# **New Holland Agriculture**

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**New Holland** is a global brand of agricultural machinery produced by CNH Industrial. New Holland agricultural products include tractors, combine harvesters, balers, forage harvesters, self-propelled sprayers, haying tools, seeding equipment, hobby tractors, utility vehicles and implements, as well as grape harvesters.

The original New Holland Machine Company was founded in 1895 in New Holland, Pennsylvania; it was acquired by Sperry Corporation in the 1970s, then by Ford Motor Company in 1986, and then by Fiat in 1991, becoming a full line producer. Since 1999, New Holland is a brand of CNH Global (NYSE: CNH), which is majority-owned by Fiat Industrial.

New Holland equipment is manufactured all around the world; the current administrative headquarters are in Turin, Italy, with New Holland, Pennsylvania serving as the headquarters for North America and home of the largest hay tools production facility in the world. With 18 plants spread globally, as well as six joint ventures in the Americas, Asia and Middle East, the corporation is present in 170 countries worldwide.<sup>[1]</sup>

In recent years, the firm has received several awards for its products, designs, and innovative features. Recently, New Holland presented

the NH2, a hydrogen powered tractor farmers can refill generating energy from renewable sources. New Holland also owns trademarks for specific innovation on its products such as ABS Super Steer system, Opti Fan System, Intellifill system and others.

The brand is also known to the wider public for being the Juventus F.C. main sponsor from 2007 to 2010.

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#### **New Holland Agriculture**

AGRICULTURE						
Туре	Brand					
Industry	Agricultural equipment Capital lending					
Founded	1895					
Headquarters	Turin, Italy					
Key people	Carlo Lambro, Brand President					
Products	Tractors Combine harvesters Haying Equipment Balers Grape Harvesters					
Parent	CNH Industrial					
Website	NewHolland.com (http://www.newholland.com)					

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# History

New Holland history is the sum and integration of four agricultural brands that converge and merged: Ford, Fiat Trattori, Claeys and New Holland.

New Holland was founded in 1895 by Abe Zimmerman<sup>[2]</sup> in New Holland, Pennsylvania and was producing agricultural products, including a feed mill, to help the farming community around him (see New Holland Machine Company). In 1947 the company changed its name into Sperry New Holland, due to a take over by the Sperry Rand Corporation. The same year it made a major breakthrough in hay harvesting technology with the introduction of the haybine mower-conditioner. In 1964, Sperry New Holland bought a major interest in Claeys.



The first New Holland plant in New Holland, Pennsylvania.

Claeys was founded in 1906 by Leon Claeys, a Belgian mechanic. This firm started to build threshing machines, and in 1909 built a factory in Zedelgem, Belgium, where one of New Holland's plants is still producing harvesting products today. By the 1960s, Claeys, was one of the biggest combine manufacturers in Europe.<sup>[3]</sup>

In 1975, Sperry New Holland introduced the world's first twin-rotor combine, a successful technology that is still used

today.



A Ford Tractor Model F, produced since 1917

In 1986, Ford bought Sperry New Holland and formed Ford New Holland Inc.<sup>[4]</sup>

Before this acquisition, Ford had a long history in agricultural machinery production. In 1907 Ford came out with the prototype for the world's first mass-produced, gasoline-powered tractor, named an 'automobile plow'. Ten years later this tractor went into actual production.<sup>[5]</sup> It was renamed the Fordson Model F, and produced by a new business, Henry Ford & Son Company. In 1939 Ford introduced the 3 point hitch (three-point linkage) on the 'N' tractor Series, a very successful tractor family. In the 1980s Ford was one of the major players, and its tractor division had been responsible for a number of

industry innovations, including the use of power hydraulics, rubber pneumatic tires, diesel engines, and the 3-point hitch (The 3-point hitch was originally developed by Harry Ferguson, but was in wide use on Ford tractors).<sup>[6]</sup>

In 1991 Fiat purchased an 80 per cent interest in Ford New Holland.<sup>[7]</sup> Also Fiat was present in the agriculture machinery industry since the beginning of the 20th century. In 1918 Fiat Model 702 tractor was launched and went into full production a year later<sup>[8]</sup> at the car and truck plant in Turin, and won the International Ploughing Contest in Senlis (France).<sup>[9]</sup> Model 702 was the first Fiat agricultural tractor, as well as the first Italian tractor to be built on an industrial scale. In 1930s Fiat's founder, Senator Giovanni Agnelli, wanted his tractor to become an integral part of Italy's agriculture and so he began an association with the Italian agricultural co-operatives. The company kept on growing and by the end of the 1970s, Fiat Trattori have built over one million tractors.<sup>[10]</sup>



FIAT produced tractors since 1918

In the 1980s Fiat acquired Braud, a French company founded in 1870 which introduced the stationary threshers to farmers in Western France in 1895. In 1975 Braud launched his first grape harvester, model 1020. This was further improved with Braud 1014, the best selling grape harvester in the history of the vineyard, with over 2000 units sold in less than four years.<sup>[11]</sup>

With the purchase of Ford New Holland, New Holland became a global full liner producer and the full integration process was completed at the official launch of the brand at the worldwide convention in Orlando, Florida, in 1994.

Under the ownership of Fiat, New Holland N.V. and Case Corporation merged in 1999, giving birth to CNH. Due to antitrust policies, New Holland had to divest Laverda and the Versatile tractor plant in Winnipeg, Canada.<sup>[12]</sup>

Following the 1993 purchase the joint venture signed between the Ford Motor Company and the Mexican Quimmco Group in 1990 was transferred to the New Holland company. In 1999 the name of the company was changed to CNH de México.

New Holland Fiat India Pvt. Ltd., previously New Holland Tractors India (Pvt.) Ltd., was established as a 100% subsidiary of CNH Global NV in 1996. The factory is situated in the Greater Noida area, near New Delhi.<sup>[13]</sup>

In 1998, New Holland has acquired Bizon. Bizon was a combine harvester manufacturer based in Plock, Poland. It designed machines for harvesting cereals, rapeseed, maize, sunflower and other crops. Bizon held approximately 60% of the Polish combine harvester market and had begun sales expansion in Latin America, Pakistan, Belarus and Ukraine.

In 1998 New Holland signed a joint venture with Türk Traktör, a company belonging to the Koç Group, Turkey's largest industrial conglomerate. The factory based in Ankara was already producing Fiat tractors since the previous

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joint venture with the Fiat Group dated 1967.<sup>[14]</sup> In 2011 the factory celebrated the production of its 600 thousandth tractor.<sup>[15]</sup>

Shanghai New Holland Agricultural Machinery Corporation Ltd. (SNH) was established on January 1, 2002, as a joint venture bringing together CNH and Shanghai Tractor and Internal Combustion Engine Corporation (STEC), an industry leader in the Chinese market. Today, it is one of the China's largest joint ventures for agricultural machinery.<sup>[16]</sup>

Also in 2002, the New Holland TG tractor series was introduced, and featured the unique "Cat'sEye" lighting as dubbed by then Fiat Chairman Paolo Cantarella. The free form halogen lighting was a first, not only in tractor design but actually preceded the use of this type of lighting in automotive design. Virtually every tractor produced after this design has been influenced by the original TG model New Holland. The TG was the first styling effort by New Holland's newly named consulting designers and stylists (Montgomery Design International) who had been the long time firm of record for IH and CaseIH. A single sketch penned by owner and principal designer Gregg Montgomery, set New Holland's styling direction which continues today in the complete range of New Holland tractors.

From 2007<sup>[17]</sup> to 2010<sup>[18]</sup> New Holland was the sponsor of Juventus F.C.. In the same year, tractor number 500,000 rolls off the Jesi production line in Italy.<sup>[19]</sup> In Paraná State, Brazil, the first machines are delivered to the Programa Trator Solidário (Solidary Tractor). A white T7050 tractor is presented to the Pope Benedictus XVI.<sup>[20]</sup>

In 2008 New Holland Fiat India produces the 100,000th tractor at its New Delhi plant,<sup>[21]</sup> 200,000 combines built in Zedelgem, Belgium and 700,000 small square balers in New Holland, PA, US.<sup>[22]</sup> The rotary combine model, the CR9090 Elevation, is launched and sets a new world record for combine harvesting, recognised by Guinness World Records, with 551.6 tonnes of wheat harvested in eight hours.<sup>[23]</sup>

In 2009 New Holland Agricultural presented the world first hydrogen powered tractor, the NH2.

In 2010, following the finalization of the Industrial agreement between CNH and OJSC KAMAZ, the newly formed industrial joint venture has started the assembly of the New Holland new tractor models T9060, T9040, T8050 and the CSX7080 and the CSX7060 combine harvesters at its Naberezhnye Chelny plant in the Republic of Tatarstan, Russia. In 2012 two new products have been added, the T8.330 tractor and the CX8080 combine.<sup>[24]</sup> In the same year, New Holland celebrates 150,000th tractor made at its Indian plant at its manufacturing facility in Greater Noida, near New Delhi.<sup>[25]</sup> In Europe, Zedelgem plant celebrates 50 year in the self- propelled forage harvesters sector with the launch of the FR9000 50th Anniversary Limited Edition.<sup>[26]</sup>

In 2011 TürkTraktör, CNH's joint venture with Koç Holding and, celebrates the production of its 600 thousandth tractor, a New Holland TD 100D. New Holland is a Gold Sponsor of the Climate Action Networking Reception, hosted by Climate Action in partnership with the United Nations Environment Programme (UNEP) and the South African government in Durban.<sup>[27]</sup>

In 2012 New Holland is sponsoring the Rio+20 Summit United Nations Conference on Sustainable Development.<sup>[28]</sup>

In 2014, New Holland released redesigned versions of its CR/CX line of combines, including its first ever Class 10 model, the CR 10.90. With 653 hp, it is the biggest and most powerful combine on the market (as of Jan. 2015.) On August 15, 2014 a CR10.90 set a new world record for combine harvesting, recognized by Guinness World Records, with 797.7 tonnes of wheat harvested in eight hours.<sup>[29][30]</sup>

## Awards

New Holland products received many awards and recognitions during the years.<sup>[31]</sup> The most recent ones are:

Year	Product	Award	Jury Panel	Event	Country
2011	CX Opti-Fan System	AE50 Award for Engineering Innovation <sup>[32]</sup>	ASABE (American Society of Agricultural and Biological Engineers)		USA
2011	BB9000 - CropID system	Silver medal for technical innovationhttp://agronotizie.imagelinenetwork.com /agrimeccanica/sima-annuncia-gli-awards- 10403.cfm	Organizers' jury panel	SIMA	France
2011	T7 Range - Intelligent Trailer Braking System	Silver medal for innovation <sup>[33]</sup>	DLG - German Agricultural Society	Agritechnica	Germany
2011	Smart Key	Silver medal for innovation <sup>[33]</sup>	DLG - German Agricultural Society	Agritechnica	Germany
2011	CR - SynchroKnife drive	Silver medal for innovation <sup>[33]</sup>	DLG - German Agricultural Society	Agritechnica	Germany
2011	ECOBraud - Sustainable Viticulture	Silver medal for innovation <sup>[33]</sup>	DLG - German Agricultural Society	Agritechnica	Germany
2011	Braud9090X Olive - SuperIntensive Olive Farming	Silver medal for innovation <sup>[33]</sup>	DLG - German Agricultural Society	Agritechnica	Germany
2011	CR Combine	Maschine des Jahres 2012 <sup>[34]</sup>	DLV - German press association	Agritechnica	Germany
2012	T8 Tractor	AE50 Award for Engineering Innovation <sup>[35]</sup>	ASABE (American Society of Agricultural and Biological Engineers)		USA
2012	T9.560 4WD Tractor	AE50 Award for Engineering Innovation <sup>[35]</sup>	ASABE (American		USA

			Society of Agricultural and Biological Engineers)	
2012	CR - SynchroKnife drive	AE50 Award for Engineering Innovation <sup>[35]</sup>	ASABE (American Society of Agricultural and Biological Engineers)	USA
2012	MowMax II Cutterbar for Durabine Disc Mower- Conditioner header	AE50 Award for Engineering Innovation <sup>[35]</sup>	ASABE (American Society of Agricultural and Biological Engineers)	USA
2012	Cornrower - Corn Stover Windrowing attachment to a corn header	AE50 Award for Engineering Innovation <sup>[35]</sup>	ASABE (American Society of Agricultural and Biological Engineers)	USA

#### **Awarded New Holland Products**



Boomer 8N was awarded with AE50 Award for Engineering Innovation and Good Design Award by Chicago Atheneum.



FR9000 won a Gold Medal for Technical Innovation at Agritechnica for the Intellifill system.



CR9000 was awarded by AE50 Award for Engineering Innovation for the IntelliView monitor

## **Global market presence**

New Holland is present worldwide in 170 countries.<sup>[1]</sup> The headquarters is situated in Turin, Italy. New Holland is represented with branches in North America, with offices in USA in New Holland, Pennsylvania and Racine, Wisconsin, in South America in Curitiba, Brazil. In Europe, New Holland covers the main markets with branches in Basildon, UK; Copenhagen, Denmark; Heilbronn, Germany; Madrid, Spain; Modena, Italy; Paris, France; Płock,

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Poland; St. Valentin, Austria; Zedelgem, Belgium.

New Holland headquarters for Africa, the Middle East, the Commonwealth of Independent States (CIS), Asia, including India and China, and Oceania is based in Lugano, Switzerland, where it is part of CNH International that is responsible for CNH operations in the above-mentioned markets. Operations are covered by hubs based in Istanbul, Turkey; Kiev, Ukraine; Moscow, Russia; New Delhi, India; Shanghai, China; Sydney, Australia and Tashkent, Uzbekistan, with representative offices in Bangkok, Thailand and Johannesburg, South Africa. In Japan the company is present with a Commercial joint venture in Sapporo.

New Holland based its production on 22 plants spread in:

#### Asia

- Dera Ghazi Khan, Pakistan: tractors, engines (joint ventures)
- Harbin, China: tractors
- Naberezhnye Chelny, Russia: tractors and combines (joint venture)
- Greater Noida, India: tractors
- Shanghai, China: tractors (joint venture)
- Tashkent, Uzbekistan: tractors (joint venture)

#### Europe

- Ankara, Turkey: tractors, engines (joint ventures)
- Antwerp, Belgium: components
- Basildon, UK: tractors
- Coex, France: grape harvesters
- Croix, France: components
- Jesi, Italy: tractors
- Lecce. Italy: telehandlers
- Modena, Italy: components
- Płock, Poland: combines and balers
- Zedelgem, Belgium: combines, balers and forage harvesters
- Cork,Ireland: tractors

#### **North America**

#### Mexico

Querétaro: tractors and components (joint venture)

#### **United States**

- Fargo, North Dakota: tractors
- Grand Island, Nebraska: combines and hay and forage equipment
- New Holland, Pennsylvania: balers, hay and forage equipment

Racine, Wisconsin: tractor assembly, transmissions

#### Canada

Saskatoon, Saskatchewan: planting and seeding equipment

#### **South America**

#### Argentina

Ferreyra, Córdoba: Combines and tractors

#### Brazil

- Rio Verde: sprayers, tractors and combines
- Curitiba: tractors and combines
- Piracicaba: sprayer
- Sorocaba: combines

New Holland can also count on a vast number of importers and dealers in Africa, Asia, Europe, North America, Oceania, and South America. New Holland has over 2,200 dealers and 100 importers.

## **Environmental initiatives and innovation projects**

## NH2 Hydrogen Powered Tractor and Energy Independent Farm

New Holland has developed the Energy Independent Farm, a new approach, where farmers are meant to be able to generate their own energy to run their farm and agricultural equipment. The basis of this is the usage of Hydrogen generated from renewable sources which farmers have at their disposal: wind, solar, waste or biomass, according on its availability in each particular farming area. The electricity is then converted into Hydrogen using an electrolyser; this technology is used to split water into hydrogen and oxygen gases. Basically, it needs water and electricity as inputs; the hydrogen is then stored at the farm in high-pressure tanks and it is ready to be used as a free and clean fuel which can be used directly in farm machinery or in generators to provide electrical power and heat for buildings and numerous applications. Hydrogen was chosen because it is an efficient energy carrier, it works like a battery, accumulating energy and it is more advantageous and cleaner than a conventional battery. The hydrogen powered NH2 tractor is based on the T6.140 production model The tractor is able to perform all operate all the implements required for different seasonal operations: soil preparation, seeding, baling, transport, and front loader applications while operating virtually silently and emitting only heat, vapour and water<sup>[36]</sup> Its internal combustion engine has been replaced with fuel cells that generate electricity. The compressed hydrogen stored in a special tank reacts with the oxygen in the air inside the cell to generate water and electricity. This powers the electric motors which drive the main transmission and the auxiliary systems of the tractor. The fuel cell generates less heat than an internal combustion engine, offers a consistent output of power and does not produce



The concept of NH2 Hydrogen Tractor.



NH2 Hydrogen Tractor.

polluting nitrogen oxides, soot particles or carbon dioxide. It is quicker to refuel, it takes 5 minutes to fill a tank compared to hours required by batteries.<sup>[37]</sup>

Product specification

- Power: 75 kW (106 hp)<sup>[38]</sup>
- Transmission: CVT through electrical motor
- PTO : CVT through electrical motor

NH2 Hydrogen Powered Tractor was awarded with Gold Medal for technical innovation at SIMA in 2009.<sup>[39]</sup>

The hydrogen powered NH2 tractor will be tested at La Bellotta, Turin, Italy, as a pilot to realize the first Energy Independent farm.<sup>[40]</sup>

## 100% Biodiesel equipment

New Holland approved the use of Biodiesel in its products since 2006 with the use of 20% Biodiesel (B20) in all of its equipment containing New Holland engines. In 2007 New Holland offered 100% Biodiesel (B100) compatibility with New Holland Tier 3 engines.<sup>[41][42]</sup> All Tier 4A ECOBlue SCR engines are compatible with 20% Biodiesel (B20) blends, as long as the biodiesel blend complies with fuel specification EN14214:2009.<sup>[43]</sup>

## Partnership with British Beekeepers' Association

New Holland has formed a partnership with the British Beekeepers' Association (BBKA) which has led the campaign to raise funds for research to fully understand the reason why British bee colonies are being wiped out. New Holland will provide funding and will have stands at key agricultural shows and events – where it can raise awareness of the work of the BBKA amongst farmers, land-owners and contractors.<sup>[44]</sup>

## **Carbon Footprint Calculator**

New Holland has developed an online Carbon Footprint Calculator (called CarbonID calculator), verified by SGS, to calculate the carbon footprint of tractors, either based on annual fuel usage or hours worked. The calculator shows a comparison between the Tier 4A/Stage IIIB and previous engine emissions regulations.<sup>[45]</sup>

## Biomass

New Holland is supporting different projects based on energy production from biomass made from agricultural, industrial and domestic residue and energetic crops:

- A willow wood near Lockerbie, United Kingdom, where the forage harvester FR9090 has been tested and is
  actually in action to harvest crops without the further need of rework before being taken to the power station<sup>[46]</sup>
- In Guragon, near Delhi, Punjab region, India, the A2Z Maintenance & Engineering is producing energy from what were previously considered to be waste products, straw from paddy fields and from cotton, maize and oilseed rape. Over 45 megawatts of energy are delivered to the national grid. This new usage of agricultural residue also reduces the negative environmental impact of large-scale stubble burning. New Holland is currently operating a fleet of 105 tractors, 45 conventional balers, 15 rakes and 2 mowers.<sup>[47]</sup>
- In Brazil New Holland has started a partnership with the Centro de Tecnologia Canavieira (Sugar Cane Technology Centre – CTC) for the production of energy from sugar cane, in the traditional form of ethanol and

by transforming sugar cane straw into energy. Two Brazilian test farms use a range of New Holland large square balers, tractors, windrowers and bale accumulators.<sup>[48]</sup>

In Makeni, Sierra Leone, New Holland has started a partnership with Addax Bioenergy. The first portion of the plan, the Makeni Ethanol and Power Project (MEP), entails the establishment of sugarcane estates, an ethanol refinery, a cogeneration plant and the related infrastructure. 9 New Holland medium HP tractors are operated to prepare the land for planting.<sup>[49]</sup>

## Trademarks

New Holland introduced several innovation and patents on his products.

## ABS SuperSteer system & Intelligent Trailer Braking System

ABS SuperSteer is an application of ABS technology to tractors, which offers an increased safety, especially when operating on steep hills, and increased tractor manoeuvrability.<sup>[50]</sup> ABS SuperSteer uses ABS technology to manage each wheel's brake individually. Using a single foot pedal, the ABS SuperSteer allows the tractor to be steered by the brakes. Two orange pedal extensions either side of a single pedal replace the conventional, independent two-pedal arrangement. At low speed, this provides the driver with the same single-wheel steering as a conventional tractor, but automatically disables at higher speeds to prevent accidental application. The ABS SuperSteer function includes tyre slip control and automatic coupling with the steering angle. This allows the tractor to perform tight turning manoeuvres without driver intervention on brakes by pivoting on a braked rear wheel, reducing the turning circle to that of a tractor fitted with a SuperSteer front axle. A driver-selectable amount of slip on the pivoting wheel is allowed to prevent soil damage. The hill holder function improves tractor control on slopes, automatically engaging the brakes to prevent the machine rolling back during hill starts and easing clutch engagement.<sup>[51]</sup> The Intelligent Trailer Braking system manages and equalises the braking force exerted on the trailer. When slowing with the transmission or the exhaust brake the trailer brakes are modulated so that the trailer deceleration matches that of the tractor.

The ABS system is assembled at Basildon plant using a dynamic standard operating procedure, this enables any operator to assemble the highly complex assembly made up of around 80 processes and 25 different assembly tools, and this also incorporates a test station to ensure the ABS unit is in perfect working order before fitting to a tractor. This is a ground breaking system using new technologies and 3D Assembly instructions the Project leader is process engineer Howard Turnnidge.

## **Opti-Fan system**

The Opti-Fan system compensates automatically for continuous uphill or downhill gradients in combines. When driving downhill, material moves against gravity and therefore more slowly over the grainpan and top sieve, causing it to remain longer in the cleaning shoe and the layer thickness to increase. More 'material other than grain' (MOG) remains in the cleaning shoe as the set cleaning fan speed is insufficient to clear the crop. Driving uphill causes the material layer to decrease as it moves more quickly out of the shoe under gravity. The air flow from the fan is too high for the thin layer of material which results in the material travelling too quickly over the top causing increased



The Opti-Fan system.

grain losses. The fan speed control system senses the combine's angle of ascent or descent and automatically adjusts the cleaning fan speed to compensate. The operator sets the level-field fan speed and the system reduces the speed when travelling uphill and increases it downhill to optimise the material layer thickness on the cleaning shoe.<sup>[52]</sup> Opti-fan system was awarded with a Silver Medal at Agritechnica in 2009.<sup>[53]</sup>

## IntelliFill system

The FR9000's IntelliFill system allows the operator to fill a trailer accurately and with minimal losses, even when visibility is limited. Following a front-to-rear or rear-to-front pattern, the automatic trailer tracking system uses a specialised 3D camera mounted under the spout to guide the crop flow into the trailer. The system ensures a uniform fill whether the trailer is alongside the forage harvester, or following, in the case of starting new fields. The system can accurately control the crop flow trajectory even when operating at night. The spout-mounted sensor creates a distance image of the trailer and its surroundings, based on NIR (near infra red) technology.<sup>[52]</sup> Unlike conventional mono or stereo camera systems, which have poor depth perception, the New Holland tracking system can accurately position the crop flow to a distance of 20 metres.<sup>[54]</sup> IntelliFill system was awarded with a Gold Medal at Agritechnica in 2009.<sup>[53]</sup>

### Super Steer system



The SuperSteer front axle reduces the turn radius of the tractor. The front axle beam turns with the wheels to give an effective turn angle of 65°. The tractor turns tighter and faster so it spends less time turning and more time working. The SuperSteer front axle also increases the wheelbase, with the weight of the front ballast resting directly on the front axle beam. Traction is enhanced in certain conditions without need for extra ballast.<sup>[55]</sup>

#### Moisture sensing system

Two star wheels penetrate the bale and provide an accurate measurement of the moisture content;<sup>[56]</sup> the information about the condition of the crop being

baled prevents processing a crop which is not really ready and allows precise application of additives.<sup>[57]</sup>

### Sensitrak 4WD management

Sensitrak traction management monitors the speed differential between the front and rear wheels. If the system detects that the front wheels are slipping, power is automatically directed to the rear wheels. The system reduces wheel slip but not the manoeuvrability. The operator can select permanent 4WD and a manually applied front axle differential lock further boosting traction.

### On the move bale weighting system

The weight data is transmitted instantaneously to the monitor in the tractor cab, enabling the operator to keep a constant and accurate check on the progress of baling operations and optimize the performance of the baler to suit harvesting conditions. This automatic system bale weighing system has an accuracy of +/-2% and can easily handle different bale size in any kind of crop condition. It is available as a dealer installed accessory.<sup>[58]</sup>

### **Edgewrap system**

With the New Holland EdgeWrap system, net is brought to the bale by a duckbill net applicator. The system penetrates in the bale chamber for positive wrapping material delivery. The duckbill net applicator is wider than the bale chamber, providing coverage of the bale edge. The use of wide net provides over the edge coverage.

### Grain Cam system

A camera recognises the concentration of chaff and broken grain in the sample as it is transferred through the grain

elevator to the grain tank; this information is shown on the IntelliView III monitor in the form of a graph, allowing the operator to fine tune adjustments, further boosting grain purity. Grain Cam was awarded by the Gold Medal for innovation at Agritechnica in 2007.

## **Opti-Clean cleaning shoe**



The Opti-Clean system optimize the strike and the throwing angles of each of the main components in CR9000 Elevation models. The grain pan is not coupled with the pre-sieve and top sieve



The Edgewrap system

so that each element can operate as its optimum efficiency. The cascade distance between the grain pan and the pre-sieve is increased for greater capacity, while a long sieve stroke and a steep throwing angle keep more material airborne, for even a higher cleaning efficiency. The opposing motion of

the grain pan and bottom sieve to the pre-sieve reduces overall machine vibrations and increases operator comfort.<sup>[59]</sup>

## Sidewinder

The SideWinder II armrest is a new command control for T6, T7, T8 and T9 tractor ranges. The most frequently used controls have been placed in this armrest to improve ergonomics and productivity.<sup>[60]</sup>

## Crop ID

The Crop ID system records information in real time about every bale. When the bale passes through the chamber, an empty radio frequency ID tag is applied, and when it exits the chamber, and passes off the chute, the information is recorded by the processor, including bale weight, moisture content, date and time and its GPS location. An infrared scanner can then be used to read the tag.<sup>[61]</sup>

## Synchroknife

The SynchroKnife drive technology includes a single, centrally mounted gearbox with double knife drive which ensures lateral weight distribution for more uniform stubble height, as well as significantly reducing knife stress and vibration. Located under the header floor, the edge of the uncut crop is protected from potential snagging caused by bulky side-mounted knife drive gearboxes.<sup>[62]</sup>

## Notes

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## **External links**

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- New Holland European Press Kit (http://newhollandpresskit.btsadv.com)
- New Holland North America Press Kit (http://www.newhollandmediakit.com/)
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