineering problems.

Proper well screen selection is a critical part of a successful well completion. A number of factors influence screen selection, and our technical staff will assist you in achieving optimal well performance. Our laboratories can help you in the selection process with sieve analysis of representative formation material samples. We can also help with the proper material selection for special downhole corrosive environments. The extensive manufacturing capabilities of Weatherford's well screen plants enable us to respond quickly to custom-order requirements for any well in any part of the world.

SL media



PMF media



*Maxflo* media

# Metal-Mesh Damage-Tolerant Screens

## Excelflo® and Maxflo® Screens

Our *Excelflo* and *Maxflo* damage-tolerant screens are built to take the punishment of installation through the tightest turns in horizontal and multilateral wells and then provide dependable, long-lasting sand control. These screens are built to your specifications for reliability and durability.

Proprietary welding procedures and high-grade alloy- and chrome-based pipe improve corrosion resistance and mechanical integrity of the finished screen. The porous metal fiber (PMF) and sintered laminate (SL) mesh-screen elements are available in both 316L stainless steel and high-nickel-content alloy to meet the most stringent downhole requirements.

*Maxflo* screen

Media combination for improved performance.

# Pre-Pack Screens

## Micro-Pak® Screen

Whether the requirement is for standalone sand control in subsea horizontal wells, improved gravel placement during high-pressure pumping, or workover of remedial wells, Weatherford can customize a pre-pack screen for your application. We pioneered the use of synthetic proppant to improve permeability along with our best-in-class packing systems. If the application calls for a cured, consolidated pre-pack screen, our unique curing process ensures a consistent cure and eliminates scorched or undercured packs.

Configuration to client needs

Process controls ensure consistent steam curing.

Industrial vibratory system provides a uniform annular pack.

Wire wrap is automatically fed onto base pipe.

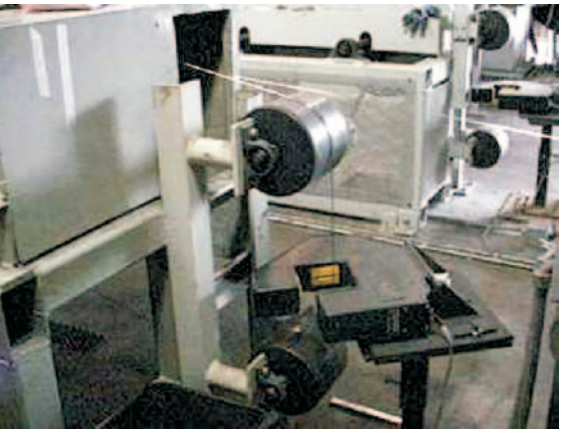
# Wire-Wrapped Screens

## Ultra-Grip™ and Dura-Grip® Screens

Weatherford originated the all-welded, continuous-slot screen, and after more than 100 years of designing and building these custom screens for the most demanding applications, we are truly the world's most experienced provider.

Precise slot control begins with precise wire forming; therefore, we draw, form and anneal all of our own wire to ensure that it meets our exacting standards. These practices become especially critical with our precise, slot-tolerant, high-open-area designs.

So whether your application requires minimal drawdown pressures or industry-leading mechanical strength, turn to Weatherford. No one else provides the level of experience or range of products that we do.



Precise laser monitoring of in-house wire-forming and annealing operations provides the necessary tolerances to wrap directly on the base pipe.

Camera and sensor measure each gap to ensure required tolerance.

## Multifunction Screens

Successful gravel packing and frac packing are highly dependent on proper gravel placement and the absence of voids caused by annular bridging of the gravel. To ensure void-free packing, the industry has recognized the benefits of shunt-screen systems.

Weatherford is a leading manufacturer of shunt-tube technology. From ALLPAC® and ALLFRAC® Alternate Path® screens to screen-wrapped sliding sleeves, and special-clearance thru-tubing screens, we can rapidly design and build a solution for you.

Unique to Weatherford's offering is our FloReg™ inflow control device (ICD) for controlled flow in extended-reach reservoirs.

For reservoir monitoring with significant time and cost savings, our Intelligent Screens™ technology deploys with optical distributed temperature sensors for valuable real-time data.

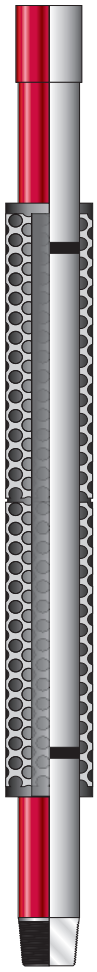
So, whether your completion involves a standard low-rate gravel pack or something as complex as a subsea horizontal well, Weatherford is prepared to handle your needs.

Control-line and optical-sensor screens make up our *Intelligent Screens* offering and are available for onshore or offshore applications.

Alternate Path

Injection point in Alternate Path screen

ALLPAC, ALLFRAC and Alternate Path are registered trademarks of ExxonMobil Corporation.

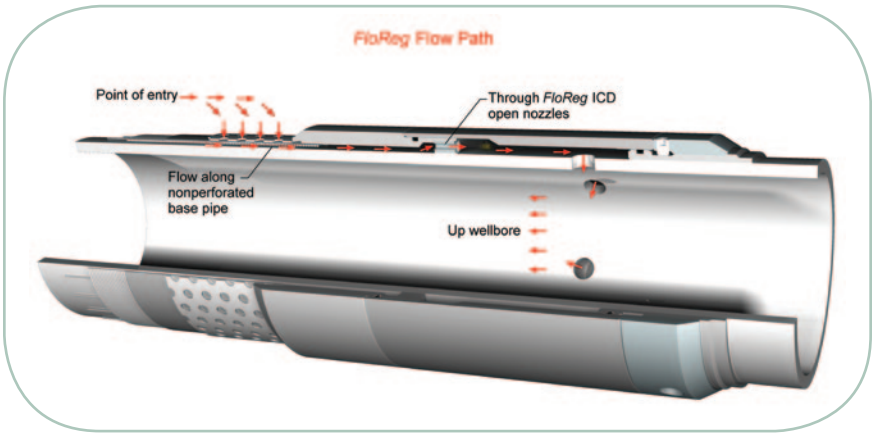


*Intelligent Screens* system

## The Weatherford FloReg™ Inflow Control Device

The *FloReg* ICD is designed to help distribute inflow evenly throughout a horizontal wellbore. This device reduces the tendency of water or gas coning, allowing the reservoir to drain more efficiently and thus maximizing production and recovery. When installed with Weatherford's screens, the *FloReg* ICD allows for uniform production-flow distribution along a sand-control completion in a horizontal well.

Weatherford's *FloReg* device enables predetermined setting of the pressure drop (heel-to-toe) along a screen section, using multiple open or closed flow ports.




## Intelligent Screens™ Systems

The *Intelligent Screens* system combines two highly effective and successful Weatherford technologies—well screens and optical sensing—to enable safe, easy, permanent monitoring across perforated intervals and openhole sections in sand-control completions. The system provides distributed temperature sensing (DTS) capabilities from the wellhead to total depth for on-demand thermal profiling of the well.

Applications include monitoring of completion effectiveness and well startup; continuous production- and injection-profiling; wellbore diagnostics; and special analyses during normal well operations, such as the warm-back that accompanies shut-ins of injection wells. In addition, the system provides the ability to install other optical sensors, such as pressure/temperature gauges, flowmeters and seismic sensors, within or between zones on a single optical cable.

For the best screen solution for your wells, contact an authorized Weatherford representative, or visit **weatherford.com**.

## Solving your sand control challenges

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